

# A1 Birtley to Coal House

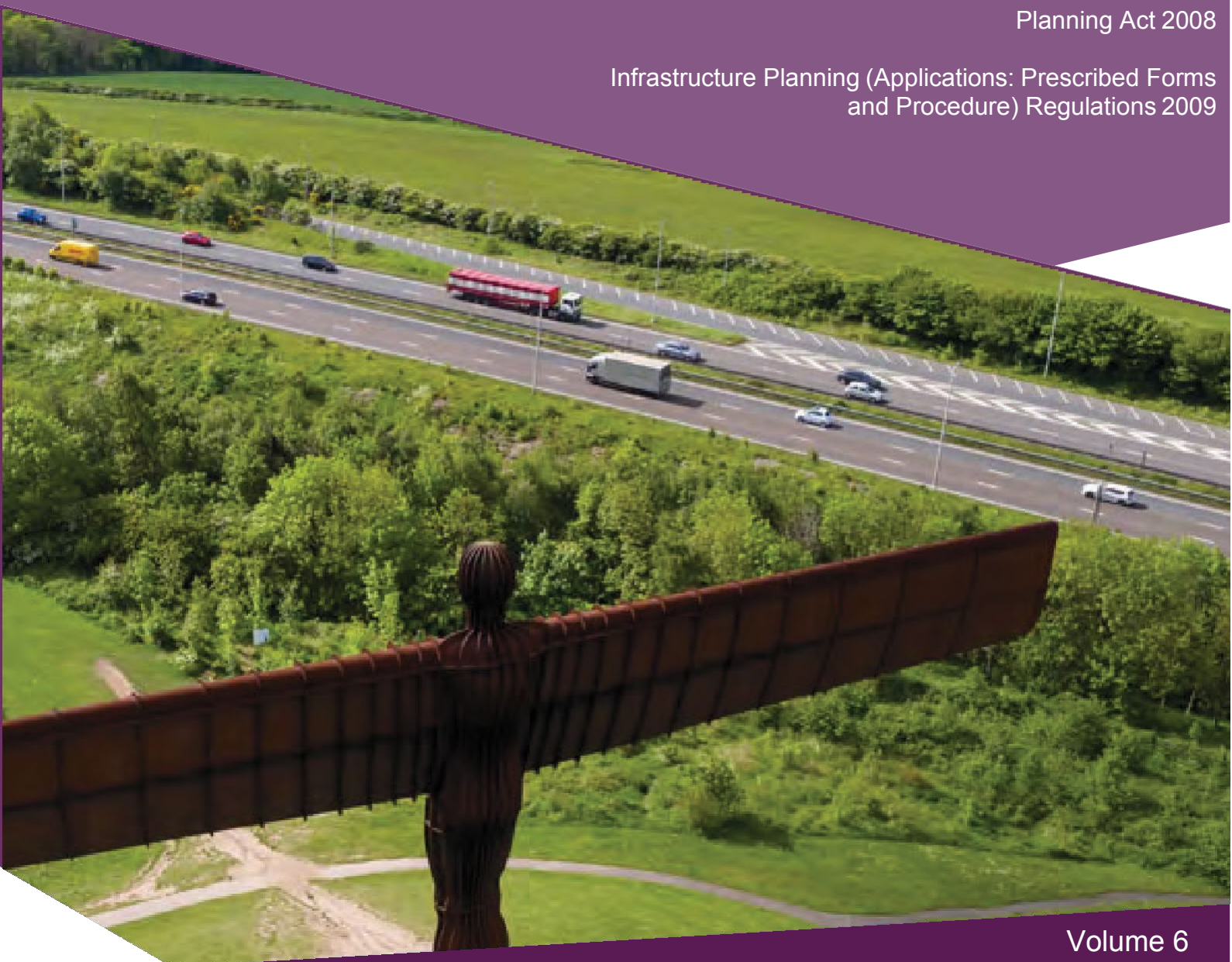
**Scheme Number: TR010031**

## **6.3 Environmental Statement – Appendix 9.2b Ground Investigation Factual Report**

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms  
and Procedure) Regulations 2009



Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning  
(Applications: Prescribed Forms and  
Procedures) Regulations 2009**

**A1 Birtley to Coal House  
Development Consent Order 20[xx]**

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**Environmental Statement -  
Appendix**

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|                                               |                                                            |
|-----------------------------------------------|------------------------------------------------------------|
| <b>Regulation Reference:</b>                  | APFP Regulation 5(2)(a)                                    |
| <b>Planning Inspectorate Scheme Reference</b> | TR010031                                                   |
| <b>Application Document Reference</b>         | TR010031/APP/6.3                                           |
| <b>Author:</b>                                | A1 Birtley to Coal House Project Team,<br>Highways England |

| <b>Version</b> | <b>Date</b>    | <b>Status of Version</b> |
|----------------|----------------|--------------------------|
| Rev 0          | 14 August 2019 | Application Issue        |



**APPENDIX A  
EXPLORATORY HOLE LOGS**

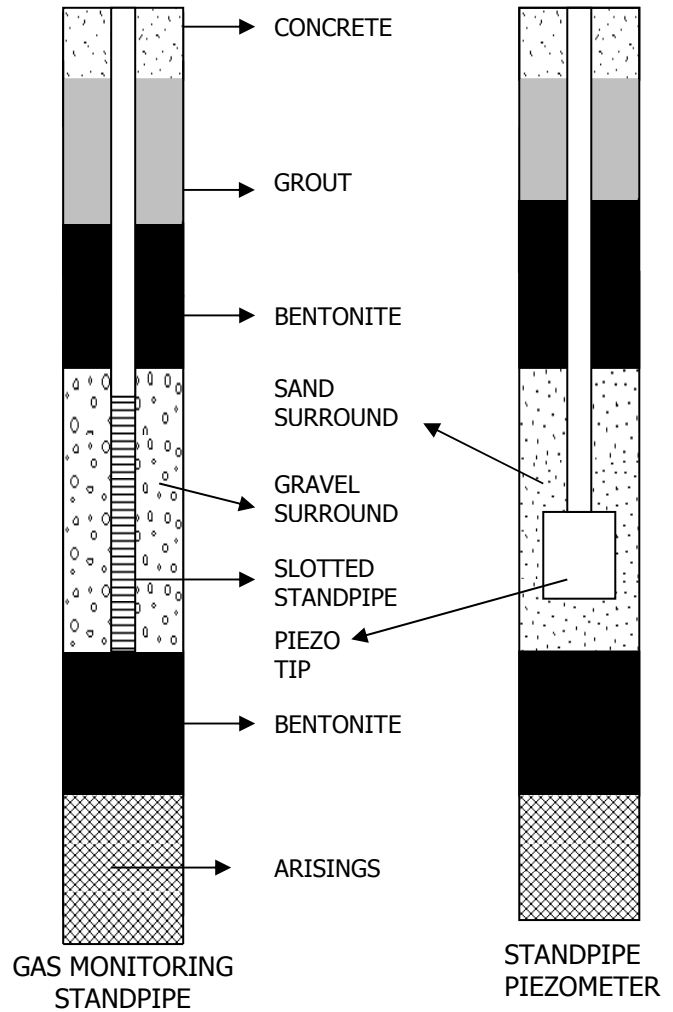


**EXPLORATORY HOLE LEGEND SHEET**

**STRATA LEGENDS**

|  |                     |
|--|---------------------|
|  | TOPSOIL             |
|  | MADE GROUND         |
|  | CLAY                |
|  | SANDY GRAVELLY CLAY |
|  | ORGANIC CLAY        |
|  | SILT                |
|  | SAND                |
|  | GRAVEL              |
|  | SAND & GRAVEL       |
|  | PEAT                |
|  | COBBLES             |
|  | BOULDERS            |
|  | MUDSTONE            |
|  | SILTSTONE           |
|  | SANDSTONE           |
|  | LIMESTONE           |
|  | CHALK               |

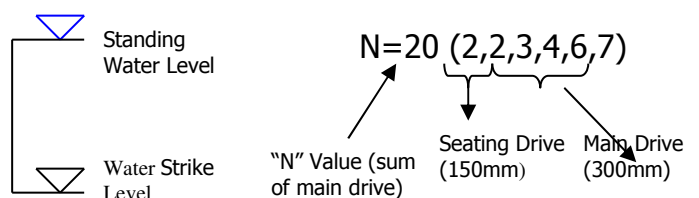
**INSTALLATIONS / BACKFILL**



**SAMPLE / INSITU TEST TYPES**

|     |                            |
|-----|----------------------------|
| B   | Bulk Disturbed Sample      |
| D   | Disturbed Sample           |
| W   | Water Sample               |
| ES  | Environmental Soil Sample  |
| EW  | Environmental Water Sample |
| U   | Undisturbed Sample         |
| P   | Piston Sample              |
| S   | SPT (Split Spoon)          |
| C   | CPT / Core Sample          |
| HV  | Hand Vane                  |
| PID | Photo Ionisation Detector  |

**MISCELLANEOUS**





|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424481.15</b>   | Northing: <b>558625.34</b> | From (m)<br>0.00 - 1.20<br>1.20 - 8.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.81mAOD</b> | Final Depth: <b>8.00m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 14/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 14/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 8.00 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 5  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 7  | Large Bulk       | 0 |
| Disturbed                  | 16 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 2             | 12         | 450                    | 12 | N=12 (1,1/1,3,4,4) | MOD 02     |
| Split Spoon                       | 2.00      | -          | -         | 3             | 16         | 450                    | 16 | N=16 (1,2/3,3,4,6) | MOD 02     |
| Split Spoon                       | 3.00      | -          | -         | 6             | 17         | 450                    | 17 | N=17 (3,3/4,4,5,4) | MOD 02     |
| Split Spoon                       | 4.00      | -          | -         | 4             | 10         | 450                    | 10 | N=10 (2,2/3,2,2,3) | MOD 02     |
| Split Spoon                       | 5.00      | -          | -         | 4             | 11         | 450                    | 11 | N=11 (2,2/2,3,3,3) | MOD 02     |
| Split Spoon                       | 6.00      | -          | -         | 4             | 11         | 450                    | 11 | N=11 (2,2/2,2,3,4) | MOD 02     |
| Split Spoon                       | 7.00      | -          | -         | 6             | 12         | 450                    | 12 | N=12 (3,3/3,3,3,3) | MOD 02     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 5 |
| Standard Penetration Tests | 7 |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 2.50 - 2.70                         | 30              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 101       | 100        |         |
| 2.00 - 3.00                         | 101       | 100        |         |
| 3.00 - 4.00                         | 86        | 75         |         |
| 4.00 - 5.00                         | 86        | 85         |         |
| 5.00 - 6.00                         | 76        | 95         |         |
| 6.00 - 7.00                         | 76        | 90         |         |
| 7.00 - 8.00                         | 66        | 10         |         |





|                                      |                             |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424481.15</b>   | Northing: <b>558625.34</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 8.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.81mAOD</b> | Final Depth: <b>8.00m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 14/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 14/05/2018 |

| Strata Description                                                                                                                                                   | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                  |                       |                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|------------------------------------|-----------------------|----------------------------------|
|                                                                                                                                                                      |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)                          | Ref                   | Test Results                     |
| MADE GROUND: Soft brown gravelly CLAY. Gravel is subangular fine to coarse sandstone, mudstone, brick and rare coal.                                                 |        | (0.55)                        |                      |                   |                      |                       |                         |                 |                         | 0.20<br>0.30                       | 1 D<br>2 ES           |                                  |
| MADE GROUND: Yellow sandy subangular fine to coarse sandstone GRAVEL. Sand is fine to coarse.                                                                        |        | 0.55<br>(0.10)<br>0.65        | 18.26<br>18.16       |                   |                      |                       |                         |                 |                         | 0.55<br>0.65 - 1.20<br>0.70        | 3 D<br>7 B<br>4 ES    |                                  |
| MADE GROUND: Yellowish brown gravelly sandy CLAY. Gravel is subangular fine to coarse sandstone, mudstone and brick. Sand is fine to coarse.                         |        | (0.75)                        |                      |                   |                      |                       |                         |                 |                         | 1.00<br>1.00<br>1.20 - 1.65        | 5 D<br>6 ES<br>8 D    | SPT(S) 1.20m, N=12 (1,1/1,3,4,4) |
| MADE GROUND: Firm dark brown slightly gravelly slightly sandy CLAY. Gravel is subangular fine to coarse sandstone, mudstone, brick and coal. Sand is fine to coarse. |        | 1.40                          | 17.41                |                   |                      |                       |                         |                 |                         | 1.40 - 2.00<br>1.50                | 10 B<br>9 D           |                                  |
|                                                                                                                                                                      |        | (1.10)                        |                      |                   |                      |                       | 116<br>2.00             |                 |                         | 2.00                               | 11 ES                 | SPT(S) 2.00m, N=16 (1,2/3,3,4,6) |
| Firm to stiff thinly laminated orangish grey silty CLAY with rare peat and coal.                                                                                     |        | 2.50                          | 16.31                | 30                |                      |                       |                         |                 |                         | 2.50<br>2.50 - 3.00                | 12 D<br>14 B          | HV 2.50m, (p)=60 kPa (r)=6 kPa   |
|                                                                                                                                                                      |        | (1.00)                        |                      |                   |                      |                       |                         |                 |                         | 3.00<br>3.00 - 3.45<br>3.00 - 4.00 | 13 ES<br>15 D<br>17 B | SPT(S) 3.00m, N=17 (3,3/4,4,5,4) |
| Firm to stiff grey laminated CLAY.                                                                                                                                   |        | 3.50                          | 15.31                |                   |                      |                       |                         |                 |                         | 3.50                               | 16 D                  | HV 3.50m, (p)=60 kPa (r)=9 kPa   |
|                                                                                                                                                                      |        | (3.95)                        |                      |                   |                      |                       |                         |                 |                         | 4.00 - 4.45<br>4.00 - 5.00         | 18 D<br>20 B          | SPT(S) 4.00m, N=10 (2,2/3,2,3)   |
|                                                                                                                                                                      |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.50                               | 19 D                  | HV 4.50m, (p)=55 kPa (r)=8 kPa   |
|                                                                                                                                                                      |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.00 - 5.45<br>5.00 - 6.00         | 21 D<br>23 B          | SPT(S) 5.00m, N=11 (2,2/3,3,3)   |
|                                                                                                                                                                      |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.50                               | 22 D                  | HV 5.50m, (p)=35 kPa (r)=5 kPa   |
|                                                                                                                                                                      |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.00 - 6.45<br>6.00 - 7.00         | 24 D<br>26 B          | SPT(S) 6.00m, N=11 (2,2/2,2,3,4) |
|                                                                                                                                                                      |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.50                               | 25 D                  | HV 6.50m, (p)=41 kPa (r)=6 kPa   |
|                                                                                                                                                                      |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.00 - 7.10<br>7.00 - 7.45         | 28 D<br>27 D          | SPT(S) 7.00m, N=12 (3,3/3,3,3,3) |
| NO RECOVERY due to inner core barrel failure during drilling.                                                                                                        |        | 7.45                          | 11.36                |                   |                      |                       |                         |                 |                         |                                    |                       |                                  |
|                                                                                                                                                                      |        | (0.55)                        |                      |                   |                      |                       |                         |                 |                         |                                    |                       |                                  |
| EOH at 8.00m - End of Shift                                                                                                                                          |        | 8.00                          | 10.81                |                   |                      |                       |                         |                 |                         |                                    |                       |                                  |

|                        |       |                     |              |            |            |           |          |        |               |                    |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|---------------|--------------------|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        | Installations |                    |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           | 0.00     | 8.00   | Bentonite     |                    |            |           |       |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |               |                    |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                    |            |           |       |
|                        |       |                     |              |            |            |           |          |        |               |                    |            |           |       |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
MOD 02 (65%)



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424628.65</b>   | Northing: <b>558602.73</b> | From (m)<br>0.00 - 1.20<br>1.20 - 2.44 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.22mAOD</b> | Final Depth: <b>2.44m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 15/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 15/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 2.44 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 4 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 2 | Large Bulk       | 0 |
| Disturbed                    | 5 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 1 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                                                   |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|---------------------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result                                   | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 2             | 7          | 450                    | 7 | N=7 (1,1/1,2,2,2)<br>50 (25 for 25mm/50 for 15mm) | MOD 02     |
| Split Spoon                       | 2.00      | -          | -         | 25            | 50         | 40                     |   |                                                   | MOD 02     |

| In-Situ Tests              |       |
|----------------------------|-------|
| PID                        | Count |
| Hand Vane*                 | 1     |
| Standard Penetration Tests | 2     |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 100        | 169 Blows |



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
Wakefield WF2 0XJ  
Tel +44(0)1924 229889  
Web: www.central-alliance.co.uk

Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-02**  
FINAL



|                                      |                             |                            |                     |                               |                        |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|-------------------------------|------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                               |                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424628.65</b>   | Northing: <b>558602.73</b> | Depth (m)           | Method                        | Plant Used             | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.22mAOD</b> | Final Depth: <b>2.44m</b>  | 0.00 - 1.20         | Inspection Pit                | Hand Tools             | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   | 1.20 - 2.44         | Dynamic Sampling (Windowless) | Modular Window Sampler | Start Date: 15/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |                               |                        | Finish Date: 15/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                  | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | Depth (m)         | Ref   |
| MADE GROUND: Brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone, mudstone and rare coal.<br>MADE GROUND: Brownish yellow sandy clayey subangular fine to coarse sandstone GRAVEL. Sand is fine to coarse.<br>MADE GROUND: Firm laminated dark yellowish brown slightly gravelly CLAY. Gravel is subangular fine to coarse sandstone, mudstone and rare coal. |        | (0.30)                        | 17.92                |                         |                 |                         | 0.20              | 1 D   |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        | 0.30                          |                      |                         |                 |                         | 2 ES              |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        | (0.20)                        |                      |                         |                 |                         | 0.50              | 3 D   |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        | 0.50                          |                      |                         |                 |                         | 0.50 - 1.20       | 7 B   |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | 0.70              | 4 ES  |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        | (1.94)                        |                      |                         |                 |                         | 1.00              | 5 D   |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | 1.00              | 6 ES  |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | 1.20 - 1.65       | 8 D   |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | 1.20 - 1.90       | 11 B  |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | 1.50              | 9 D   |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | 1.90              | 10 ES |
|                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | 2.00 - 2.40       | 12 UT |
| EOH at 2.44m - Refusal                                                                                                                                                                                                                                                                                                                                                                                              |        | 2.44                          | 15.78                |                         |                 |                         |                   |       |

|                        |                                                                              |                     |            |                       |              |            |              |               |                    |  |            |           |      |
|------------------------|------------------------------------------------------------------------------|---------------------|------------|-----------------------|--------------|------------|--------------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc.                                                                        | Backfill            |            | Dynamic Sampling Runs |              |            |              | Installations |                    |  |            |           |      |
|                        | No Groundwater Encountered<br>Casing Used<br>No Monitoring Point/s Installed | Depth (m)           | Material   | From (m)              | To (m)       | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |                                                                              | 0.00 - 2.44         | Bentonite  | 1.20                  | 2.00         | 101        | 100          | 169 Blows     |                    |  |            |           |      |
|                        |                                                                              | Groundwater Strikes |            |                       |              |            |              |               |                    |  |            |           |      |
|                        |                                                                              | Strike (m)          | Casing (m) | Sealed (m)            | Rises To (m) | Time (min) | Remarks      |               |                    |  |            |           |      |
|                        |                                                                              |                     |            |                       | MOD 02 (65%) |            |              |               |                    |  |            |           |      |





|                                      |                              |                            |                         |                          |                          |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424693.43</b>    | Northing: <b>558604.12</b> | From (m)<br>0.00 - 0.90 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.10m AOD</b> | Final Depth: <b>0.90m</b>  | Logger: <b>GS</b>       | Grid System: <b>OSGB</b> |                          | Approved: BH           |
| Client: <b>SLV</b>                   | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                         |                          |                          | Start Date: 15/05/2018 |
|                                      |                              |                            |                         |                          |                          | End Date: 15/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.90 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 2 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-02A**  
FINAL



|                                      |                              |                            |                          |                          |                          |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |                          |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424693.43</b>    | Northing: <b>558604.12</b> | Depth (m)<br>0.00 - 0.90 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.10m AOD</b> | Final Depth: <b>0.90m</b>  |                          |                          |                          | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                          |                          |                          | Start Date: 15/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |                          |                          | Finish Date: 15/05/2018 |

| Strata Description                                                                                     | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |     |
|--------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|-----|
|                                                                                                        |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref |
| MADE GROUND: TOPSOIL.                                                                                  |        | (0.20)                           |                         |                               |                 |                            |                   |     |
| MADE GROUND: Brownish yellow sandy subangular fine to coarse sandstone GRAVEL. Sand is fine to coarse. |        | 0.20                             | 17.90                   |                               |                 |                            | 0.20              | 1 D |
|                                                                                                        |        | (0.70)                           |                         |                               |                 |                            | 0.30 - 0.90       | 3 B |
|                                                                                                        |        | 0.90                             | 17.20                   |                               |                 |                            | 0.50              | 2 D |
| EOH at 0.90m - Refusal                                                                                 |        |                                  |                         |                               |                 |                            |                   |     |

|                        |                                                                                |                               |            |              |            |                       |              |         |                    |               |            |           |      |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|------------|--------------|------------|-----------------------|--------------|---------|--------------------|---------------|------------|-----------|------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |            |              |            | Dynamic Sampling Runs |              |         |                    | Installations |            |           |      |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)                     | Material   | From (m)     | To (m)     | Diam (mm)             | Recovery (%) | Remarks | Instrument Details |               | Resp. Zone | Depth (m) | Diam |
|                        |                                                                                | 0.00 - 0.90                   | Bentonite  |              |            |                       |              |         |                    |               |            |           |      |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) |            |              |            |                       |              |         |                    |               |            |           |      |
| Groundwater Strikes    |                                                                                |                               |            |              |            |                       |              |         |                    |               |            |           |      |
| Strike (m)             |                                                                                | Casing (m)                    | Sealed (m) | Rises To (m) | Time (min) | Remarks               |              |         |                    |               |            |           |      |
|                        |                                                                                |                               |            |              |            |                       |              |         |                    |               |            |           |      |



|                                      |                             |                            |                                       |                                                         |                                                  |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------------------------|---------------------------------------------------------|--------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                   |                                                         |                                                  | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424643.40</b>   | Northing: <b>558602.05</b> | From (m): 0.00 - 1.20<br>1.20 - 10.45 | Method: Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used: Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.94mAOD</b> | Final Depth: <b>10.45m</b> |                                       |                                                         |                                                  | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                       |                                                         |                                                  | Start Date: 16/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                       |                                                         |                                                  | End Date: 16/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 10.45         | 66        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                                       |        |                |           |
|-----------------------------------|---------------------------------------|--------|----------------|-----------|
| Date                              | Instrument Details                    | To (m) | Resp. Zone (m) | Diam (mm) |
| 16/05/2018                        | Standpipe with Water Level Datalogger | 4.50   | 3.00 - 6.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 3.00   | Bentonite   |
| 3.00 - 6.00   | Gravel      |
| 6.00 - 10.00  | Bentonite   |
| 10.00 - 10.45 | Arisings    |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 5  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 10 | Large Bulk       | 0 |
| Disturbed                  | 19 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    |                  | 2 |
| Undisturbed Thin Wall (NR) |    |                  | 1 |
| Core Sample                |    |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | 2.00       | -         | 3             | 15         | 450                    | 15 | N=15 (2,1/2,3,4,6) | MOD 02     |
| Split Spoon                       | 3.00      | 2.00       | -         | 7             | 21         | 450                    | 21 | N=21 (3,4/4,5,6,6) | MOD 02     |
| Split Spoon                       | 5.00      | 2.00       | -         | 6             | 19         | 450                    | 19 | N=19 (3,3/4,4,5,6) | MOD 02     |
| Split Spoon                       | 7.00      | 2.00       | -         | 5             | 9          | 450                    | 9  | N=9 (3,2/2,2,3)    | MOD 02     |
| Split Spoon                       | 8.00      | 2.00       | -         | 6             | 20         | 450                    | 20 | N=20 (3,3/5,5,5,5) | MOD 02     |
| Split Spoon                       | 9.00      | 2.00       | -         | 6             | 15         | 450                    | 15 | N=15 (3,3/3,4,4,4) | MOD 02     |
| Split Spoon                       | 10.00     | 2.00       | -         | 4             | 12         | 450                    | 12 | N=12 (2,2/3,3,3,3) | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |          |
|-------------------------------------|-----------|------------|----------|
| Dynamic Sampling Runs               |           |            |          |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks  |
| 1.20 - 2.00                         | 101       | 100        | 90 blows |
| 2.00 - 3.00                         | 101       | 70         | 88 blows |
| 3.00 - 4.00                         | 86        | 90         | 88 blows |
| 4.00 - 5.00                         | 86        | 100        | 79 blows |
| 5.00 - 6.00                         | 86        | 100        | 107 blow |
| 6.00 - 7.00                         | 76        | 100        | 77 blow  |
| 7.00 - 8.00                         | 76        | 100        | 68 blows |
| 8.00 - 9.00                         | 66        | 100        | 37 blows |
| 9.00 - 10.00                        | 66        | 100        | 30 blows |





|                                      |                              |                            |                                          |                                                           |                                                    |                         |
|--------------------------------------|------------------------------|----------------------------|------------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                      |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424643.40</b>    | Northing: <b>558602.05</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 10.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.94m AOD</b> | Final Depth: <b>10.45m</b> |                                          |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                                          |                                                           |                                                    | Start Date: 16/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                          |                                                           |                                                    | Finish Date: 16/05/2018 |

| Strata Description                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | Depth (m)                                                                                                                                                                                                                  | Ref                                                                                                                                                                                                           |
| MADE GROUND: Firm greyish brown slightly gravelly CLAY. Gravel is subangular fine to coarse sandstone, mudstone, coal and brick.                              |        | (1.30)                           |                         |                               |                 |                         | 0.20 1 D<br>0.20 - 1.20 7 B<br>0.30 2 ES<br>0.50 3 D<br>0.70 4 ES<br>1.00 5 D<br>1.00 6 ES<br>1.20 - 1.65 8 D<br>1.20 - 2.00 11 B<br>1.50 9 D                                                                              | SPT(S) 1.20m, N=15 (2,1/2,3,4,6)<br>HV 1.50m, (p)=56 kPa (r)=10 kPa                                                                                                                                           |
| MADE GROUND: Firm laminated orangish brown slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to coarse mudstone. (Reworked Clay) |        | (1.20)                           | 16.64                   | 116<br>2.00                   |                 |                         | 1.90 10 ES<br>2.00 - 2.45 12 UT<br>2.00 - 3.00 15 B                                                                                                                                                                        |                                                                                                                                                                                                               |
| Firm laminated orangish brown slightly silty CLAY.                                                                                                            |        | 2.50                             | 15.44                   |                               |                 |                         | 2.50 13 D<br>2.90 14 ES<br>3.00 - 3.45 16 D<br>3.00 - 4.00 18 B                                                                                                                                                            | HV 2.50m, (p)=54 kPa (r)=6 kPa<br>SPT(S) 3.00m, N=21 (3,4/4,5,6,6)                                                                                                                                            |
| Soft to firm thin laminated grey silty CLAY.                                                                                                                  |        | 4.00                             | 13.94                   |                               |                 |                         | 3.50 17 D<br>4.00 - 4.45 19 UT<br>4.00 - 5.00 21 B<br>4.50 20 D<br>5.00 - 5.45 22 D<br>5.00 - 6.00 24 B                                                                                                                    | HV 3.50m, (p)=60 kPa (r)=9 kPa<br>HV 4.50m, (p)=60 kPa (r)=8 kPa<br>SPT(S) 5.00m, N=19 (3,3/4,4,5,6)                                                                                                          |
|                                                                                                                                                               |        | (6.45)                           |                         |                               |                 |                         | 5.50 23 D<br>6.00 - 6.45 25 UT-<br>NR<br>27 B<br>6.50 26 D<br>7.00 - 7.45 28 D<br>7.00 - 8.00 30 B<br>7.50 29 D<br>8.00 - 8.45 31 D<br>8.00 - 9.00 33 B<br>8.50 32 D<br>9.00 - 10.00 36 B<br>9.00 - 9.45 34 D<br>9.50 35 D | HV 5.50m, (p)=35 kPa (r)=3 kPa<br>HV 6.50m, (p)=26 kPa (r)=2 kPa<br>SPT(S) 7.00m, N=9 (3,2/2,2,2,3)<br>HV 7.50m, (p)=13 kPa (r)=1 kPa<br>SPT(S) 8.00m, N=20 (3,3/5,5,5,5)<br>SPT(S) 9.00m, N=15 (3,3/3,4,4,4) |
| Continued on Next Page                                                                                                                                        |        |                                  |                         |                               |                 |                         | 10.00 - 10.45 37 D                                                                                                                                                                                                         | SPT(S) 10.00m, N=12 (2,2/3,3,3,3)                                                                                                                                                                             |

| Observations / Remarks                                                    | Misc. | Backfill      |              | Dynamic Sampling Runs         |        |           |              | Installations |                                       |             |           |      |
|---------------------------------------------------------------------------|-------|---------------|--------------|-------------------------------|--------|-----------|--------------|---------------|---------------------------------------|-------------|-----------|------|
|                                                                           |       | Depth (m)     | Material     | From (m)                      | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details                    | Resp. Zone  | Depth (m) | Diam |
| No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |       | 0.00 - 3.00   | Bentonite    | 1.20                          | 2.00   | 101       | 100          | 90 blows      | Standpipe with Water Level Datalogger | 3.00 - 6.00 | 4.50      |      |
|                                                                           |       | 3.00 - 6.00   | Gravel       | 2.00                          | 3.00   | 101       | 70           | 88 blows      |                                       |             |           |      |
|                                                                           |       | 6.00 - 10.00  | Bentonite    | 3.00                          | 4.00   | 86        | 90           | 88 blows      |                                       |             |           |      |
|                                                                           |       | 10.00 - 10.45 | Arisings     | 4.00                          | 5.00   | 86        | 100          | 79 blows      |                                       |             |           |      |
|                                                                           |       |               |              | 5.00                          | 6.00   | 86        | 100          | 107 blow      |                                       |             |           |      |
|                                                                           |       |               |              | 6.00                          | 7.00   | 76        | 100          | 77 blow       |                                       |             |           |      |
|                                                                           |       |               |              | 7.00                          | 8.00   | 76        | 100          | 68 blows      |                                       |             |           |      |
|                                                                           |       |               |              | 8.00                          | 9.00   | 66        | 100          | 37 blows      |                                       |             |           |      |
|                                                                           |       |               |              | 9.00                          | 10.00  | 66        | 100          | 30 blows      |                                       |             |           |      |
|                                                                           |       |               |              | Hammer Ref & Energy Ratio (%) |        |           |              |               |                                       |             |           |      |
|                                                                           |       |               | MOD 02 (65%) |                               |        |           |              |               |                                       |             |           |      |

| Groundwater Strikes |            |            |              |            |         |
|---------------------|------------|------------|--------------|------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Rises To (m) | Time (min) | Remarks |
|                     |            |            |              |            |         |





|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424763.94</b>   | Northing: <b>558552.67</b> | From (m)<br>0.00 - 1.20<br>1.20 - 3.21 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.99mAOD</b> | Final Depth: <b>3.21m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 01/06/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 01/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 3.21          | 101       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 3.21 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 4 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 3 | Large Bulk       | 0 |
| Disturbed                    | 8 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        | Hammer Ref |
| Split Spoon                       | 1.20      | -          | Dry       | 15            | 35         | 450                    | 35 | N=35 (8,7,7,6,10,12)   | MOD 02     |
| Split Spoon                       | 2.00      | 2.00       | Dry       | 16            | 18         | 450                    | 18 | N=18 (6,10/7,5,3,3)    | MOD 02     |
| Split Spoon                       | 3.00      | 2.00       | Dry       | 7             | 50         | 210                    |    | N=50 (3,4/50 for 60mm) | MOD 02     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 3 |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 100        | 632 blows |
| 2.00 - 3.00                         | 101       | 90         | 107 blows |





|                                      |                             |                            |                            |                                                 |                                      |                         |
|--------------------------------------|-----------------------------|----------------------------|----------------------------|-------------------------------------------------|--------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant        |                                                 |                                      | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424763.94</b>   | Northing: <b>558552.67</b> | Depth (m)                  | Method                                          | Plant Used                           | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.99mAOD</b> | Final Depth: <b>3.21m</b>  | 0.00 - 1.20<br>1.20 - 3.21 | Inspection Pit<br>Dynamic Sampling (Windowless) | Hand Tools<br>Modular Window Sampler | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                            |                                                 |                                      | Start Date: 01/06/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                            |                                                 |                                      | Finish Date: 01/06/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-------------------|--------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | Depth (m)         | Ref                                  |
| MADE GROUND: Soft greyish brown slightly sandy gravelly CLAY. Sand is fine to medium. Gravel is subangular fine to medium sandstone, mudstone and brick.<br>MADE GROUND: Brownish red very gravelly clayey fine to coarse SAND. Gravel is subangular fine to coarse brick, sandstone and mudstone.<br>MADE GROUND: Soft to firm brown gravelly sandy CLAY. Gravel is subangular fine to coarse sandstone, brick, mudstone and rare coal. Sand is fine to coarse.<br>MADE GROUND: Brownish red sandy slightly clayey subangular to subrounded fine to coarse brick and sandstone GRAVEL. Sand is fine to coarse. |        | 0.25                             | 16.74                   |                               |                 |                         | 0.10 - 1.20       | 7 B                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 0.25                             | 16.64                   |                               |                 |                         | 0.20              | 1 D                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 0.35                             |                         |                               |                 |                         | 0.30              | 2 ES                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 0.65                             | 16.34                   |                               |                 |                         | 0.50              | 3 D                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 0.70              | 4 ES                                 |
| MADE GROUND: Firm to stiff grey gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and brick. Sand is fine to coarse.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        | (1.75)                           |                         |                               |                 |                         | 1.00              | 5 D                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.00              | 6 ES                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.20 - 1.65       | 8 D                                  |
| EOH at 3.21m - Refusal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        | 3.20                             | 13.79                   |                               |                 |                         | 1.20 - 2.00       | 10 B                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.50              | 9 D                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         | 116                           |                 |                         | 2.00              | 12 ES                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         | 2.00                          |                 |                         | 2.00 - 2.45       | 11 D                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 2.40                             | 14.59                   |                               |                 |                         | 2.50              | 13 D                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        | (0.80)                           |                         |                               |                 |                         | 2.60 - 3.00       | 14 B                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 3.00 - 3.20       | 15 D                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         |                   | SPT(S) 1.20m, N=35 (8,7/7,6,10,12)   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         |                   | SPT(S) 2.00m, N=18 (6,10/7,5,3,3)    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         |                   | SPT(S) 3.00m, N=50 (3,4/50 for 60mm) |

|                        |                                                                             |                               |           |                       |        |           |              |                     |                    |            |              |            |         |
|------------------------|-----------------------------------------------------------------------------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------------|--------------------|------------|--------------|------------|---------|
| Observations / Remarks | Misc.                                                                       | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations       |                    |            |              |            |         |
|                        | No Groundwater Encountered<br>Casing Used<br>No Monitoring Points Installed | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks             | Instrument Details |            | Resp. Zone   | Depth (m)  | Diam    |
|                        |                                                                             | 0.00 - 3.21                   | Bentonite | 1.20                  | 2.00   | 101       | 100          | 632 blows           |                    |            |              |            |         |
|                        |                                                                             |                               |           | 2.00                  | 3.00   | 101       | 90           | 107 blows           |                    |            |              |            |         |
|                        |                                                                             | Hammer Ref & Energy Ratio (%) |           | MOD 02 (65%)          |        |           |              |                     |                    |            |              |            |         |
|                        |                                                                             |                               |           |                       |        |           |              | Groundwater Strikes |                    |            |              |            |         |
|                        |                                                                             |                               |           |                       |        |           |              | Strike (m)          | Casing (m)         | Sealed (m) | Rises To (m) | Time (min) | Remarks |
|                        |                                                                             |                               |           |                       |        |           |              |                     |                    |            |              |            |         |



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424763.44</b>   | Northing: <b>558552.72</b> | From (m)<br>0.00 - 1.20<br>1.20 - 3.33 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.99mAOD</b> | Final Depth: <b>3.33m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 01/06/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 01/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 3.33          | 101       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 3.33 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 4  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 3  | Large Bulk       | 0 |
| Disturbed                    | 10 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |  |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|--|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        |  | Hammer Ref |
| Split Spoon                       | 1.20      | -          | Dry       | 9             | 34         | 450                    | 34 | N=34 (4,5/7,9,9,9)     |  | MOD 02     |
| Split Spoon                       | 2.00      | 2.00       | Dry       | 12            | 15         | 450                    | 15 | N=15 (5,7/4,4,3,4)     |  | MOD 02     |
| Split Spoon                       | 3.00      | 2.00       | Dry       | 18            | 50         | 330                    |    | 50 (6,12/50 for 180mm) |  | MOD 02     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 3 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 3 |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 90         | 455 blows |
| 2.00 - 3.00                         | 101       | 80         | 194 blows |



|                                      |                              |                            |                                         |                                                           |                                                    |                                                   |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|---------------------------------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50                                       |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424763.44</b>    | Northing: <b>558552.72</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 3.33 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH                                   |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.99m AOD</b> | Final Depth: <b>3.33m</b>  | Logged By: <b>GS</b>                    | Grid System: <b>OSGB</b>                                  |                                                    | Approved By: BH                                   |
| Client: <b>SLIV</b>                  | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Start Date: 01/06/2018<br>Finish Date: 01/06/2018 |

| Strata Description                                                                                                                                                                                                                                   | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-------------------|-------|
|                                                                                                                                                                                                                                                      |        |                                  |                         |                               |                 |                         | Depth (m)         | Ref   |
| MADE GROUND: Soft brown gravelly sandy CLAY with medium cobble content. Gravel is subangular to subrounded fine to coarse sandstone, brick and mudstone. Sand is fine to coarse. Cobbles are subangular to subrounded sandstone, brick and mudstone. |        | 0.30                             | 16.69                   |                               |                 |                         | 0.10 - 1.20       | 7 B   |
|                                                                                                                                                                                                                                                      |        | 0.30                             | 16.69                   |                               |                 |                         | 0.20              | 1 D   |
|                                                                                                                                                                                                                                                      |        | 0.10                             | 16.59                   |                               |                 |                         | 0.30              | 2 ES  |
|                                                                                                                                                                                                                                                      |        | 0.40                             | 16.39                   |                               |                 |                         | 0.50              | 3 D   |
|                                                                                                                                                                                                                                                      |        | 0.20                             | 16.39                   |                               |                 |                         | 0.70              | 4 ES  |
| MADE GROUND: Brownish red slightly gravelly fine to coarse SAND. Gravel is subangular fine to coarse brick and sandstone.                                                                                                                            |        | 0.60                             |                         |                               |                 |                         | 1.00              | 5 D   |
|                                                                                                                                                                                                                                                      |        |                                  |                         |                               |                 |                         | 1.00              | 6 ES  |
|                                                                                                                                                                                                                                                      |        |                                  |                         |                               |                 |                         | 1.20 - 1.65       | 8 D   |
| MADE GROUND: Soft to firm brown gravelly sandy CLAY. Gravel is subangular fine to coarse sandstone, mudstone and brick. Sand is fine to coarse.                                                                                                      |        | 1.20                             |                         |                               |                 |                         | 1.20 - 1.80       | 11 B  |
|                                                                                                                                                                                                                                                      |        |                                  |                         |                               |                 |                         | 1.50              | 9 D   |
| MADE GROUND: Brownish red slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse brick, sandstone and mudstone.                                                                                                    |        | 1.80                             | 15.19                   |                               |                 |                         | 1.80              | 10 D  |
|                                                                                                                                                                                                                                                      |        |                                  |                         |                               |                 |                         | 2.00              | 13 ES |
| MADE GROUND: Soft to firm reddish grey sandy very gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone, sandstone and brick. Sand is fine to coarse.                                                                            |        | 1.53                             |                         | 116                           |                 |                         | 2.00 - 2.45       | 12 D  |
|                                                                                                                                                                                                                                                      |        |                                  |                         | 2.00                          |                 |                         | 2.20 - 2.80       | 16 B  |
|                                                                                                                                                                                                                                                      |        |                                  |                         |                               |                 |                         | 2.50              | 14 D  |
|                                                                                                                                                                                                                                                      |        |                                  |                         |                               |                 |                         | 2.80              | 15 D  |
|                                                                                                                                                                                                                                                      |        |                                  |                         |                               |                 |                         | 3.00 - 3.30       | 17 D  |
| From 2.80m to 3.30m 1 no. mudstone boulder.                                                                                                                                                                                                          |        |                                  |                         |                               |                 |                         |                   |       |
| EOH at 3.33m - Refusal                                                                                                                                                                                                                               |        | 3.33                             | 13.66                   |                               |                 |                         |                   |       |

|                                                                                                                                                                                |                                                                                                           |             |              |                       |         |           |              |               |                    |            |           |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------|--------------|-----------------------|---------|-----------|--------------|---------------|--------------------|------------|-----------|------|
| Observations / Remarks<br>* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon. | Misc.<br><i>No Groundwater Encountered</i><br><i>Casing Used</i><br><i>No Monitoring Points Installed</i> | Backfill    |              | Dynamic Sampling Runs |         |           |              | Installations |                    |            |           |      |
|                                                                                                                                                                                |                                                                                                           | Depth (m)   | Material     | From (m)              | To (m)  | Diam (mm) | Recovery (%) | Remarks       | Instrument Details | Resp. Zone | Depth (m) | Diam |
|                                                                                                                                                                                |                                                                                                           | 0.00 - 3.33 | Bentonite    | 1.20                  | 2.00    | 101       | 90           | 455 blows     |                    |            |           |      |
|                                                                                                                                                                                |                                                                                                           |             |              | 2.00                  | 3.00    | 101       | 80           | 194 blows     |                    |            |           |      |
| Groundwater Strikes                                                                                                                                                            |                                                                                                           |             |              |                       |         |           |              |               |                    |            |           |      |
| Strike (m)                                                                                                                                                                     | Casing (m)                                                                                                | Sealed (m)  | Rises To (m) | Time (min)            | Remarks |           |              |               |                    |            |           |      |
| Hammer Ref & Energy Ratio (%)<br><b>MOD 02 (65%)</b>                                                                                                                           |                                                                                                           |             |              |                       |         |           |              |               |                    |            |           |      |



# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
Wakefield WF2 0XJ  
Tel +44(0)1924 229889  
Web: www.central-alliance.co.uk

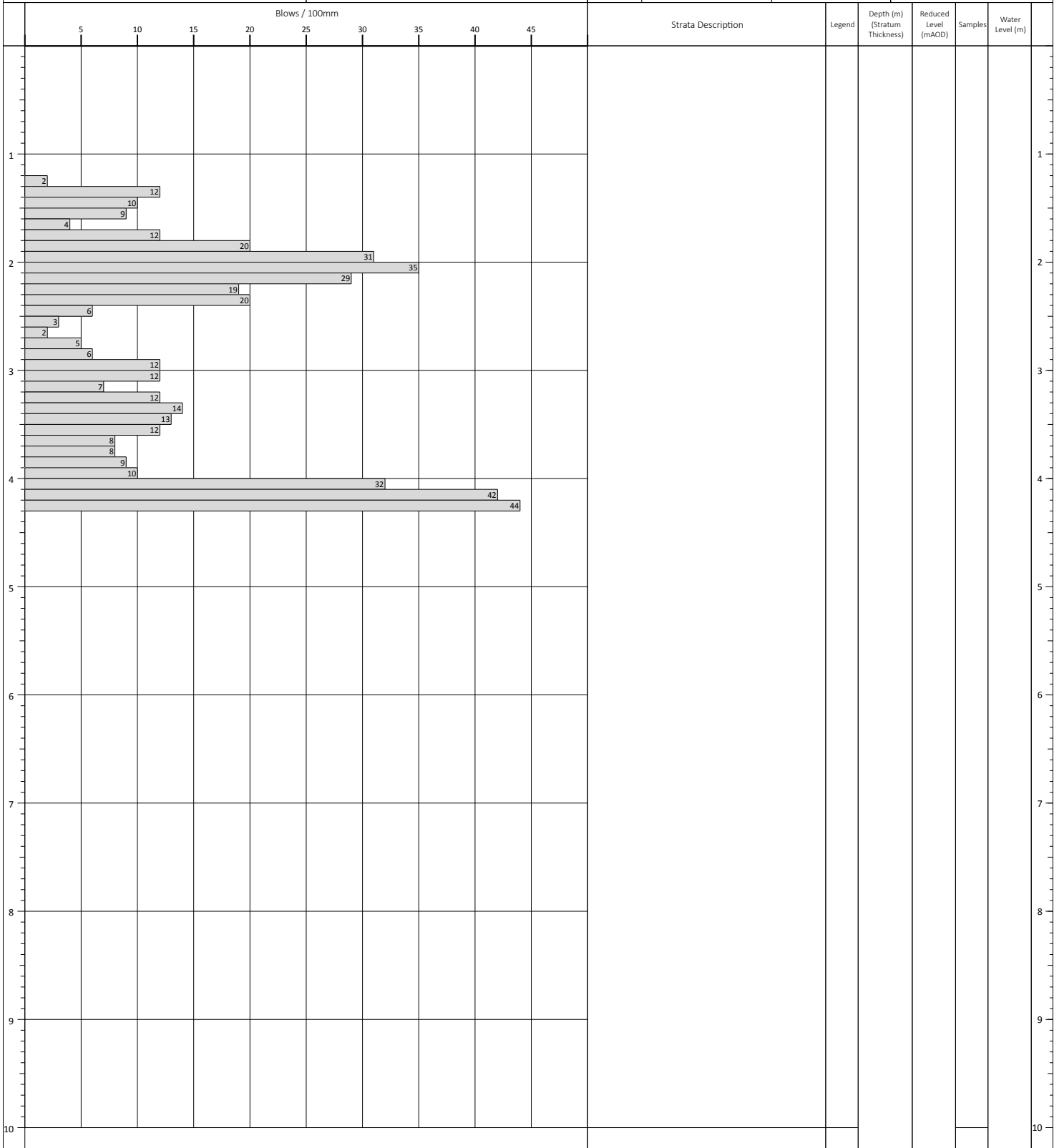
Log Type  
**Dynamic Probe**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-04B**  
FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                                         |                                             |                                                    |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|---------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                             |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424762.94</b>    | Northing: <b>558552.78</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 4.30 | Method<br>Inspection Pit<br>Dynamic Probing | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.99m AOD</b> | Final Depth: <b>4.30m</b>  |                                         |                                             |                                                    | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By:                   | Grid System: <b>OSGB</b>   |                                         |                                             |                                                    | Start Date: 01/06/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                                         |                                             |                                                    | Finish Date: 01/06/2018 |



|                        |                                                                                                                                                                              |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Equipment Information<br>Dynamic Probe Type:<br><b>DPSH-B</b><br>Fall Height: <b>750mm</b> Hammer Weight: <b>64.0kg</b><br>Cone Base Diam: <b>50mm</b> Rod Diam: <b>35mm</b> |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



|                                      |                             |                            |                                        |                                              |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|----------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                              |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424778.97</b>   | Northing: <b>558528.12</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.30 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>14.03mAOD</b> | Final Depth: <b>1.30m</b>  |                                        |                                              |                                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   |                                        |                                              |                                        | Start Date: 27/03/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                              |                                        | End Date: 27/03/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 1.30          | 200       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.30 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 5 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   |                  | 0 |
| Undisturbed Thin Wall (NR) |   |                  | 0 |
| Core Sample                |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                                |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|--------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result                | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 25            | 100        | 30                     |   | 100 (25 for 10mm/100 for 20mm) | AR1134     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 2 |
| Standard Penetration Tests | 1 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 1.20 - 1.30                         | 45              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



**CENTRAL ALLIANCE**  
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Log Type  
**Cable Percussion**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-05**  
FINAL



|                                      |                              |                            |                                         |                                              |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant                     |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424778.97</b>    | Northing: <b>558528.12</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 1.30 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>14.03m AOD</b> | Final Depth: <b>1.30m</b>  |                                         |                                              |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                                         |                                              |                                        | Start Date: 27/03/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                              |                                        | Finish Date: 27/03/2018 |

| Strata Description                                                                                                                    | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(m AOD) | Chiselling<br>(mins) | Water Added<br>(Litres) | Hole Ø<br>(mm)<br>Depth (m) | Casing Ø<br>(mm)<br>Depth (m) | Water Level<br>(m) | Installation/<br>Backfill | Samples & Testing |                                              |                                 |                                 |
|---------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|--------------------------|----------------------|-------------------------|-----------------------------|-------------------------------|--------------------|---------------------------|-------------------|----------------------------------------------|---------------------------------|---------------------------------|
|                                                                                                                                       |        |                                  |                          |                      |                         |                             |                               |                    |                           | Depth (m)         | Ref                                          | Test Results                    |                                 |
| MADE GROUND: Firm medium strength dark brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies. |        | 1.30                             | 12.73                    | 45                   |                         | 200<br>1.30                 |                               |                    |                           | 0.20              | 1 D                                          | HV 0.30m, (p)=52 kPa (r)=18 kPa |                                 |
|                                                                                                                                       |        |                                  |                          |                      |                         |                             |                               |                    |                           | 0.30              | 2 ES                                         |                                 |                                 |
|                                                                                                                                       |        |                                  |                          |                      |                         |                             |                               |                    |                           | 0.50              | 3 D                                          |                                 | HV 0.50m, (p)=56 kPa (r)=16 kPa |
|                                                                                                                                       |        |                                  |                          |                      |                         |                             |                               |                    |                           | 0.60              | 4 B                                          |                                 |                                 |
|                                                                                                                                       |        |                                  |                          |                      |                         |                             |                               |                    |                           | 0.70              | 5 ES                                         |                                 |                                 |
|                                                                                                                                       |        |                                  |                          |                      |                         |                             |                               |                    |                           | 0.80              | 6 D                                          |                                 |                                 |
| EOH at 1.30m - Refusal                                                                                                                |        | 1.30                             | 12.73                    | 45                   |                         | 200<br>1.30                 |                               |                    | 1.20                      | 7 D               | SPT(S) 1.20m, 100 (25 for 10mm/100 for 20mm) |                                 |                                 |
|                                                                                                                                       |        |                                  |                          |                      |                         |                             |                               | 1.20 - 1.65        | 8 D                       |                   |                                              |                                 |                                 |

|                                                                                                                                 |                     |                   |            |           |            |           |          |        |           |                    |            |           |       |
|---------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|------------|-----------|------------|-----------|----------|--------|-----------|--------------------|------------|-----------|-------|
| Observations / Remarks                                                                                                          | Misc.               | Shift Information |            |           |            |           | Backfill |        |           | Installations      |            |           |       |
|                                                                                                                                 |                     | Date              | Time       | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                                                                                                                                 |                     | 27/03             | 08:00      | 8.00      | 4.50       | DRY       | 0.00     | 1.30   | Bentonite |                    |            |           |       |
|                                                                                                                                 |                     | 28/03             | 18:00      | 8.00      | 4.50       | DRY       |          |        |           |                    |            |           |       |
| No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Point Installed<br>Hammer Ref. & Energy Ratio (%)<br>AR1134 (56%) | Groundwater Strikes |                   |            |           |            |           |          |        |           |                    |            |           |       |
|                                                                                                                                 | Strike (m)          | Rises To (m)      | Time (min) | Remarks   |            |           |          |        |           |                    |            |           |       |
|                                                                                                                                 |                     |                   |            |           |            |           |          |        |           |                    |            |           |       |





|                                      |                             |                            |                             |                                    |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------|------------------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant         |                                    |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424778.13</b>   | Northing: <b>558528.00</b> | From (m)                    | Method                             | Plant Used               | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.89mAOD</b> | Final Depth: <b>10.00m</b> | 0.00 - 1.20<br>1.20 - 10.00 | Inspection Pit<br>Cable Percussion | Hand Tools<br>Dando 2000 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   |                             |                                    |                          | Start Date: 27/03/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                             |                                    |                          | End Date: 28/03/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 10.00         | 200       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.00            | 200       |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
| 4.80                | -          | 4.50       | 20         | 4.60        |  |         |

| Installation / Instrument Details |                                       |        |                |           |
|-----------------------------------|---------------------------------------|--------|----------------|-----------|
| Date                              | Instrument Details                    | To (m) | Resp. Zone (m) | Diam (mm) |
| 28/03/2018                        | Standpipe with Water Level Datalogger | 3.50   | 1.00 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.30  | Concrete    |
| 0.30 - 1.00  | Bentonite   |
| 1.00 - 4.00  | Gravel      |
| 4.00 - 10.00 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       |    | Water            |   |
|                            | 6  |                  | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       |    | Large Bulk       |   |
|                            | 7  |                  | 0 |
| Disturbed                  |    | Disturbed (NR)   |   |
|                            | 13 |                  | 0 |
| Piston                     |    | Piston (NR)      |   |
|                            | 0  |                  | 0 |
| Undisturbed                |    | Undisturbed (NR) |   |
|                            | 0  |                  | 0 |
| Undisturbed Thin Wall      |    |                  |   |
|                            |    |                  | 2 |
| Undisturbed Thin Wall (NR) |    |                  |   |
|                            |    |                  | 1 |
| Core Sample                |    |                  |   |
|                            |    |                  | 0 |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Cone                              | 1.20      | -          | -         | 3             | 8          | 450                    | 8  | N=8 (1,2/2,2,2,2)  | AR1134     |
| Split Spoon                       | 2.50      | -          | -         | 3             | 9          | 450                    | 9  | N=9 (1,2/2,2,2,3)  | AR1134     |
| Cone                              | 3.50      | -          | -         | 4             | 10         | 450                    | 10 | N=10 (2,2/3,3,2,2) | AR1134     |
| Cone                              | 4.50      | -          | -         | 4             | 13         | 450                    | 13 | N=13 (2,2/3,3,3,4) | AR1134     |
| Split Spoon                       | 6.50      | -          | -         | 5             | 14         | 450                    | 14 | N=14 (2,3/3,3,4,4) | AR1134     |
| Split Spoon                       | 8.50      | -          | -         | 4             | 12         | 450                    | 12 | N=12 (2,2/3,3,3,3) | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Cable Percussion**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-05A**  
FINAL



|                                      |                             |                            |                                          |                                              |                                        |                         |
|--------------------------------------|-----------------------------|----------------------------|------------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant                      |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424778.13</b>   | Northing: <b>558528.00</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 10.00 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.89mAOD</b> | Final Depth: <b>10.00m</b> |                                          |                                              |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ</b>        | Grid System: <b>OSGB</b>   |                                          |                                              |                                        | Start Date: 27/03/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                          |                                              |                                        | Finish Date: 28/03/2018 |

| Strata Description                                                                                                                          | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |          |                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|----------|----------------------------------|
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref      | Test Results                     |
| MADE GROUND: Firm dark brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies.                       |        |                               |                      |                   |                      |                       |                         |                 |                         | 0.70              | 5 ES     |                                  |
|                                                                                                                                             |        | (2.30)                        |                      |                   |                      |                       |                         |                 |                         | 1.20 - 1.65       | 10 B     | SPT(C) 1.20m, N=8 (1,2/2,2,2,2)  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 1.70              | 11 ES    |                                  |
| From 2.00m becomes mottled grey, brown and light brown.                                                                                     |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.00              | 12 D     |                                  |
| MADE GROUND: Light brown sandy slightly clayey subrounded fine to coarse limestone GRAVEL. Sand is fine to coarse.                          |        | 2.30                          | 11.59                |                   |                      |                       |                         |                 |                         | 2.30              | 13 D     |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.50 - 2.95       | 14 D     | SPT(S) 2.50m, N=9 (1,2/2,2,2,3)  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.50 - 2.95       | 15 B     |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.70              | 16 ES    |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.00              | 17 D     |                                  |
|                                                                                                                                             |        | (2.50)                        |                      |                   |                      |                       |                         |                 |                         | 3.50 - 3.95       | 19 B     | SPT(C) 3.50m, N=10 (2,2/3,3,2,2) |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.70              | 19A ES   |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.00              | 20 D     |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.50 - 4.95       | 22 B     | SPT(C) 4.50m, N=13 (2,2/3,3,3,4) |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.70              | 22A ES   |                                  |
| Firm to stiff occasionally weakly laminated dark grey gravelly CLAY. Gravel is subrounded to rounded fine to coarse of various lithologies. |        |                               |                      |                   |                      |                       |                         | 4.80            |                         | 5.00              | 23 D     |                                  |
|                                                                                                                                             |        | (0.70)                        |                      |                   |                      |                       |                         |                 |                         | 5.50 - 5.95       | 24 UT-NR | 10 blows, 0% Recovery            |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.50 - 5.95       | 25 B     |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.70              | 25A ES   |                                  |
| Firm to stiff thinly laminated grey CLAY.                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.00              | 26 D     |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         | 200<br>6.00     |                         | 6.50 - 6.95       | 27 D     | SPT(S) 6.50m, N=14 (2,3/3,3,4,4) |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.50 - 6.95       | 28 B     |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.00              | 29 D     |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.50 - 7.95       | 30 UT    | 20 blows, 100% Recovery          |
|                                                                                                                                             |        | (4.50)                        |                      |                   |                      |                       |                         |                 |                         | 8.00              | 31 D     |                                  |
| From 8.50m becomes stiff.                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.50 - 8.95       | 32 D     | SPT(S) 8.50m, N=12 (2,2/3,3,3,3) |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.50 - 8.95       | 33 B     |                                  |
|                                                                                                                                             |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.00              | 34 D     |                                  |
| From 9.30m becomes very stiff.                                                                                                              |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.50 - 9.95       | 35 UT    | 22 blows, 75% Recovery           |
| EOH at 10.00m - Scheduled depth                                                                                                             |        | 10.00                         | 3.89                 |                   |                      | 200<br>10.00          |                         |                 |                         | 10.00             | 36 D     |                                  |

|                        |       |                   |      |           |            |           |           |                     |              |                            |               |             |           |       |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|---------------------|--------------|----------------------------|---------------|-------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |                     |              |                            | Installations |             |           |       |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)              | Material     | Instrument Details         |               | Resp. Zone  | Depth (m) | Diam. |
|                        |       |                   |      |           |            |           | 0.00      | 0.30                | Concrete     | Standpipe with Water Level |               | 1.00 - 4.00 | 3.50      |       |
|                        |       |                   |      |           | 0.30       | 1.00      | Bentonite | Datalogger          |              |                            |               |             |           |       |
|                        |       |                   |      |           | 1.00       | 4.00      | Gravel    |                     |              |                            |               |             |           |       |
|                        |       |                   |      |           | 4.00       | 10.00     | Bentonite |                     |              |                            |               |             |           |       |
|                        |       |                   |      |           |            |           |           | Groundwater Strikes |              |                            |               |             |           |       |
|                        |       |                   |      |           |            |           |           | Strike (m)          | Rises To (m) | Time (min)                 | Remarks       |             |           |       |
|                        |       |                   |      |           |            |           |           | 4.80                | 4.60         | 20                         |               |             |           |       |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)







|                                      |                              |                            |                                              |                                                     |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------------|-----------------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                          |                                                     |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424889.57</b>    | Northing: <b>558531.58</b> | From (m)                                     | Method                                              | Plant Used                             | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.80m AOD</b> | Final Depth: <b>80.00m</b> | 0.00 - 1.20<br>1.20 - 47.00<br>47.00 - 55.60 | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000<br>Frasco PLG | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB+GS</b>     | Grid System: <b>OSGB</b>   |                                              |                                                     |                                        | Start Date: 29/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                              |                                                     |                                        | Finish Date: 01/06/2018 |

| Strata Description                                                                                                                                                                                                        | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                  |                                  |                                           | Coring |          |     |     |     |    |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------|--------------------------|----------------------------|-----------------|-------------------------|----------------------------------------------------|----------------------------------|-------------------------------------------|--------|----------|-----|-----|-----|----|--|--|
|                                                                                                                                                                                                                           |        |                                  |                       |                          |                            |                 |                         | Depth (m)                                          | Ref                              | Test Results                              | Method | Core Run | TCR | SCR | RQD | If |  |  |
| <b>MADE GROUND: TOPSOIL.</b><br>MADE GROUND: Dark brown slightly sandy gravelly CLAY. Gravel is subangular fine to coarse brick, sandstone and siltstone. Sand is fine to coarse.                                         |        | (0.10)<br>0.10                   | 11.70                 |                          |                            |                 |                         | 0.10<br>0.20                                       | 1 D<br>2 ES                      |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | (1.10)                           |                       |                          |                            |                 |                         | 0.50<br>0.50                                       | 3 D<br>4 ES                      | PID 0.50m = 306.0ppm                      |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 1.20                             | 10.60                 |                          |                            |                 |                         | 1.00<br>1.00<br>1.20<br>1.20 - 1.65<br>1.20 - 1.65 | 5 D<br>6 ES<br>7 D<br>8 D<br>9 B | PID 1.00m = 367.0ppm                      |        |          |     |     |     |    |  |  |
| <b>MADE GROUND: Greyish brown sandy clayey angular to subrounded fine to coarse brick, sandstone and siltstone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular sandstone and brick.</b> |        | (1.60)                           |                       |                          |                            |                 |                         | 2.00<br>2.00<br>2.00 - 2.65<br>2.00 - 2.65         | 10 D<br>11 ES<br>12 D<br>13 B    | PID 2.00m = 735.0ppm                      |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 2.80                             | 9.00                  |                          |                            |                 |                         |                                                    |                                  | SPT(S) 2.50m, N=50<br>(9,11/50 for 180mm) |        |          |     |     |     |    |  |  |
| <b>MADE GROUND: Dark grey slightly sandy gravelly organic CLAY.</b><br>Sand is fine to coarse. Gravel is subangular fine to coarse sandstone, brick and siltstone.                                                        |        | (2.70)                           |                       |                          |                            |                 |                         | 3.00<br>3.00<br>3.30 - 3.95<br>3.50 - 3.95         | 14 D<br>15 ES<br>16 D<br>17 B    | PID 3.00m = 459.0ppm                      |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 5.50                             | 6.30                  |                          |                            |                 |                         | 4.00<br>4.00<br>4.50 - 4.95<br>4.50 - 4.95         | 18 D<br>19 ES<br>20 D<br>21 B    | SPT(S) 3.50m, N=4<br>(0,1/1,1,1,1)        |        |          |     |     |     |    |  |  |
| <b>Soft greenish grey sandy clayey SILT. Sand is fine to coarse.</b>                                                                                                                                                      |        | (2.80)                           |                       |                          |                            |                 |                         | 5.00<br>5.00                                       | 22 D<br>23 ES                    |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 8.30                             | 3.50                  |                          |                            |                 |                         | 5.50 - 5.95                                        | 24 UT                            | 4 blows, 100% Recovery                    |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | (1.45)                           |                       |                          |                            |                 |                         | 6.00                                               | 25 D                             |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 8.30                             | 3.50                  |                          |                            |                 |                         | 6.50 - 6.95                                        | 27 B                             | SPT(S) 6.50m, N=3<br>(0,0/0,1,1,1)        |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 9.00                             |                       |                          |                            |                 |                         | 7.00<br>7.00                                       | 26 D<br>28 D                     |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 9.75                             | 2.05                  |                          |                            |                 |                         | 7.50 - 7.90<br>7.50 - 7.95                         | 29 D<br>30 B                     | SPT(S) 7.50m, N=4<br>(1,0/1,1,1,1)        |        |          |     |     |     |    |  |  |
| <b>Dark grey slightly gravelly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse sandstone, siltstone and mudstone.</b>                                                                           |        | (1.45)                           |                       |                          |                            |                 |                         | 8.00                                               | 31 D                             |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 9.75                             | 2.05                  |                          |                            |                 |                         | 8.50 - 8.95<br>8.50 - 8.95                         | 32 D<br>33 B                     | SPT(S) 8.50m, N=9<br>(1,2/2,2,2,2)        |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                           |        | 9.75                             | 2.05                  |                          |                            |                 |                         | 9.00                                               | 34 D                             |                                           |        |          |     |     |     |    |  |  |
| <b>Firm thinly laminated brownish grey CLAY.</b>                                                                                                                                                                          |        | 9.75                             | 2.05                  |                          |                            |                 |                         | 9.50 - 9.95<br>9.50 - 9.95                         | 35 D<br>36 B                     | SPT(S) 9.50m, N=8<br>(2,2/2,2,2,2)        |        |          |     |     |     |    |  |  |
| Continued on Next Page                                                                                                                                                                                                    |        |                                  |                       |                          |                            |                 |                         |                                                    |                                  |                                           |        |          |     |     |     |    |  |  |

|                                                                                                                                                                                                                                                                                           |                                                                               |                   |       |           |            |           |          |        |               |                      |             |           |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------|-------|-----------|------------|-----------|----------|--------|---------------|----------------------|-------------|-----------|------|
| Observations / Remarks<br>* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon.<br>Running sands causing slow progress<br>06.06.18: 1.75 Hours<br>07.06.18: 10 Hours<br>11.06.18: 10 Hours | Misc.<br>Groundwater Encountered<br>Casing Used<br>Monitoring Point/Installed | Shift Information |       |           |            |           | Backfill |        |               | Installations        |             |           |      |
|                                                                                                                                                                                                                                                                                           |                                                                               | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details   | Resp. Zone  | Depth (m) | Diam |
|                                                                                                                                                                                                                                                                                           |                                                                               | 30/05             | 06:00 | 1.65      | 1.50       | Dry       | 0.30     | 3.50   | Bentonite     | Standpipe Piezometer | 3.50 - 5.50 | 5.00      |      |
|                                                                                                                                                                                                                                                                                           |                                                                               | 30/05             | 18:00 | 1.65      | 1.50       | Dry       | 3.50     | 5.50   | Gravel        |                      |             |           |      |
|                                                                                                                                                                                                                                                                                           |                                                                               |                   |       |           |            |           |          |        | Water Strikes |                      |             |           |      |
|                                                                                                                                                                                                                                                                                           |                                                                               |                   |       |           |            |           |          |        | Strike (m)    | Rises To (m)         | Time (min)  | Remarks   |      |
|                                                                                                                                                                                                                                                                                           |                                                                               |                   |       |           |            |           |          |        | 2.20          | 2.00                 | 20          |           |      |
|                                                                                                                                                                                                                                                                                           |                                                                               |                   |       |           |            |           |          |        | 5.80          | 4.10                 | 20          |           |      |



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Log Type  
**Combined Borehole**  
Sheet 2 of 8

Exploratory Hole Number  
**BH17-07**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424889.57</b>    | Northing: <b>558531.58</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.80m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB+GS</b>     | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 29/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 01/06/2018 |

| Strata Description | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                                                | Coring |          |     |     |     |    |  |  |  |  |
|--------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|----------------------------------------------------------------|--------|----------|-----|-----|-----|----|--|--|--|--|
|                    |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                                                   | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 10.50 - 10.95     | 38 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 10.50 - 10.95     | 39 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 11.00             | 40 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 12.00             | 41 D  | 10 blows, 100% Recovery<br>SPT(S) 12.00m, N=7<br>(1,1,1,2,2,2) |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 12.00 - 12.45     | 42 UT |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 12.50             | 43 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 13.00             | 44 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 13.50 - 13.95     | 45 D  | SPT(S) 13.50m, N=9<br>(2,2/3,3,1,2)                            |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 13.50 - 13.95     | 46 B  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 14.00             | 47 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 15.00             | 48 D  | 5 blows, 80% Recovery                                          |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 15.00 - 15.45     | 49 UT |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 15.50             | 50 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 16.00             | 51 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 16.50 - 16.95     | 52 D  | SPT(S) 16.50m, N=19<br>(3,4/4,5,5,5)                           |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 16.50 - 16.95     | 53 B  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 17.00             | 54 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 18.00             | 55 D  | 17 blows, 100% Recovery                                        |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 18.00 - 18.45     | 56 UT |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 18.50             | 57 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 19.00             | 58 D  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 19.50 - 19.95     | 59 D  | SPT(S) 19.50m, N=22<br>(4,4/5,5,6,6)                           |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 19.50 - 19.95     | 60 B  |                                                                |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 20.00             | 61 D  |                                                                |        |          |     |     |     |    |  |  |  |  |

Continued on Next Page

|                                                                                                                                                                                                                                                                                           |                                                                                 |                   |         |           |            |           |          |        |           |                      |             |           |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------|---------|-----------|------------|-----------|----------|--------|-----------|----------------------|-------------|-----------|------|
| Observations / Remarks<br>* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon.<br>Running sands causing slow progress<br>06.06.18: 1.75 Hours<br>07.06.18: 10 Hours<br>11.06.18: 10 Hours | Misc.<br>Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed | Shift Information |         |           |            |           | Backfill |        |           | Installations        |             |           |      |
|                                                                                                                                                                                                                                                                                           |                                                                                 | Date              | Time    | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details   | Resp. Zone  | Depth (m) | Diam |
|                                                                                                                                                                                                                                                                                           |                                                                                 |                   |         |           |            |           | 0.30     | 3.50   | Bentonite | Standpipe Piezometer | 3.50 - 5.50 | 5.00      |      |
|                                                                                                                                                                                                                                                                                           |                                                                                 |                   |         |           |            |           | 3.50     | 5.50   | Gravel    |                      |             |           |      |
| Water Strikes                                                                                                                                                                                                                                                                             |                                                                                 |                   |         |           |            |           |          |        |           |                      |             |           |      |
| Strike (m)                                                                                                                                                                                                                                                                                | Rises To (m)                                                                    | Time (min)        | Remarks |           |            |           |          |        |           |                      |             |           |      |
| 2.20                                                                                                                                                                                                                                                                                      | 2.00                                                                            | 20                |         |           |            |           |          |        |           |                      |             |           |      |
| 5.80                                                                                                                                                                                                                                                                                      | 4.10                                                                            | 20                |         |           |            |           |          |        |           |                      |             |           |      |













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Log Type
Combined Borehole
Sheet 7 of 8

Exploratory Hole Number
BH17-07
FINAL



Table with project details: Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, etc.), Methodology & Plant, and Scale/Checked/Approved/Start/Finish dates.

Main drilling log table with columns: Strata Description, Legend, Depth (m), Reduced Level (m), Hole diameter (mm), Casing diameter (mm), Water Level (m), Installation/Backfill, Samples & Testing (Depth, Ref, Test Results), and Coring (Method, Core Run, TCR, SCR, RQD, If). Includes a vertical scale from 61 to 70 meters.

Observations / Remarks section containing text about testing in a confined environment, groundwater encountered, casing used, and monitoring points installed. Includes a table for Backfill and Installations.



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Log Type
Combined Borehole
Sheet 8 of 8

Exploratory Hole Number
BH17-07
FINAL



Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 424889.57, Northing: 558531.58, Elevation: 11.80m AOD, Final Depth: 80.00m, Logged By: ALB+GS, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 29/05/2018
Finish Date: 01/06/2018

Table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole ø (mm) Depth (m), Casing ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If).
Main entry: ROTARY OPEN HOLE DRILLING.
Bottom entry: EOH at 80.00m - Scheduled depth

Observations / Remarks: \* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon. Running sands causing slow progress.
Misc. Groundwater Encountered, Casing Used, Monitoring Point/s Installed
Shift Information: Date, Time, Depth (m), Casing (m), Water (m)
Backfill: From (m), To (m), Material
Installations: Instrument Details, Resp. Zone, Depth (m), Diam
Water Strikes: Strike (m), Rises To (m), Time (min), Remarks



|                                      |                             |                            |                     |                    |            |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------------------|------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                    |            | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424909.83</b>   | Northing: <b>558539.71</b> | From (m)            | Method             | Plant Used | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.43mAOD</b> | Final Depth: <b>80.00m</b> | 0.00 - 1.20         | Inspection Pit     | Hand Tools | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS+DS</b>        | Grid System: <b>OSGB</b>   | 1.20 - 1.30         | Cable Percussion   | Fraste PLG | Start Date: 30/03/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    | 1.30 - 80.00        | Rotary Open Holing |            | End Date: 04/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 1.30          | 120       |
| 80.00         | 120       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 10.00           | 120       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 04/05/2018                        | Standpipe Piezometer | 47.60  | 46.60 - 48.40  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 0.50   | Concrete    |
| 0.50 - 46.60  | Bentonite   |
| 46.60 - 48.40 | Gravel      |
| 48.40 - 80.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 2 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 2 | Large Bulk       | 0 |
| Disturbed                    | 3 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 0 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

|                 |                  |
|-----------------|------------------|
| SPT Hammer Ref. | Energy Ratio (%) |
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 0.00 - 10.00              | Water      | Grey         | 100      |
| 10.00 - 18.00             | Water      | Grey         | 100      |
| 18.00 - 45.00             | Water      | Grey         | 100      |
| 45.00 - 80.00             | Water      | Grey         | 100      |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |













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Log Type

**Rotary  
Borehole**

Sheet 5 of 8

Exploratory Hole Number

**BH17-08**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424909.83</b>    | Northing: <b>558539.71</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.43m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS+DS</b>      | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 30/03/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 04/05/2018 |

| Strata Description                       | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole $\phi$ (mm)<br>Depth (m) | Casing $\phi$ (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |  |
|------------------------------------------|--------|----------------------------------|-----------------------|-------------------------------|---------------------------------|-----------------|-------------------------|-------------------|-----|--------------|--|
|                                          |        |                                  |                       |                               |                                 |                 |                         | Depth (m)         | Ref | Test Results |  |
| Firm CLAY (Driller's Description).       |        |                                  |                       |                               |                                 |                 |                         |                   |     |              |  |
| SAND and GRAVEL (Driller's Description). |        | 46.60<br>(1.80)                  | -35.17                |                               |                                 |                 |                         |                   |     |              |  |
| MUDSTONE (Driller's Description).        |        | 48.40                            | -36.97                |                               |                                 |                 |                         |                   |     |              |  |
| Continued on Next Page                   |        |                                  |                       |                               |                                 |                 |                         |                   |     |              |  |

|                        |       |                   |      |           |            |           |           |                                                        |           |                      |               |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|--------------------------------------------------------|-----------|----------------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |                                                        |           | Installations        |               |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)                                                 | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 0.50                                                   | Concrete  | Standpipe Piezometer | 46.60 - 48.40 | 47.60     |      |
|                        |       |                   |      |           |            |           | 0.50      | 46.60                                                  | Bentonite |                      |               |           |      |
|                        |       |                   |      |           | 46.60      | 48.40     | Gravel    | Drilling Fluid<br>Depth (m)   Type   Colour   Return % |           |                      |               |           |      |
|                        |       |                   |      |           | 48.40      | 80.00     | Bentonite |                                                        |           |                      |               |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)



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Log Type  
**Rotary Borehole**  
Sheet 6 of 8

Exploratory Hole Number  
**BH17-08**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424909.83</b>    | Northing: <b>558539.71</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.43m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS+DS</b>      | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 30/03/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 04/05/2018 |

| Strata Description                 | Legend             | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |  |
|------------------------------------|--------------------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--|
|                                    |                    |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref | Test Results |  |
| MUDSTONE (Driller's Description).  | [Horizontal Lines] | (6.10)                        |                       |                       |                         |                 |                         |                   |     |              |  |
| SILTSTONE (Driller's Description). | [X Pattern]        | (3.50)                        | -43.07                |                       |                         |                 |                         |                   |     |              |  |
| MUDSTONE (Driller's Description).  | [Horizontal Lines] |                               | -46.57                |                       |                         |                 |                         |                   |     |              |  |
| Continued on Next Page             |                    |                               |                       |                       |                         |                 |                         |                   |     |              |  |

|                        |       |                   |      |           |            |           |           |                |           |                      |               |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|----------------|-----------|----------------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |                |           | Installations        |               |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)         | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 0.50           | Concrete  | Standpipe Piezometer | 46.60 - 48.40 | 47.60     |      |
|                        |       |                   |      |           |            |           | 0.50      | 46.60          | Bentonite |                      |               |           |      |
|                        |       |                   |      |           | 46.60      | 48.40     | Gravel    |                |           |                      |               |           |      |
|                        |       |                   |      |           | 48.40      | 80.00     | Bentonite |                |           |                      |               |           |      |
|                        |       |                   |      |           |            |           |           | Drilling Fluid |           |                      |               |           |      |
|                        |       |                   |      |           |            |           |           | Depth (m)      | Type      | Colour               | Return %      |           |      |
|                        |       |                   |      |           |            |           |           |                |           |                      |               |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)



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Log Type  
**Rotary Borehole**  
Sheet 7 of 8

Exploratory Hole Number  
**BH17-08**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424909.83</b>    | Northing: <b>558539.71</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.43m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS+DS</b>      | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 30/03/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 04/05/2018 |

| Strata Description                 | Legend                     | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |  |
|------------------------------------|----------------------------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--|
|                                    |                            |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref | Test Results |  |
| MUDSTONE (Driller's Description).  | [Horizontal lines pattern] | (6.00)                        |                       |                       |                         |                 |                         |                   |     |              |  |
| SILTSTONE (Driller's Description). | [Cross-hatch pattern]      | 64.00                         | -52.57                |                       |                         |                 |                         |                   |     |              |  |
|                                    | [Cross-hatch pattern]      | (9.50)                        |                       |                       |                         |                 |                         |                   |     |              |  |
| Continued on Next Page             |                            |                               |                       |                       |                         |                 |                         |                   |     |              |  |

|                        |       |                   |      |           |            |           |           |                |           |                      |               |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|----------------|-----------|----------------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |                |           | Installations        |               |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)         | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 0.50           | Concrete  | Standpipe Piezometer | 46.60 - 48.40 | 47.60     |      |
|                        |       |                   |      |           |            |           | 0.50      | 46.60          | Bentonite |                      |               |           |      |
|                        |       |                   |      |           | 46.60      | 48.40     | Gravel    | Drilling Fluid |           |                      |               |           |      |
|                        |       |                   |      |           | 48.40      | 80.00     | Bentonite | Depth (m)      | Type      | Colour               | Return %      |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)





|                                      |                             |                            |                                        |                                              |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|----------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                              |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424996.18</b>   | Northing: <b>558534.60</b> | From (m)<br>0.00 - 1.20<br>1.20 - 2.62 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 4000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.08mAOD</b> | Final Depth: <b>2.62m</b>  |                                        |                                              |                                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   |                                        |                                              |                                        | Start Date: 04/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                              |                                        | End Date: 05/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 2.62 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 5 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 2 | Large Bulk       | 0 |
| Disturbed                  | 6 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   |                  | 1 |
| Undisturbed Thin Wall (NR) |   |                  | 0 |
| Core Sample                |   |                  | 7 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |              |              |            |               |            |                        |    |                                                     |                  |
|-----------------------------------|--------------|--------------|------------|---------------|------------|------------------------|----|-----------------------------------------------------|------------------|
| Test Type                         | Depth (m)    | Casing (m)   | Water (m)  | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                                     | Hammer Ref       |
| Split Spoon Cone                  | 1.20<br>2.60 | 1.00<br>2.00 | Dry<br>Dry | 6<br>25       | 14<br>50   | 450<br>20              | 14 | N=14 (2,4/3,4,4,3)<br>N=50 (25 for 5mm/50 for 15mm) | AR1710<br>AR1710 |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1710          | 61               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 2.45 - 2.60                         | 90              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                              |                            |                                         |                                              |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant                     |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424996.18</b>    | Northing: <b>558534.60</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 2.62 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 4000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.08m AOD</b> | Final Depth: <b>2.62m</b>  |                                         |                                              |                                        | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                                         |                                              |                                        | Start Date: 04/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                              |                                        | Finish Date: 05/04/2018 |

| Strata Description                                                                                                                                          | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|---------------------------------------------|
|                                                                                                                                                             |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                                |
| MADE GROUND: GRASSCRETE with rebar.                                                                                                                         |        | (0.15)                        |                       |                   |                      |                       |                         |                 |                         | 0.10              | 1 D   |                                             |
| MADE GROUND: Dark brown slightly sandy clayey angular to subrounded fine to coarse concrete limestone and slate GRAVEL                                      |        | 0.15                          | 12.93                 |                   |                      |                       |                         |                 |                         | 0.40              | 2 ES  |                                             |
|                                                                                                                                                             |        | (1.05)                        |                       |                   |                      |                       |                         |                 |                         | 0.40              | 4 ES  |                                             |
|                                                                                                                                                             |        |                               |                       |                   |                      |                       |                         |                 |                         | 0.50 - 1.00       | 3 B   |                                             |
|                                                                                                                                                             |        |                               |                       |                   |                      |                       |                         |                 |                         | 0.80              | 4 ES  |                                             |
|                                                                                                                                                             |        | 1.20                          | 11.88                 |                   |                      |                       |                         |                 |                         | 1.00              | 5 D   |                                             |
| MADE GROUND: Firm dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of concrete and limestone. |        | (1.20)                        |                       |                   |                      |                       |                         |                 |                         | 1.20 - 1.65       | 6 D   | SPT(S) 1.20m, N=14 (2,4/3,4,4,3)            |
|                                                                                                                                                             |        |                               |                       |                   |                      |                       |                         |                 |                         | 1.20 - 1.70       | 7 B   |                                             |
|                                                                                                                                                             |        |                               |                       |                   |                      |                       |                         |                 |                         | 1.50              | 8 ES  |                                             |
|                                                                                                                                                             |        |                               |                       |                   |                      |                       |                         |                 |                         | 1.70              | 9 D   |                                             |
|                                                                                                                                                             |        | 2.40                          | 10.68                 |                   |                      |                       | 2.00                    |                 |                         | 2.00 - 2.45       | 10 UT | 67 blows, 100% Recovery                     |
|                                                                                                                                                             |        | (0.20)                        |                       |                   |                      |                       |                         |                 |                         | 2.45              | 11 D  |                                             |
| MADE GROUND: Light brown slightly sandy slightly clayey angular to subangular fine to coarse limestone GRAVEL. Sand is fine to coarse.                      |        | 2.60                          | 10.48                 | 90                |                      |                       |                         |                 |                         | 2.50              | 12 D  | SPT(C) 2.60m, N=50 (25 for 5mm/50 for 15mm) |
|                                                                                                                                                             |        |                               |                       |                   |                      |                       |                         |                 |                         | 2.50              | 13 ES |                                             |
| EOH at 2.62m - Refusal                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         |                   |       |                                             |

Continued on Next Page

|                        |       |                   |              |            |            |           |          |        |          |                    |            |           |       |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |          | Installations      |            |           |       |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                        |       | 05/04             | 05:00        | 1.00       | -          | Dry       | 0.00     | 2.62   | Arisings |                    |            |           |       |
|                        |       | 05/04             | 21:00        | 1.00       | -          | Dry       |          |        |          |                    |            |           |       |
| Groundwater Strikes    |       |                   |              |            |            |           |          |        |          |                    |            |           |       |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |            |           |       |
|                        |       |                   |              |            |            |           |          |        |          |                    |            |           |       |

No Groundwater Encountered  
Hole Not Cased  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1710 (61%)



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Log Type

Cable Percussion

Sheet 2 of 6

Exploratory Hole Number

BH17-09

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details: Easting: 424996.18, Northing: 558534.60, Elevation: 13.08m AOD, Final Depth: 2.62m, Logged By: RJ, Grid System: OSGB, Orientation: N/A, Inclin: 90°, Methodology & Plant: Depth (m), Method, Plant Used, Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 04/04/2018, Finish Date: 05/04/2018

Main data table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Chiselling (mins), Water Added (Litres), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation/Backfill, Samples & Testing (Depth (m), Ref, Test Results). Includes depth scale from 11 to 20m.

Continued on Next Page

Observations / Remarks, Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Installations (Instrument Details, Resp. Zone, Depth (m), Diam.), Groundwater Strikes (Strike (m), Rises To (m), Time (min), Remarks)

No Groundwater Encountered
Hole Not Cased
No Monitoring Point Installed
Hammer Ref. & Energy Ratio (%)
AR1710 (61%)





# CENTRAL ALLIANCE

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Log Type

**Cable  
Percussion**

Sheet 3 of 6

Exploratory Hole Number

**BH17-09**

**FINAL**



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424996.18</b>    | Northing: <b>558534.60</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.08m AOD</b> | Final Depth: <b>2.62m</b>  |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 04/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 05/04/2018 |

| Strata Description | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(m AOD) | Chiselling<br>(mins) | Water Added<br>(Litres) | Hole Ø<br>(mm)<br>Depth (m) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation/<br>Backfill | Samples & Testing |     |              |    |
|--------------------|--------|----------------------------------|--------------------------|----------------------|-------------------------|-----------------------------|-------------------------------|-----------------|---------------------------|-------------------|-----|--------------|----|
|                    |        |                                  |                          |                      |                         |                             |                               |                 |                           | Depth (m)         | Ref | Test Results |    |
| 21                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 21 |
| 22                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 22 |
| 23                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 23 |
| 24                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 24 |
| 25                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 25 |
| 26                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 26 |
| 27                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 27 |
| 28                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 28 |
| 29                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 29 |
| 30                 |        |                                  |                          |                      |                         |                             |                               |                 |                           |                   |     |              | 30 |

Continued on Next Page

|                        |       |                     |              |            |            |           |          |        |          |                    |  |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        |          | Installations      |  |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam. |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |          |                    |  |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |  |            |           |       |

No Groundwater Encountered  
Hole Not Cased  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1710 (61%)





CENTRAL ALLIANCE

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Log Type

Cable Percussion

Sheet 5 of 6

Exploratory Hole Number

BH17-09

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 424996.18, Northing: 558534.60, Elevation: 13.08m AOD, Final Depth: 2.62m, Logged By: RJ, Grid System: OSG, Orientation: N/A, Inclination: 90°
Methodology & Plant: Depth (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 04/04/2018
Finish Date: 05/04/2018

Main data table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Chiselling (mins), Water Added (Litres), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation/Backfill, Samples & Testing (Depth (m), Ref, Test Results). Rows 41-50.

Continued on Next Page

Observations / Remarks, Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Installations (Instrument Details, Resp. Zone, Depth (m), Diam.), Groundwater Strikes (Strike (m), Rises To (m), Time (min), Remarks)

No Groundwater Encountered
Hole Not Cased
No Monitoring Point Installed
Hammer Ref. & Energy Ratio (%)
AR1710 (61%)



CENTRAL ALLIANCE

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Log Type

Cable Percussion

Sheet 6 of 6

Exploratory Hole Number

BH17-09

FINAL



CENTRAL ALLIANCE GEO

Table with project details: Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, etc.), Methodology & Plant (Depth, Method, Plant Used), and Scale/Checked/Approved/Start/Finish dates.

Main data table with columns: Strata Description, Legend, Depth (m), Reduced Level (m), Chiselling (mins), Water Added (Litres), Hole Ø (mm), Casing Ø (mm), Water Level (m), Installation/Backfill, and Samples & Testing (Depth, Ref, Test Results). Includes depth scale on the left and right.

Observations / Remarks table with columns: Misc., Shift Information (Date, Time, Depth, Casing, Water), Backfill (From, To, Material), Installations (Instrument Details, Resp. Zone, Depth, Diam.), and Groundwater Strikes (Strike, Rises To, Time, Remarks).



|                                      |                             |                            |                     |                    |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424996.16</b>   | Northing: <b>558533.60</b> | From (m)            | Method             | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.08mAOD</b> | Final Depth: <b>80.00m</b> | 0.00 - 3.00         | Rotary Open Holing | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ+GS</b>        | Grid System: <b>OSGB</b>   | 3.00 - 51.00        | Cable Percussion   | Start Date: 11/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    | 51.00 - 63.50       | Rotary Coring      | End Date: 10/05/2018   |
|                                      |                             |                            | 63.50 - 80.00       | Rotary Open Holing |                        |
|                                      |                             |                            |                     | Plant Used         |                        |
|                                      |                             |                            |                     | Frastré PLG        |                        |
|                                      |                             |                            |                     | Dando 4000         |                        |
|                                      |                             |                            |                     | Frastré PLG        |                        |
|                                      |                             |                            |                     | Frastré PLG        |                        |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 80.00         | 93        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 52.00           | 121       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 11/05/2018                        | Standpipe Piezometer | 50.60  | 50.00 - 51.00  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 50.00  | Bentonite   |
| 50.00 - 51.00 | Gravel      |
| 51.00 - 80.00 | Bentonite   |

| Sample Summary             |    |                  |    |
|----------------------------|----|------------------|----|
| Environmental Samples      |    |                  |    |
| Soil                       | 1  | Water            | 0  |
| Geotechnical Samples       |    |                  |    |
| Bulk                       | 15 | Large Bulk       | 0  |
| Disturbed                  | 53 | Disturbed (NR)   | 0  |
| Piston                     | 0  | Piston (NR)      | 0  |
| Undisturbed                | 0  | Undisturbed (NR) | 0  |
| Undisturbed Thin Wall      |    |                  | 16 |
| Undisturbed Thin Wall (NR) |    |                  | 0  |
| Core Sample                |    |                  | 7  |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        | Hammer Ref |
| Split Spoon                       | 3.00      | 3.00       | -         | 11            | 21         | 450                    | 21 | N=21 (6,5/7,4,6,4)     | AR1710     |
| Split Spoon                       | 5.00      | 4.00       | -         | 7             | 17         | 450                    | 17 | N=17 (3,4/5,4,3,5)     | AR1710     |
| Split Spoon                       | 7.00      | 4.00       | -         | 8             | 13         | 450                    | 13 | N=13 (3,5/3,3,4,3)     | AR1710     |
| Split Spoon                       | 9.00      | 4.00       | -         | 8             | 15         | 450                    | 15 | N=15 (5,3/4,3,3,5)     | AR1710     |
| Split Spoon                       | 11.50     | 4.00       | -         | 10            | 17         | 450                    | 17 | N=17 (6,4/3,5,4,5)     | AR1710     |
| Split Spoon                       | 14.50     | 4.00       | -         | 10            | 22         | 450                    | 22 | N=22 (6,4/5,6,6,5)     | AR1710     |
| Split Spoon                       | 17.50     | 15.00      | -         | 11            | 22         | 450                    | 22 | N=22 (6,5/6,4,7,5)     | AR1710     |
| Split Spoon                       | 20.50     | 15.00      | -         | 13            | 22         | 450                    | 22 | N=22 (6,7/5,6,6,5)     | AR1710     |
| Split Spoon                       | 23.50     | 15.00      | -         | 15            | 31         | 450                    | 31 | N=31 (7,8/8,6,9,8)     | AR1710     |
| Split Spoon                       | 26.50     | 15.00      | -         | 17            | 32         | 450                    | 32 | N=32 (8,9/8,8,9,7)     | AR1710     |
| Split Spoon                       | 29.50     | 15.00      | -         | 19            | 35         | 450                    | 35 | N=35 (9,10/8,10,8,9)   | AR1710     |
| Split Spoon                       | 32.50     | 15.00      | -         | 15            | 33         | 450                    | 33 | N=33 (8,7/8,9,7,9)     | AR1710     |
| Split Spoon                       | 35.50     | 15.00      | -         | 19            | 38         | 450                    | 38 | N=38 (10,9/10,11,8,9)  | AR1710     |
| Split Spoon                       | 38.50     | 15.00      | -         | 19            | 37         | 450                    | 37 | N=37 (9,10/8,9,9,11)   | AR1710     |
| Split Spoon                       | 41.50     | 15.00      | -         | 24            | 39         | 450                    | 39 | N=39 (11,13/10,8,9,12) | AR1710     |
| Split Spoon                       | 44.50     | 15.00      | -         | 22            | 40         | 450                    | 40 | N=40 (12,10/9,11,11,9) | AR1710     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1710          | 61               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 2.60 - 3.00                         | 30              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 51.00 - 52.00             | Water      | Grey         | 50       |
| 52.00 - 63.50             | Water      | Grey         | 70       |
| 63.50 - 80.00             | Water      |              | 0        |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Combined Borehole**  
Sheet 2 of 8

Exploratory Hole Number  
**BH17-09A**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424996.16</b>    | Northing: <b>558533.60</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.08m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ+GS</b>      | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 10/05/2018 |

| Strata Description                 | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                         |              | Coring                  |          |     |     |     |    |  |  |  |  |
|------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------------------------|--------------|-------------------------|----------|-----|-----|-----|----|--|--|--|--|
|                                    |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref                     | Test Results | Method                  | Core Run | TCR | SCR | RQD | If |  |  |  |  |
| Stiff thinly laminated brown CLAY. |        |                               |                       |                       |                         |                 |                         | 10.45             | 22 D                    |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 11.00                   | 23 D         |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 11.50 - 11.95           | 24 D         | SPT(S) 11.50m, N=17     |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 11.50 - 12.00           | 25 B         | (6,4/3,5,4,5)           |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 12.50                   | 26 D         |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 13.00 - 13.45           | 27 UT        | 64 blows, 100% Recovery |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 14.00                   | 28 D         |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 14.50 - 14.95           | 29 D         | SPT(S) 14.50m, N=22     |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 14.50 - 15.00           | 30 B         | (6,4/5,6,6,5)           |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 |                         |                   | 15.50                   | 31 D         |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 | 16.00 - 16.45           | 32 UT             | 61 blows, 100% Recovery |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 | 17.00                   | 33 D              |                         |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 | 17.50 - 17.95           | 34 D              | SPT(S) 17.50m, N=22     |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 | 17.50 - 18.00           | 35 B              | (6,5/6,4,7,5)           |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 | 18.50                   | 36 D              |                         |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 | 19.00 - 19.45           | 37 UT             | 73 blows, 100% Recovery |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                               |                       |                       |                         |                 | 20.00                   | 38 D              |                         |              |                         |          |     |     |     |    |  |  |  |  |

Continued on Next Page

|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           |          |        |           |                      |               |           |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|---------|-----------|------------|-----------|----------|--------|-----------|----------------------|---------------|-----------|------|
| Observations / Remarks<br>Driller reports loss of flush from 63.50m to 80.00m.<br>Redrilling in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs<br>Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs | Misc.<br>No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed | Shift Information |         |           |            |           | Backfill |        |           | Installations        |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    | Date              | Time    | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           | 0.00     | 50.00  | Bentonite | Standpipe Piezometer | 50.00 - 51.00 | 50.60     |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           | 50.00    | 51.00  | Gravel    |                      |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           | 51.00    | 80.00  | Bentonite |                      |               |           |      |
| Water Strikes                                                                                                                                                                                                                                                                                                                                       |                                                                                    |                   |         |           |            |           |          |        |           |                      |               |           |      |
| Strike (m)                                                                                                                                                                                                                                                                                                                                          | Rises To (m)                                                                       | Time (min)        | Remarks |           |            |           |          |        |           |                      |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           |          |        |           |                      |               |           |      |



**CENTRAL ALLIANCE**  
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Log Type  
**Combined Borehole**  
Sheet 3 of 8

Exploratory Hole Number  
**BH17-09A**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424996.16</b>    | Northing: <b>558533.60</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.08m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ+GS</b>      | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 10/05/2018 |

| Strata Description                 | Legend | Depth (m) (Stratum Thickness)       | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   | Coring |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------------|--------|-------------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|--------|----------|-----|-----|-----|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                                    |        |                                     |                       |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Stiff thinly laminated brown CLAY. |        |                                     |                       |                       |                         |                 |                         | 20.50 - 20.95     | 39 D  | SPT(S) 20.50m, N=22 (6,7/5,6,6,5) |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 20.50 - 21.00     | 40 B  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 21.50             | 41 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 22.00 - 22.45     | 42 UT | 77 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 23.00             | 43 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 23.50 - 23.95     | 44 D  | SPT(S) 23.50m, N=31 (7,8/8,6,9,8) |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 23.50 - 24.00     | 45 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 24.50             | 46 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 25.00 - 25.45     | 47 UT | 79 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                    |        |                                     |                       |                       |                         |                 |                         | 26.00             | 48 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26.50 - 26.95                      | 49 D   | SPT(S) 26.50m, N=32 (8,9/8,8,9,7)   |                       |                       |                         |                 |                         |                   |       |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26.50 - 27.00                      | 51 B   |                                     |                       |                       |                         |                 |                         |                   |       |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27.50                              | 50 D   |                                     |                       |                       |                         |                 |                         |                   |       |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28.00 - 28.45                      | 52 UT  | 83 blows, 100% Recovery             |                       |                       |                         |                 |                         |                   |       |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29.00                              | 53 D   |                                     |                       |                       |                         |                 |                         |                   |       |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29.50 - 29.95                      | 54 D   | SPT(S) 29.50m, N=35 (9,10/8,10,8,9) |                       |                       |                         |                 |                         |                   |       |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29.50 - 30.00                      | 55 B   |                                     |                       |                       |                         |                 |                         |                   |       |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Continued on Next Page             |        |                                     |                       |                       |                         |                 |                         |                   |       |                                   |        |          |     |     |     |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           |          |        |           |                      |  |               |           |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|---------|-----------|------------|-----------|----------|--------|-----------|----------------------|--|---------------|-----------|------|
| Observations / Remarks<br>Driller reports loss of flush from 63.50m to 80.00m.<br>Redrilling in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs<br>Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs | Misc.<br>No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed | Shift Information |         |           |            |           | Backfill |        |           | Installations        |  |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    | Date              | Time    | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details   |  | Resp. Zone    | Depth (m) | Diam |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           | 0.00     | 50.00  | Bentonite | Standpipe Piezometer |  | 50.00 - 51.00 | 50.60     |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           | 50.00    | 51.00  | Gravel    |                      |  |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           | 51.00    | 80.00  | Bentonite |                      |  |               |           |      |
| Water Strikes                                                                                                                                                                                                                                                                                                                                       |                                                                                    |                   |         |           |            |           |          |        |           |                      |  |               |           |      |
| Strike (m)                                                                                                                                                                                                                                                                                                                                          | Rises To (m)                                                                       | Time (min)        | Remarks |           |            |           |          |        |           |                      |  |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           |          |        |           |                      |  |               |           |      |





CENTRAL ALLIANCE

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Alliance House, South Park Way
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Log Type
Combined Borehole
Sheet 4 of 8

Exploratory Hole Number
BH17-09A
FINAL



Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 424996.16, Northing: 558533.60, Elevation: 13.08m AOD, Final Depth: 80.00m, Logged By: RJ+GS, Grid System: OSG, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 11/04/2018
Finish Date: 10/05/2018

Table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole ø (mm) Depth (m), Casing ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If).
Row 1: Stiff thinly laminated brown CLAY.
Row 2: 30.50 - 56 D
Row 3: 31.00 - 31.45 - 57 UT - 89 blows, 100% Recovery
Row 4: 31.45 - 58 D
Row 5: 32.00 - 59 D
Row 6: 32.50 - 32.95 - 60 D - SPT(S) 32.50m, N=33 (8,7/8,9,7,9)
Row 7: 32.50 - 33.00 - 61 B
Row 8: 33.50 - 62 D
Row 9: 34.00 - 34.45 - 63 UT - 88 blows, 100% Recovery
Row 10: 35.00 - 64 D
Row 11: 35.50 - 35.95 - 65 D - SPT(S) 35.50m, N=38 (10,9/10,11,8,9)
Row 12: 35.50 - 36.00 - 66 B
Row 13: 36.50 - 67 D
Row 14: 37.00 - 37.45 - 68 UT - 91 blows, 100% Recovery
Row 15: 37.45 - 69 D
Row 16: 38.00 - 70 D
Row 17: 38.50 - 38.95 - 71 D - SPT(S) 38.50m, N=37 (9,10/8,9,9,11)
Row 18: 38.50 - 39.00 - 72 B
Row 19: 39.50 - 73 D
Row 20: 40.00 - 40.45 - 74 UT - 93 blows, 100% Recovery

Continued on Next Page

Observations / Remarks: Driller reports loss of flush from 63.50m to 80.00m. Redrilling in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6"; 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs. Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs.
Misc.: No Groundwater Encountered, Casing Used, Monitoring Point/s Installed.
Shift Information: Date, Time, Depth (m), Casing (m), Water (m).
Backfill: From (m), To (m), Material.
Installations: Instrument Details, Resp. Zone, Depth (m), Diam.
Water Strikes: Strike (m), Rises To (m), Time (min), Remarks.



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Log Type  
**Combined  
Borehole**  
Sheet 5 of 8

Exploratory Hole Number  
**BH17-09A**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424996.16</b>    | Northing: <b>558533.60</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.08m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>RJ+GS</b>      | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 10/05/2018 |

| Strata Description                 | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(m AOD) | Hole Ø<br>(mm)<br>Depth (m) | Casing Ø<br>(mm)<br>Depth (m) | Water Level<br>(m) | Installation /<br>Backfill | Samples & Testing |                          |              | Coring                  |          |     |     |     |    |  |  |  |  |
|------------------------------------|--------|----------------------------------|--------------------------|-----------------------------|-------------------------------|--------------------|----------------------------|-------------------|--------------------------|--------------|-------------------------|----------|-----|-----|-----|----|--|--|--|--|
|                                    |        |                                  |                          |                             |                               |                    |                            | Depth (m)         | Ref                      | Test Results | Method                  | Core Run | TCR | SCR | RQD | If |  |  |  |  |
| Stiff thinly laminated brown CLAY. |        |                                  |                          |                             |                               |                    |                            |                   |                          |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        | 41                               |                          |                             |                               |                    |                            | 41.00             | 75 D                     |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                                  |                          |                             |                               |                    |                            |                   | 41.50 - 41.95            | 76 D         | SPT(S) 41.50m, N=39     |          |     |     |     |    |  |  |  |  |
|                                    |        |                                  |                          |                             |                               |                    |                            |                   | 41.50 - 42.00            | 77 B         | (11,13/10,8,9,12)       |          |     |     |     |    |  |  |  |  |
|                                    |        | 42                               |                          |                             |                               |                    |                            |                   | 42.50                    | 78 D         |                         |          |     |     |     |    |  |  |  |  |
|                                    |        | 43                               |                          |                             |                               |                    |                            |                   | 43.00 - 43.45            | 79 UT        | 99 blows, 100% Recovery |          |     |     |     |    |  |  |  |  |
|                                    |        | 44                               |                          |                             |                               |                    |                            |                   | 44.00                    | 80 D         |                         |          |     |     |     |    |  |  |  |  |
| 45                                 |        |                                  |                          |                             |                               |                    | 44.50 - 44.95              | 81 D              | SPT(S) 44.50m, N=40      |              |                         |          |     |     |     |    |  |  |  |  |
|                                    |        |                                  |                          |                             |                               |                    | 44.50 - 45.00              | 82 B              | (12,10/9,11,11,9)        |              |                         |          |     |     |     |    |  |  |  |  |
| 46                                 |        |                                  |                          |                             |                               |                    | 45.50                      | 83 D              |                          |              |                         |          |     |     |     |    |  |  |  |  |
| 47                                 |        |                                  |                          |                             |                               |                    | 46.00 - 46.45              | 84 UT             | 101 blows, 100% Recovery |              |                         |          |     |     |     |    |  |  |  |  |
| 48                                 |        |                                  |                          |                             |                               |                    |                            |                   |                          |              |                         |          |     |     |     |    |  |  |  |  |
| 49                                 |        |                                  |                          |                             |                               |                    |                            |                   |                          |              |                         |          |     |     |     |    |  |  |  |  |
| 50                                 |        |                                  |                          |                             |                               |                    |                            |                   |                          |              |                         |          |     |     |     |    |  |  |  |  |

Continued on Next Page

|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           |           |        |           |                      |               |           |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|---------|-----------|------------|-----------|-----------|--------|-----------|----------------------|---------------|-----------|------|
| Observations / Remarks<br>Driller reports loss of flush from 63.50m to 80.00m.<br>Redrilling in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs<br>Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs | Misc.<br>No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed | Shift Information |         |           |            |           | Backfill  |        |           | Installations        |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    | Date              | Time    | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m) | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           | 0.00      | 50.00  | Bentonite | Standpipe Piezometer | 50.00 - 51.00 | 50.60     |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           | 50.00     | 51.00  | Gravel    |                      |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           | 51.00      | 80.00     | Bentonite |        |           |                      |               |           |      |
| Water Strikes                                                                                                                                                                                                                                                                                                                                       |                                                                                    |                   |         |           |            |           |           |        |           |                      |               |           |      |
| Strike (m)                                                                                                                                                                                                                                                                                                                                          | Rises To (m)                                                                       | Time (min)        | Remarks |           |            |           |           |        |           |                      |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |         |           |            |           |           |        |           |                      |               |           |      |





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Log Type  
**Combined  
Borehole**  
Sheet 7 of 8

Exploratory Hole Number  
**BH17-09A**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424996.16</b>    | Northing: <b>558533.60</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.08m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ+GS</b>      | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 10/05/2018 |

| Strata Description                                                                      | Legend           | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |          |     |     |     |    |  |  |  |  |
|-----------------------------------------------------------------------------------------|------------------|----------------------------------|-----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|--|--|--|
|                                                                                         |                  |                                  |                       |                          |                            |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |
| From 60.80m to 60.90m 1 no. discontinuity subvertical (70-80 degrees) rough undulating. | [Dotted pattern] |                                  |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
|                                                                                         |                  | 59.50<br>61.00                   |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
|                                                                                         |                  | 61.00<br>62.00                   |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| ROTARY OPEN HOLE DRILLING.                                                              | [Dotted pattern] | 63.50                            | -50.42                |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
|                                                                                         |                  | 62.00<br>63.50                   |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Continued on Next Page                                                                  |                  |                                  |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |

|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |      |            |            |           |                        |                         |                                  |                      |               |           |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|------|------------|------------|-----------|------------------------|-------------------------|----------------------------------|----------------------|---------------|-----------|------|
| Observations / Remarks<br>Driller reports loss of flush from 63.50m to 80.00m.<br>Redrilling in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs<br>Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs | Misc.<br>No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed | Shift Information |      |            |            |           | Backfill               |                         |                                  | Installations        |               |           |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    | Date              | Time | Depth (m)  | Casing (m) | Water (m) | From (m)               | To (m)                  | Material                         | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    |                   |      |            |            |           | 0.00<br>50.00<br>51.00 | 50.00<br>51.00<br>80.00 | Bentonite<br>Gravel<br>Bentonite | Standpipe Piezometer | 50.00 - 51.00 | 50.60     |      |
|                                                                                                                                                                                                                                                                                                                                                     |                                                                                    | Water Strikes     |      |            |            |           |                        |                         |                                  |                      |               |           |      |
| Strike (m)                                                                                                                                                                                                                                                                                                                                          |                                                                                    | Rises To (m)      |      | Time (min) |            | Remarks   |                        |                         |                                  |                      |               |           |      |



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Log Type
Combined Borehole
Sheet 8 of 8

Exploratory Hole Number
BH17-09A
FINAL



Table with project details: Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, etc.), Methodology & Plant (From, Method, Plant Used), and Scale/Checked/Approved/Start/Finish dates.

Main data table with columns: Strata Description, Legend, Depth (m), Reduced Level (m), Hole phi (mm), Casing phi (mm), Water Level (m), Installation/Backfill, Samples & Testing (Depth, Ref, Test Results), and Coring (Method, Core Run, TCR, SCR, RQD, If). Includes a vertical scale on the left and right from 71 to 80m.

Summary table with sections: Observations / Remarks, Misc., Shift Information (Date, Time, Depth, Casing, Water), Backfill (From, To, Material), and Installations (Instrument Details, Resp. Zone, Depth, Diam, Water Strikes).





|                                      |                              |                            |                     |                    |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------------------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                    |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425016.51</b>    | Northing: <b>558526.43</b> | From (m)            | Method             | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.67m AOD</b> | Final Depth: <b>80.00m</b> | 0.00 - 1.20         | Inspection Pit     | Hand Tools | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   | 1.20 - 47.00        | Cable Percussion   | Dando 2000 | Start Date: 15/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 47.00 - 55.00       | Rotary Open Holing | Fraсте PLG | Finish Date: 14/06/2018 |
|                                      |                              |                            | 55.00 - 56.50       | Rotary Open Holing | Fraсте PLG |                         |
|                                      |                              |                            | 56.50 - 57.00       | Rotary Open Holing | Fraсте PLG |                         |
|                                      |                              |                            | 57.00 - 58.50       | Rotary Coring      | Fraсте PLG |                         |

| Strata Description                                                                                                                                                                             | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                  |                                   |                                           | Coring |          |     |     |     |    |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|----------------------------------------------------|-----------------------------------|-------------------------------------------|--------|----------|-----|-----|-----|----|--|--|
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | Depth (m)                                          | Ref                               | Test Results                              | Method | Core Run | TCR | SCR | RQD | If |  |  |
| MADE GROUND: TOPSOIL.<br>MADE GROUND: Greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick, sandstone, siltstone and coal. |        | (0.10)<br>0.10                | 13.57                 |                       |                         |                 |                         | 0.20<br>0.20                                       | 1 D<br>2 ES                       |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        | (2.00)                        |                       |                       |                         |                 |                         | 0.50<br>0.50<br>0.60                               | 3 D<br>4 ES<br>5 B                |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 1.00<br>1.00<br>1.20<br>1.20 - 1.65<br>1.20 - 1.65 | 6 D<br>7 ES<br>8 D<br>10 B<br>9 D | SPT(C) 1.20m, N=40<br>(9,10/10,10,10,10)  |        |          |     |     |     |    |  |  |
| MADE GROUND: Yellowish brown gravelly silty fine to coarse SAND. Gravel is subangular fine to coarse limestone.                                                                                |        | 2.10                          | 11.57                 |                       |                         |                 |                         | 2.00<br>2.00<br>2.10                               | 11 D<br>12 ES<br>13 B             |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        | (1.60)                        |                       |                       |                         |                 |                         | 2.50 - 2.95                                        | 14 B                              | SPT(C) 2.50m, N=48<br>(9,11/48 for 230mm) |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 3.00<br>3.00                                       | 15 D<br>16 ES                     |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 3.50 - 3.95                                        | 17 D                              | SPT(C) 3.50m, N=11<br>(2,2/2,3,3,3)       |        |          |     |     |     |    |  |  |
| MADE GROUND: Orange mottled brown slightly organic sandy silty CLAY with rare gravel. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and mudstone.                      |        | 3.70                          | 9.97                  |                       |                         |                 |                         | 3.70 - 3.95                                        | 18 B                              |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        | (0.80)                        |                       |                       |                         |                 |                         | 4.00<br>4.00                                       | 19 D<br>20 ES                     |                                           |        |          |     |     |     |    |  |  |
| Soft light brown sandy clayey SILT. Sand is fine to coarse.                                                                                                                                    |        | 4.50                          | 9.17                  |                       |                         | 4.10<br>4.50    |                         | 4.50 - 4.95                                        | 21 UT                             | 10 blows, 100% Recovery                   |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        | (1.50)                        |                       |                       |                         |                 |                         | 5.00                                               | 22 D                              |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 5.50 - 5.95<br>5.50 - 5.95                         | 23 D<br>24 B                      | SPT(S) 5.50m, N=13<br>(1,2/3,3,3,4)       |        |          |     |     |     |    |  |  |
| Soft to firm thinly laminated greyish brown slightly sandy CLAY. Sand is fine to coarse.                                                                                                       |        | 6.00                          | 7.67                  |                       |                         |                 |                         | 6.00                                               | 25 D                              |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 6.50 - 6.95                                        | 26 UT                             | 10 blows, 100% Recovery                   |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 7.00                                               | 27 D                              |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 7.50 - 7.95<br>7.50 - 7.95                         | 28 D<br>29 B                      | SPT(S) 7.50m, N=11<br>(2,2/3,3,3,2)       |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 8.00                                               | 30 D                              |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 8.50 - 8.95                                        | 31 UT                             | 12 blows, 100% Recovery                   |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 9.00                                               | 32 D                              |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         | 250<br>9.00     |                         | 9.50 - 9.95<br>9.50 - 9.95                         | 33 D<br>34 B                      | SPT(S) 9.50m, N=13<br>(1,2/3,3,4,3)       |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 10.00                                              | 35 D                              |                                           |        |          |     |     |     |    |  |  |

|                                                                                                                                                                                                                                                                                |                                                                                  |                   |       |           |            |           |          |        |          |                    |              |            |           |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------|-------|-----------|------------|-----------|----------|--------|----------|--------------------|--------------|------------|-----------|------|
| Observations / Remarks<br>50m drilling casing abandoned in borehole. Borehole backfilled with grout in and around abandoned casing.<br>Running sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 01.06.18: 10hrs, 05.06.18: 10hrs & 11.06.18: 10hrs | Misc.<br>Groundwater Encountered<br>Casing Used<br>No Monitoring Point Installed | Shift Information |       |           |            |           | Backfill |        |          | Installations      |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |              | Resp. Zone | Depth (m) | Diam |
|                                                                                                                                                                                                                                                                                |                                                                                  | 16/05             | 06:00 | 15.45     | 9.00       | Dry       | 0.00     | 80.00  | Grout    |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 16/05             | 18:00 | 15.45     | 9.00       | Dry       |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 17/05             | 06:00 | 40.00     | 37.00      | Dry       |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 17/05             | 18:00 | 40.00     | 37.00      | 37.2      |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 18/05             | 06:00 | 47.00     | 37.00      | 37.2      |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 01/06             | 18:00 | 47.00     | 37.00      | -         |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 02/06             | 06:00 | 51.00     | 51.00      | -         |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 05/06             | 18:00 | 51.00     | 51.00      | -         |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 06/06             | 06:00 | 57.00     | 51.00      | -         |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  | 06/06             | 18:00 | 57.00     | 57.00      | -         |          |        |          |                    |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  |                   |       |           |            |           |          |        |          | Water Strikes      |              |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  |                   |       |           |            |           |          |        |          | Strike (m)         | Rises To (m) | Time (min) | Remarks   |      |
|                                                                                                                                                                                                                                                                                |                                                                                  |                   |       |           |            |           |          |        |          | 4.50               | 4.10         | 20         |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                  |                   |       |           |            |           |          |        |          | 46.70              | 37.20        | 20         |           |      |

Continued on Next Page



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
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Wakefield WF2 0XJ
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Log Type
Combined Borehole

Sheet 2 of 8

Exploratory Hole Number

BH17-11

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425016.51, Northing: 558526.43, Elevation: 13.67m AOD, Final Depth: 80.00m, Logged By: ALB, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 15/05/2018
Finish Date: 14/06/2018

Main data table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Includes data points from 10.50m to 19.50m depth.

Continued on Next Page

Observations / Remarks: 50m drilling casing abandoned in borehole. Borehole backfilled with grout in and around abandoned casing. Running sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 01.06.18: 10hrs, 05.06.18: 10hrs & 11.06.18: 10hrs. Misc. Groundwater encountered Casing Used No Monitoring Point Installed. Shift Information: Date, Time, Depth (m), Casing (m), Water (m). Backfill: From (m), To (m), Material. Installations: Instrument Details, Resp. Zone, Depth (m), Diam. Water Strikes: Strike (m), Rises To (m), Time (min), Remarks.







**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Combined Borehole**  
Sheet 4 of 8

Exploratory Hole Number  
**BH17-11**  
FINAL



|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425016.51</b>   | Northing: <b>558526.43</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.67mAOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>       | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 15/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 14/06/2018 |

| Strata Description                                                                       | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                                      |                                   | Coring                  |          |     |     |     |    |  |  |  |  |
|------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|--------------------------------------|-----------------------------------|-------------------------|----------|-----|-----|-----|----|--|--|--|--|
|                                                                                          |        |                               |                      |                       |                         |                 |                         | Depth (m)         | Ref                                  | Test Results                      | Method                  | Core Run | TCR | SCR | RQD | If |  |  |  |  |
| Soft to firm thinly laminated greyish brown slightly sandy CLAY. Sand is fine to coarse. |        | 30.00 - 30.45                 |                      |                       |                         |                 |                         | 76 B              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 31.00                         |                      |                       |                         |                 |                         | 77 D              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 31.50 - 31.95                 |                      |                       |                         |                 |                         |                   | 78 UT                                | 35 blows, 100% Recovery           |                         |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 32.00                         |                      |                       |                         |                 |                         |                   | 79 D                                 |                                   |                         |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 33.00                         |                      |                       |                         |                 |                         |                   | 80 D                                 | SPT(S) 33.00m, N=33 (3,5/7,8,9,9) |                         |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 33.00 - 33.45                 |                      |                       |                         |                 |                         |                   | 81 D                                 |                                   |                         |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 33.00 - 33.45                 |                      |                       |                         |                 |                         |                   | 82 B                                 |                                   |                         |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 34.00                         |                      |                       |                         |                 |                         |                   |                                      | 83 D                              |                         |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 34.50 - 34.95                 |                      |                       |                         |                 |                         |                   |                                      | 84 UT                             | 39 blows, 100% Recovery |          |     |     |     |    |  |  |  |  |
|                                                                                          |        | 35.00                         |                      |                       |                         |                 |                         |                   |                                      | 85 D                              |                         |          |     |     |     |    |  |  |  |  |
| 36.00                                                                                    |        |                               |                      |                       |                         |                 |                         | 86 D              | SPT(S) 36.00m, N=36 (4,8/9,8,10,9)   |                                   |                         |          |     |     |     |    |  |  |  |  |
| 36.00 - 36.45                                                                            |        |                               |                      |                       |                         |                 |                         | 87 D              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |
| 36.00 - 36.45                                                                            |        |                               |                      |                       |                         |                 |                         | 88 B              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |
| 37.00                                                                                    |        |                               |                      |                       | 150<br>37.00            | 37.20           |                         | 89 D              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |
| 37.50 - 37.95                                                                            |        |                               |                      |                       |                         |                 |                         | 90 UT             | 92 blows, 100% Recovery              |                                   |                         |          |     |     |     |    |  |  |  |  |
| 38.00                                                                                    |        |                               |                      |                       |                         |                 |                         | 91 D              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |
| 39.00                                                                                    |        |                               |                      |                       |                         |                 |                         | 92 D              | SPT(S) 39.00m, N=39 (3,7/8,10,10,11) |                                   |                         |          |     |     |     |    |  |  |  |  |
| 39.00 - 39.45                                                                            |        |                               |                      |                       |                         |                 |                         | 93 D              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |
| 39.00 - 39.45                                                                            |        |                               |                      |                       |                         |                 |                         | 94 B              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |
| 40.00                                                                                    |        |                               |                      |                       |                         |                 |                         | 95 D              |                                      |                                   |                         |          |     |     |     |    |  |  |  |  |

Continued on Next Page

|                                                                                                                                                                                                                                                                                |                                                                                           |                   |              |            |            |           |          |        |          |                    |  |            |           |      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|------|--|
| Observations / Remarks<br>50m drilling casing abandoned in borehole. Borehole backfilled with grout in and around abandoned casing.<br>Running sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 01.06.18: 10hrs, 05.06.18: 10hrs & 11.06.18: 10hrs | Misc.<br><i>Groundwater Encountered<br/>Casing Used<br/>No Monitoring Point Installed</i> | Shift Information |              |            |            |           | Backfill |        |          | Installations      |  |            |           |      |  |
|                                                                                                                                                                                                                                                                                |                                                                                           | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam |  |
|                                                                                                                                                                                                                                                                                |                                                                                           |                   |              |            |            |           | 0.00     | 80.00  | Grout    |                    |  |            |           |      |  |
|                                                                                                                                                                                                                                                                                |                                                                                           | Water Strikes     |              |            |            |           |          |        |          |                    |  |            |           |      |  |
|                                                                                                                                                                                                                                                                                |                                                                                           | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |  |            |           |      |  |
|                                                                                                                                                                                                                                                                                |                                                                                           | 4.50              | 4.10         | 20         |            |           |          |        |          |                    |  |            |           |      |  |
|                                                                                                                                                                                                                                                                                |                                                                                           | 46.70             | 37.20        | 20         |            |           |          |        |          |                    |  |            |           |      |  |



# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Combined  
Borehole**

Sheet 5 of 8

Exploratory Hole Number

## BH17-11

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425016.51</b>   | Northing: <b>558526.43</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.67mAOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>       | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 15/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 14/06/2018 |

| Strata Description                                                                          | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (mAOD) | Hole $\phi$ (mm)<br>Depth (m) | Casing $\phi$ (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                                          |                       | Coring                                  |          |     |     |     |
|---------------------------------------------------------------------------------------------|--------|----------------------------------|----------------------|-------------------------------|---------------------------------|-----------------|-------------------------|-------------------|------------------------------------------|-----------------------|-----------------------------------------|----------|-----|-----|-----|
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         | Depth (m)         | Ref                                      | Test Results          | Method                                  | Core Run | TCR | SCR | RQD |
| Soft to firm thinly laminated greyish brown slightly sandy CLAY.<br>Sand is fine to coarse. |        |                                  |                      |                               |                                 |                 |                         | 40.50 - 40.95     | 96 UT                                    | 39 blows, 0% Recovery |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         | 40.50 - 40.95     | 97 B                                     |                       |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         |                   | 41.00                                    | 98 D                  |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         |                   | 42.00                                    | 99 D                  | SPT(S) 42.00m, N=40<br>(5,8/9,11,10,10) |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         |                   | 42.00 - 42.45                            | 100 D                 |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         |                   | 42.00 - 42.45                            | 101 B                 |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         |                   | 43.00                                    | 102 D                 |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         |                   | 43.50 - 43.95                            | 103 D                 | SPT(S) 43.50m, N=38<br>(7,8/11,9,9,9)   |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         |                   | 43.50 - 43.95                            | 104 B                 |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 |                         |                   | 44.00                                    | 105 D                 |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 | 45.00                   | 106 D             | SPT(S) 45.00m, N=41<br>(5,9/10,10,10,11) |                       |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 | 45.00 - 45.45           | 107 D             |                                          |                       |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 | 45.00 - 45.45           | 108 B             |                                          |                       |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 | 46.00                   | 109 D             |                                          |                       |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 | 46.50 - 46.70           | 110 UT            | 100 blows, 0% Recovery                   |                       |                                         |          |     |     |     |
|                                                                                             |        |                                  |                      |                               |                                 |                 | 46.50 - 46.70           | 111 B             |                                          |                       |                                         |          |     |     |     |
| Loose light grey silty fine to coarse SAND.<br><i>Blowing sands.</i>                        |        | 46.70<br>(0.30)                  | -33.03               |                               |                                 |                 |                         |                   |                                          |                       |                                         |          |     |     |     |
| SANDSTONE (Driller's Description).                                                          |        | 47.00                            | -33.33               |                               |                                 |                 |                         | 47.00             | 112 D                                    |                       |                                         |          |     |     |     |
| Continued on Next Page                                                                      |        |                                  |                      |                               |                                 |                 |                         |                   |                                          |                       |                                         |          |     |     |     |

|                                                                                                                                                                                                                                                                                |                                                                                           |                   |      |            |            |           |          |        |          |                    |  |            |           |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------|------|------------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|------|
| Observations / Remarks<br>50m drilling casing abandoned in borehole. Borehole backfilled with grout in and around abandoned casing.<br>Running sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 01.06.18: 10hrs, 05.06.18: 10hrs & 11.06.18: 10hrs | Misc.<br><i>Groundwater Encountered<br/>Casing Used<br/>No Monitoring Point Installed</i> | Shift Information |      |            |            |           | Backfill |        |          | Installations      |  |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                           | Date              | Time | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                                                                                                                                                                                                                                                                                |                                                                                           |                   |      |            |            |           | 0.00     | 80.00  | Grout    |                    |  |            |           |      |
|                                                                                                                                                                                                                                                                                |                                                                                           | Water Strikes     |      |            |            |           |          |        |          |                    |  |            |           |      |
| Strike (m)                                                                                                                                                                                                                                                                     |                                                                                           | Rises To (m)      |      | Time (min) |            | Remarks   |          |        |          |                    |  |            |           |      |
| 4.50                                                                                                                                                                                                                                                                           |                                                                                           | 4.10              |      | 20         |            |           |          |        |          |                    |  |            |           |      |
| 46.70                                                                                                                                                                                                                                                                          |                                                                                           | 37.20             |      | 20         |            |           |          |        |          |                    |  |            |           |      |









|                                      |                              |                            |                     |                               |                        |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425051.38</b>    | Northing: <b>558562.65</b> | From (m)            | Method                        | Plant Used             | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.23m AOD</b> | Final Depth: <b>10.00m</b> | 0.00 - 1.20         | Inspection Pit                | Hand Tools             | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   | 1.20 - 6.00         | Dynamic Sampling (Windowless) | Modular Window Sampler | Start Date: 06/06/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 6.00 - 10.00        | Dynamic Probing               | Modular Window Sampler | End Date: 06/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 6.00          | 66        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 1.50            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 10.00 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 7  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 6  | Large Bulk       | 0 |
| Disturbed                  | 13 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                           |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|---------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result           | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 15            | 49         | 450                    | 49 | N=49 (7,8/10,17,12,10)    | MOD 01     |
| Split Spoon                       | 2.00      | 1.50       | -         | 22            | 50         | 425                    |    | N=50 (10,12/50 for 275mm) | MOD 01     |
| Split Spoon                       | 3.00      | 1.50       | -         | 10            | 16         | 450                    | 16 | N=16 (4,6/3,5,4,4)        | MOD 01     |
| Split Spoon                       | 4.00      | 1.50       | -         | 4             | 8          | 450                    | 8  | N=8 (2,2/2,2,2,2)         | MOD 01     |
| Split Spoon                       | 5.00      | 1.50       | -         | 4             | 11         | 450                    | 11 | N=11 (2,2/2,3,3,3)        | MOD 01     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 101       | 100        |         |
| 2.00 - 3.00                         | 76        | 100        |         |
| 3.00 - 4.00                         | 76        | 90         |         |
| 4.00 - 5.00                         | 66        | 90         |         |
| 5.00 - 6.00                         | 66        | 80         |         |



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type
Dynamic Sampling & Probe
Sheet 1 of 1

Exploratory Hole Number

BH17-12

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425051.38, Northing: 558562.65, Elevation: 20.23mAOD, Final Depth: 10.00m, Logger: GS, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: Depth (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 06/06/2018
Finish Date: 06/06/2018

Main data table with columns: Blows / 100mm, Strata Description, Legend, Depth (m), Reduced Level (mAOD), Casing Ø (mm), Water Level (m), Installation / Backfill, Samples & Testing (Depth, Ref, Test Results). Includes detailed soil descriptions and SPT data.

Observations / Remarks, Misc., Equipment Information, Dynamic Sampling Runs, Installations, Groundwater Strikes. Includes equipment details for DP5H-B and sampling run data.





|                                      |                              |                            |                                                      |                                                                            |                                                                            |                         |
|--------------------------------------|------------------------------|----------------------------|------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                  |                                                                            |                                                                            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425051.05</b>    | Northing: <b>558571.03</b> | From (m): 0.00 - 1.20<br>1.20 - 6.45<br>6.45 - 10.00 | Method: Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Plant Used: Hand Tools<br>Modular Window Sampler<br>Modular Window Sampler | Checked: RPH            |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.03m AOD</b> | Final Depth: <b>10.00m</b> | Logger: <b>GS</b>                                    | Grid System: <b>OSGB</b>                                                   | Orientation: <b>N/A</b>                                                    | Inclination: <b>90°</b> |
| Client: <b>SLIV</b>                  |                              |                            |                                                      |                                                                            |                                                                            | Approved: BH            |
|                                      |                              |                            |                                                      |                                                                            | Start Date: 05/06/2018                                                     | End Date: 05/06/2018    |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 6.45          | 63        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 3.00            | 115       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                                       |        |                |           |
|-----------------------------------|---------------------------------------|--------|----------------|-----------|
| Date                              | Instrument Details                    | To (m) | Resp. Zone (m) | Diam (mm) |
| 05/06/2018                        | Standpipe with Water Level Datalogger | 0.00   | 1.00 - 5.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 1.00  | Bentonite   |
| 1.00 - 5.00  | Gravel      |
| 5.00 - 10.00 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 6  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 6  | Large Bulk       | 0 |
| Disturbed                    | 17 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    |                  | 1 |
| Undisturbed Thin Wall (NR)   |    |                  | 0 |
| Core Sample                  |    |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                      |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|----------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result      | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 13            | 34         | 450                    | 34 | N=34 (6,7/11,6,6,11) | MOD 01     |
| Split Spoon                       | 2.00      | -          | -         | 3             | 5          | 450                    | 5  | N=5 (1,2/1,2,1,1)    | MOD 01     |
| Split Spoon                       | 3.00      | 3.00       | 3.4       | 7             | 8          | 450                    | 8  | N=8 (5,2/2,2,2,2)    | MOD 01     |
| Split Spoon                       | 4.00      | 3.00       | 4.1       | 3             | 13         | 450                    | 13 | N=13 (1,2/3,3,3,4)   | MOD 01     |
| Split Spoon                       | 6.00      | 3.00       | 4.1       | 3             | 4          | 450                    | 4  | N=4 (1,2/1,1,1,1)    | MOD 01     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 87        | 100        |         |
| 2.00 - 3.00                         | 87        | 90         |         |
| 3.00 - 4.00                         | 75        | 100        |         |
| 4.00 - 5.00                         | 75        | 100        |         |
| 5.00 - 6.00                         | 63        | 100        |         |





|                                      |                              |                            |                                              |                                                                       |                                              |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                          |                                                                       |                                              | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425052.39</b>    | Northing: <b>558577.36</b> | From (m)                                     | Method                                                                | Plant Used                                   | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>14.48m AOD</b> | Final Depth: <b>36.00m</b> | 0.00 - 1.20<br>1.20 - 26.30<br>26.30 - 36.00 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Rotary Open Holing | Hand Tools<br>Massenza MIP3<br>Massenza MIP3 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>           | Grid System: <b>OSGB</b>   |                                              |                                                                       |                                              | Start Date: 30/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                              |                                                                       |                                              | End Date: 07/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 15.35         | 102       |
| 36.00         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 15.15           | 168       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 36.00 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 7  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 18 | Large Bulk       | 0 |
| Disturbed                  | 21 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    |                  | 5 |
| Undisturbed Thin Wall (NR) |    |                  | 0 |
| Core Sample                |    |                  | 0 |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 8             | 25         | 450                    | 25 | N=25 (2,6/9,5,5,6) | AR61       |
| Split Spoon                       | 2.00      | -          | -         | 7             | 29         | 450                    | 29 | N=29 (3,4/8,8,7,6) | AR61       |
| Split Spoon                       | 3.00      | -          | -         | 8             | 17         | 450                    | 17 | N=17 (4,4/4,5,4,4) | AR61       |
| Split Spoon                       | 4.00      | 4.00       | -         | 6             | 20         | 450                    | 20 | N=20 (3,3/4,5,6,5) | AR61       |
| Split Spoon                       | 8.85      | 8.25       | -         | 6             | 20         | 450                    | 20 | N=20 (3,3/4,6,7)   | AR61       |
| Split Spoon                       | 9.85      | 8.25       | -         | 8             | 27         | 450                    | 27 | N=27 (4,4/6,6,7,8) | AR61       |
| Split Spoon                       | 12.35     | 10.85      | -         | 5             | 17         | 450                    | 17 | N=17 (2,3/3,4,4,6) | AR61       |
| Split Spoon                       | 13.85     | 10.85      | -         | 6             | 18         | 450                    | 18 | N=18 (3,3/3,5,5,5) | AR61       |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 8 |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR61            | 58               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 5.65 - 7.25               |            | Black/Brown  | 95       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 117       | 100        |         |
| 2.00 - 3.00                         | 117       | 100        |         |
| 3.00 - 4.00                         | 117       | 100        |         |
| 4.00 - 5.00                         | 117       | 100        |         |
| 5.00 - 5.65                         | 117       | 0          |         |
| 7.25 - 8.25                         | 117       | 100        |         |
| 8.25 - 8.85                         | 117       | 100        |         |
| 8.85 - 9.85                         | 117       | 20         |         |
| 9.85 - 10.85                        | 117       | 30         |         |
| 10.85 - 12.35                       | 117       | 100        |         |
| 12.35 - 13.85                       | 117       | 87         |         |
| 13.85 - 15.35                       | 102       | 20         |         |
| 15.35 - 16.85                       | 117       | 80         |         |
| 16.85 - 18.35                       | 117       | 100        |         |
| 18.35 - 19.85                       | 117       | 0          |         |
| 19.85 - 21.35                       | 102       | 100        |         |
| 21.35 - 22.85                       | 102       | 67         |         |
| 22.85 - 24.35                       | 102       | 100        |         |
| 24.35 - 25.85                       | 102       | 67         |         |



|                                      |                              |                            |                                                           |                                                                                 |                                                            |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                       |                                                                                 |                                                            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425052.39</b>    | Northing: <b>558577.36</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 26.30<br>26.30 - 36.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless)<br>Rotary Open Holing | Plant Used<br>Hand Tools<br>Massenza MIP3<br>Massenza MIP3 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>14.48m AOD</b> | Final Depth: <b>36.00m</b> |                                                           |                                                                                 |                                                            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                                                           |                                                                                 |                                                            | Start Date: 30/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                                           |                                                                                 |                                                            | Finish Date: 07/06/2018 |

| Strata Description                                                                                                                                                                                                                        | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                          |                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|--------------------------------------------|-------------------------------|
|                                                                                                                                                                                                                                           |        |                                  |                         |                               |                 |                         | Depth (m)                                  | Ref                           |
| <b>MADE GROUND: TOPSOIL.</b><br>MADE GROUND: Greyish brown very sandy angular to subangular fine to coarse sandstone and brick GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded sandstone. |        | (0.10)<br>0.10                   | 14.38                   |                               |                 |                         | 0.20<br>0.20 - 1.20<br>0.30                | 1 D<br>4 B<br>2 ES            |
|                                                                                                                                                                                                                                           |        |                                  |                         |                               |                 |                         | 0.80                                       | 3 ES                          |
|                                                                                                                                                                                                                                           |        | (2.65)                           |                         |                               |                 |                         | 1.20 - 1.65<br>1.20 - 2.00                 | 5 D<br>7 B                    |
|                                                                                                                                                                                                                                           |        |                                  |                         |                               |                 |                         | 1.80                                       | 6 ES                          |
|                                                                                                                                                                                                                                           |        |                                  |                         |                               |                 |                         | 2.00 - 2.45<br>2.00 - 2.75                 | 8 D<br>9 B                    |
| <b>MADE GROUND: Dark grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium sandstone, mudstone and brick.</b><br><i>At 2.75m geotextile.</i>                              |        | 2.75                             | 11.74                   |                               |                 |                         | 2.80<br>2.80<br>3.00 - 3.45<br>3.00 - 4.00 | 10 D<br>11 ES<br>12 D<br>13 B |
|                                                                                                                                                                                                                                           |        |                                  |                         |                               |                 |                         | 3.80                                       | 14 ES                         |
|                                                                                                                                                                                                                                           |        | (2.90)                           |                         |                               |                 |                         | 4.00 - 4.45<br>4.00 - 5.00                 | 15 D<br>16 B                  |
|                                                                                                                                                                                                                                           |        |                                  |                         |                               |                 |                         | 4.80                                       | 17 ES                         |
|                                                                                                                                                                                                                                           |        |                                  |                         |                               |                 |                         | 5.00 - 5.65                                | 18 UT 100% Recovery           |
| <b>MADE GROUND: TARMAC FILL (Driller's Description).</b>                                                                                                                                                                                  |        | 5.65                             | 8.84                    |                               |                 |                         | 5.65 - 6.10                                | 19 D                          |
|                                                                                                                                                                                                                                           |        | (1.60)                           |                         |                               |                 |                         | 6.60 - 7.05                                | 20 D                          |
| <b>Soft brownish grey slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse sandstone and mudstone.</b><br><i>From 7.40m to 7.70m gravel becomes rare.</i>                             |        | 7.25                             | 7.24                    |                               |                 |                         | 7.30<br>7.40 - 8.10                        | 22 D<br>23 B                  |
|                                                                                                                                                                                                                                           |        | (0.45)                           |                         |                               |                 |                         | 7.60 - 8.05                                | 21 D                          |
| <b>Very soft slightly sandy slightly organic SILT. Sand is fine to coarse.</b>                                                                                                                                                            |        | 7.70                             | 6.78                    |                               |                 |                         | 8.20<br>8.25 - 8.85                        | 24 ES<br>25 UT 100% Recovery  |
|                                                                                                                                                                                                                                           |        |                                  |                         |                               |                 |                         | 8.85 - 9.30<br>8.85 - 9.85                 | 26 D<br>27 D                  |
|                                                                                                                                                                                                                                           |        | (3.60)                           |                         |                               |                 |                         | 9.85 - 10.30<br>9.85 - 10.85               | 28 D<br>29 B                  |

Continued on Next Page

| Observations / Remarks                                                      | Misc.      | Backfill     |              | Dynamic Sampling Runs |         |           |              | Installations |                    |            |           |      |
|-----------------------------------------------------------------------------|------------|--------------|--------------|-----------------------|---------|-----------|--------------|---------------|--------------------|------------|-----------|------|
|                                                                             |            | Depth (m)    | Material     | From (m)              | To (m)  | Diam (mm) | Recovery (%) | Remarks       | Instrument Details | Resp. Zone | Depth (m) | Diam |
| No Groundwater Encountered<br>Casing Used<br>No Monitoring Points Installed |            | 0.00 - 36.00 | Bentonite    | 1.20                  | 2.00    | 117       | 100          |               |                    |            |           |      |
|                                                                             |            |              |              | 2.00                  | 3.00    | 117       | 100          |               |                    |            |           |      |
|                                                                             |            |              |              | 3.00                  | 4.00    | 117       | 100          |               |                    |            |           |      |
|                                                                             |            |              |              | 4.00                  | 5.00    | 117       | 100          |               |                    |            |           |      |
|                                                                             |            |              |              | 5.00                  | 5.65    | 117       | 0            |               |                    |            |           |      |
|                                                                             |            |              |              | 7.25                  | 8.25    | 117       | 100          |               |                    |            |           |      |
|                                                                             |            |              |              | 8.25                  | 8.85    | 117       | 100          |               |                    |            |           |      |
|                                                                             |            |              |              | 8.85                  | 9.85    | 117       | 20           |               |                    |            |           |      |
|                                                                             |            |              |              | 9.85                  | 10.85   | 117       | 30           |               |                    |            |           |      |
|                                                                             |            |              |              | 10.85                 | 12.35   | 117       | 100          |               |                    |            |           |      |
|                                                                             |            |              | 12.35        | 13.85                 | 117     | 87        |              |               |                    |            |           |      |
| Hammer Ref & Energy Ratio (%)                                               |            |              |              |                       |         |           |              |               |                    |            |           |      |
| <b>AR61 (58%)</b>                                                           |            |              |              |                       |         |           |              |               |                    |            |           |      |
| Groundwater Strikes                                                         |            |              |              |                       |         |           |              |               |                    |            |           |      |
| Strike (m)                                                                  | Casing (m) | Sealed (m)   | Rises To (m) | Time (min)            | Remarks |           |              |               |                    |            |           |      |
|                                                                             |            |              |              |                       |         |           |              |               |                    |            |           |      |



**CENTRAL ALLIANCE**  
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Log Type  
**Dynamic Sampling**  
Sheet 2 of 4

Exploratory Hole Number  
**BH17-13**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425052.39</b>    | Northing: <b>558577.36</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>14.48m AOD</b> | Final Depth: <b>36.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 30/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 07/06/2018 |

| Strata Description                                                                                  | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing      |              |                                   |
|-----------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------------|-----------------|-------------------------|------------------------|--------------|-----------------------------------|
|                                                                                                     |        |                               |                      |                         |                 |                         | Depth (m)              | Ref          | Test Results                      |
| Very soft slightly sandy slightly organic SILT. Sand is fine to coarse.                             |        |                               |                      |                         |                 |                         | 10.85 - 11.30          | 30 UT        | 80% Recovery                      |
| Soft to firm thinly laminated dark greyish brown slightly sandy silty CLAY. Sand is fine to coarse. |        | 11.30                         | 3.18                 |                         |                 |                         | 11.40<br>11.50 - 12.35 | 31 D<br>32 B |                                   |
|                                                                                                     |        |                               |                      |                         |                 |                         | 12.35 - 12.80          | 33 B         | SPT(S) 12.35m, N=17 (2,3/3,4,4,6) |
|                                                                                                     |        |                               |                      |                         |                 |                         | 12.90 - 15.80          | 34 B         |                                   |
|                                                                                                     |        |                               |                      |                         |                 |                         | 13.58 - 14.30          | 35 D         | SPT(S) 13.85m, N=18 (3,3/3,5,5,5) |
|                                                                                                     |        |                               |                      |                         |                 |                         | 14.30 - 15.35          | 36 B         |                                   |
|                                                                                                     |        |                               |                      |                         |                 |                         | 15.35 - 16.00          | 37 UT        |                                   |
|                                                                                                     |        |                               |                      |                         |                 |                         | 16.00 - 16.85          | 38 B         |                                   |
|                                                                                                     |        |                               |                      |                         |                 |                         | 16.85 - 17.30          | 39 D         |                                   |
| From 17.00m, rare subangular to subrounded fine to medium sandstone gravel.                         |        |                               |                      |                         |                 |                         | 17.30 - 18.35          | 40 B         |                                   |
|                                                                                                     |        |                               |                      |                         |                 |                         | 18.35 - 19.00          | 41 UT        |                                   |
| From 18.50m, silt bands.                                                                            |        |                               |                      |                         |                 |                         | 19.00 - 19.85          | 42 B         |                                   |
|                                                                                                     |        |                               |                      |                         |                 |                         | 19.85 - 20.20          | 43 D         |                                   |
| Continued on Next Page                                                                              |        |                               |                      |                         |                 |                         |                        |              |                                   |

| Observations / Remarks                                                      | Misc. | Backfill                      |          | Dynamic Sampling Runs |            |            |              | Installations |                    |            |           |      |
|-----------------------------------------------------------------------------|-------|-------------------------------|----------|-----------------------|------------|------------|--------------|---------------|--------------------|------------|-----------|------|
|                                                                             |       | Depth (m)                     | Material | From (m)              | To (m)     | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details | Resp. Zone | Depth (m) | Diam |
| No Groundwater Encountered<br>Casing Used<br>No Monitoring Points Installed |       |                               |          | 13.85                 | 15.35      | 102        | 20           |               |                    |            |           |      |
|                                                                             |       |                               |          | 15.35                 | 16.85      | 117        | 80           |               |                    |            |           |      |
|                                                                             |       |                               |          | 16.85                 | 18.35      | 117        | 100          |               |                    |            |           |      |
|                                                                             |       |                               |          | 18.35                 | 19.85      | 117        | 0            |               |                    |            |           |      |
|                                                                             |       |                               |          | 19.85                 | 21.35      | 102        | 100          |               |                    |            |           |      |
|                                                                             |       |                               |          | 21.35                 | 22.85      | 102        | 67           |               |                    |            |           |      |
|                                                                             |       |                               |          | 22.85                 | 24.35      | 102        | 100          |               |                    |            |           |      |
|                                                                             |       |                               | 24.35    | 25.85                 | 102        | 67         |              |               |                    |            |           |      |
|                                                                             |       | Hammer Ref & Energy Ratio (%) |          |                       |            |            |              |               |                    |            |           |      |
|                                                                             |       | AR61 (58%)                    |          |                       |            |            |              |               |                    |            |           |      |
|                                                                             |       |                               |          | Groundwater Strikes   |            |            |              |               |                    |            |           |      |
|                                                                             |       |                               |          | Strike (m)            | Casing (m) | Sealed (m) | Rises To (m) | Time (min)    | Remarks            |            |           |      |
|                                                                             |       |                               |          |                       |            |            |              |               |                    |            |           |      |



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425052.39</b>    | Northing: <b>558577.36</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>14.48m AOD</b> | Final Depth: <b>36.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 30/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 07/06/2018 |

| Strata Description                                                                                  | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |      |
|-----------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------------|-----------------|-------------------------|-------------------|------|
|                                                                                                     |        |                               |                      |                         |                 |                         | Depth (m)         | Ref  |
| Soft to firm thinly laminated dark greyish brown slightly sandy silty CLAY. Sand is fine to coarse. |        |                               |                      |                         |                 |                         | 20.30 - 21.35     | 44 B |
|                                                                                                     |        |                               |                      |                         |                 |                         | 21.35 - 21.80     | 45 D |
|                                                                                                     |        |                               |                      |                         |                 |                         | 21.80 - 22.85     | 46 B |
|                                                                                                     |        |                               |                      |                         |                 |                         | 22.85             | 47 D |
|                                                                                                     |        |                               |                      |                         |                 |                         | 23.30 - 24.35     | 48 B |
|                                                                                                     |        |                               |                      |                         |                 |                         | 24.35 - 24.80     | 49 D |
| Grey CLAY. (Driller's Description)                                                                  |        |                               | 26.30                | -11.82                  |                 |                         | 24.80 - 25.85     | 50 B |
|                                                                                                     |        |                               |                      |                         |                 |                         | 25.85 - 26.30     | 51 D |
|                                                                                                     |        |                               |                      |                         |                 |                         |                   |      |
|                                                                                                     |        |                               |                      |                         |                 |                         |                   |      |
| Continued on Next Page                                                                              |        |                               |                      |                         |                 |                         |                   |      |

| Observations / Remarks | Misc. | Backfill                      |          | Dynamic Sampling Runs |        |           |              | Installations |                    |                     |            |            |              |            |
|------------------------|-------|-------------------------------|----------|-----------------------|--------|-----------|--------------|---------------|--------------------|---------------------|------------|------------|--------------|------------|
|                        |       | Depth (m)                     | Material | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |                     | Resp. Zone | Depth (m)  | Diam         |            |
|                        |       |                               |          |                       |        |           |              |               |                    | Groundwater Strikes |            |            |              |            |
|                        |       | Hammer Ref & Energy Ratio (%) |          |                       |        |           |              |               |                    | Strike (m)          | Casing (m) | Sealed (m) | Rises To (m) | Time (min) |
|                        |       | AR61 (58%)                    |          |                       |        |           |              |               |                    |                     |            |            |              |            |

No Groundwater Encountered  
Casing Used  
No Monitoring Points Installed



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Dynamic Sampling

Sheet 4 of 4

Exploratory Hole Number

BH17-13

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425052.39, Northing: 558577.36, Elevation: 14.48m AOD, Final Depth: 36.00m, Logged By: ALB, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: Depth (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 30/05/2018
Finish Date: 07/06/2018

Strata Description: Grey CLAY. (Driller's Description)
Legend: [Pattern]
Depth (m) (Stratum Thickness): (9.70)
Reduced Level (mAOD): -21.52
Casing Ø (mm) Depth (m)
Water Level (m)
Installation / Backfill
Samples & Testing: Depth (m), Ref, Test Results
EOH at 36.00m - Scheduled depth

Observations / Remarks
Misc.
Backfill
Dynamic Sampling Runs
Installations
Groundwater Strikes
Strike (m), Casing (m), Sealed (m), Rises To (m), Time (min), Remarks
Hammer Ref & Energy Ratio (%)
AR61 (58%)







|                                      |                             |                            |                     |                    |             |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------------------|-------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                    |             | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425199.25</b>   | Northing: <b>558485.11</b> | From (m)            | Method             | Plant Used  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.43mAOD</b> | Final Depth: <b>70.00m</b> | 0.00 - 1.20         | Inspection Pit     | Hand Tools  | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB+GS</b>    | Grid System: <b>OSGB</b>   | 1.20 - 45.00        | Cable Percussion   | Dando 2000  | Start Date: 11/12/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    | 45.00 - 46.50       | Rotary Coring      | Frastré PLG | Finish Date: 11/12/2017 |
|                                      |                             |                            | 46.50 - 50.00       | Rotary Open Holing | Frastré PLG |                         |
|                                      |                             |                            | 50.00 - 59.00       | Rotary Coring      | Frastré PLG |                         |
|                                      |                             |                            | 59.00 - 70.00       | Rotary Open Holing | Frastré PLG |                         |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                                        | Coring |          |     |     |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|--------------------------------------------------------|--------|----------|-----|-----|-----|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                                           | Method | Core Run | TCR | SCR | RQD |
| <p>MADE GROUND: Dark brown and grey slightly gravelly sandy silty CLAY with roots. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and mudstone.</p> <p>1 Soft fissured brown and grey slightly sandy CLAY. Sand is fine to coarse.</p> <p>2 From 2.00m becomes very silty.</p> <p>3</p> <p>4</p> <p>5 From 5.50m becomes silty.</p> <p>6 From 6.00m becomes grey and thinly laminated with no fissures.</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> |        | 1.00                          | 15.43                |                       |                         |                 |                         | 0.20              | 1 ES  | PID 0.20m = 0.2ppm                                     |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 0.50              | 2 D   | HV 0.50m, (p)=52 kPa (r) =4 kPa                        |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 0.50 - 1.00       | 5 B   |                                                        |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 0.70              | 3 ES  | PID 0.70m = 0.2ppm                                     |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 1.00              | 4 D   | HV 1.00m, (p)=52 kPa (r) =2 kPa                        |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 1.20 - 1.65       | 6 UT  | 10 blows, 100% Recovery                                |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 2.00 - 2.45       | 8 D   | SPT(S) 2.00m, N=8                                      |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 2.00 - 2.50       | 9 B   | (1,2/3,2,2,1)                                          |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 3.00 - 3.45       | 10 UT | 3 blows, 100% Recovery SPT(S) 3.00m, N=2 (1,0/0,1,0,1) |        |          |     |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 4.00 - 4.45       | 11 D  |                                                        |        |          |     |     |     |
| 4.00 - 4.50                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 12 B   |                               |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 5.00 - 5.45                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 13 UT  | 14 blows, 100% Recovery       |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 5.45                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 14 D   |                               |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 6.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 15 D   |                               |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 6.50 - 6.95                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 16 D   | SPT(S) 6.50m, N=5             |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 6.50 - 7.00                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 17 B   | (0,1/1,1,1,2)                 |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 7.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 18 D   |                               |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 8.00 - 8.45                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 19 UT  | 21 blows, 100% Recovery       |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 8.45                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 20 D   |                               |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 9.50 - 10.00                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 22 B   | SPT(S) 9.50m, N=9             |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |
| 9.50 - 9.95                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 21 D   | (1,2/3,2,2,2)                 |                      |                       |                         |                 |                         |                   |       |                                                        |        |          |     |     |     |

Continued on Next Page

| Observations / Remarks                                                                | Misc. | Shift Information |       |           |            |           | Backfill |        |           | Installations        |               |           |      |
|---------------------------------------------------------------------------------------|-------|-------------------|-------|-----------|------------|-----------|----------|--------|-----------|----------------------|---------------|-----------|------|
|                                                                                       |       | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
| <p>Groundwater Encountered</p> <p>Casing Used</p> <p>Monitoring Point/s Installed</p> |       | 11/12             | 17:00 | 1.65      | -          | -         | 0.00     | 0.50   | Concrete  | Standpipe Piezometer | 14.00 - 16.00 | 15.00     |      |
|                                                                                       |       | 12/12             | 08:00 | 1.65      | -          | -         | 0.50     | 14.00  | Bentonite |                      |               |           |      |
|                                                                                       |       | 12/12             | 17:00 | 23.45     | 15.00      | -         | 14.00    | 16.00  | Sand      |                      |               |           |      |
|                                                                                       |       | 13/12             | 08:00 | 23.45     | 15.00      | -         | 16.00    | 70.00  | Bentonite |                      |               |           |      |
|                                                                                       |       | 13/12             | 17:00 | 35.50     | 15.00      | -         |          |        |           |                      |               |           |      |
|                                                                                       |       | 14/12             | 08:00 | 35.50     | 15.00      | -         |          |        |           |                      |               |           |      |
|                                                                                       |       | 14/12             | 17:00 | 41.00     | 41.00      | -         |          |        |           |                      |               |           |      |
|                                                                                       |       | 15/12             | 08:00 | 41.00     | 41.00      | -         |          |        |           |                      |               |           |      |
|                                                                                       |       | 15/12             | 17:00 | 44.20     | 44.00      | -         |          |        |           |                      |               |           |      |
|                                                                                       |       | 11/01             | 07:30 | 45.00     | 44.90      | 23.40     |          |        |           |                      |               |           |      |
| 11/01                                                                                 | 18:30 | 50.00             | 50.00 | -         |            |           |          |        |           |                      |               |           |      |

| Water Strikes |              |            |         |
|---------------|--------------|------------|---------|
| Strike (m)    | Rises To (m) | Time (min) | Remarks |
| 43.50         | 37.00        | 20         |         |



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425199.25</b>    | Northing: <b>558485.11</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.43m AOD</b> | Final Depth: <b>70.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB+GS</b>     | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 11/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 11/12/2017 |

| Strata Description | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   | Coring |          |     |     |     |    |  |  |  |  |    |
|--------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|--------|----------|-----|-----|-----|----|--|--|--|--|----|
|                    |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 10.50             | 23 D  |                                   |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 11.00 - 11.45     | 24 UT | 31 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  | 11 |
|                    |        |                               |                       |                       |                         |                 |                         | 11.45             | 25 D  |                                   |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 12.00             | 26 D  |                                   |        |          |     |     |     |    |  |  |  |  | 12 |
|                    |        |                               |                       |                       |                         |                 |                         | 12.50 - 12.95     | 27 D  | SPT(S) 12.50m, N=8 (3,2/2,3,1,2)  |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 12.50 - 13.00     | 28 B  |                                   |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 13.50             | 29 D  |                                   |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 14.00 - 14.45     | 30 UT | 39 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  | 14 |
|                    |        |                               |                       |                       |                         |                 |                         | 14.45             | 31 D  |                                   |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 15.00             | 32 D  |                                   |        |          |     |     |     |    |  |  |  |  | 15 |
|                    |        |                               |                       |                       |                         |                 |                         | 15.50 - 15.95     | 33 D  | SPT(S) 15.50m, N=10 (2,4/2,3,3,2) |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 15.50 - 16.00     | 34 B  |                                   |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 16.50             | 35 D  |                                   |        |          |     |     |     |    |  |  |  |  | 16 |
|                    |        |                               |                       |                       |                         |                 |                         | 17.00 - 17.45     | 36 UT | 45 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  | 17 |
|                    |        |                               |                       |                       |                         |                 |                         | 17.45             | 37 D  |                                   |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 18.00             | 38 D  |                                   |        |          |     |     |     |    |  |  |  |  | 18 |
|                    |        |                               |                       |                       |                         |                 |                         | 18.50 - 18.95     | 39 D  | SPT(S) 18.50m, N=12 (3,4/3,3,2,4) |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 18.50 - 19.00     | 40 B  |                                   |        |          |     |     |     |    |  |  |  |  |    |
|                    |        |                               |                       |                       |                         |                 |                         | 19.50             | 41 D  |                                   |        |          |     |     |     |    |  |  |  |  | 19 |
|                    |        |                               |                       |                       |                         |                 |                         | 20.00 - 20.45     | 42 UT | 50 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  | 20 |

Continued on Next Page

|                        |       |                   |       |           |            |           |           |        |               |                      |               |           |      |
|------------------------|-------|-------------------|-------|-----------|------------|-----------|-----------|--------|---------------|----------------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |       |           |            |           | Backfill  |        |               | Installations        |               |           |      |
|                        |       | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m) | Material      | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                        |       | 12/01             | 07:30 | 50.00     | 50.00      | 24.40     | 0.00      | 0.50   | Concrete      | Standpipe Piezometer | 14.00 - 16.00 | 15.00     |      |
|                        |       | 12/01             | 17:30 | 51.50     | 50.00      | -         | 0.50      | 14.00  | Bentonite     |                      |               |           |      |
| 15/01                  | 07:30 | 51.50             | 50.00 | 17.80     | 14.00      | 16.00     | Sand      |        |               |                      |               |           |      |
| 15/01                  | 18:30 | 59.00             | 50.00 | -         | 14.00      | 70.00     | Bentonite |        |               |                      |               |           |      |
| 16/01                  | 07:30 | 59.00             | 50.00 | 18.50     |            |           |           |        | Water Strikes |                      |               |           |      |
|                        |       |                   |       |           |            |           |           |        | Strike (m)    | Rises To (m)         | Time (min)    | Remarks   |      |
|                        |       |                   |       |           |            |           |           |        | 43.50         | 37.00                | 20            |           |      |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
Wakefield WF2 0XJ  
Tel +44(0)1924 229889  
Web: www.central-alliance.co.uk

Log Type  
**Combined Borehole**  
Sheet 3 of 7

Exploratory Hole Number  
**BH17-14**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425199.25</b>    | Northing: <b>558485.11</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.43m AOD</b> | Final Depth: <b>70.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB+GS</b>     | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 11/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 11/12/2017 |

| Strata Description | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   | Coring |          |     |     |     |    |  |  |  |
|--------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|--------|----------|-----|-----|-----|----|--|--|--|
|                    |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      | Method | Core Run | TCR | SCR | RQD | If |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 20.45             | 43 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 21.00             | 44 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 21.00 - 22.00     | 46 B  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 21.50 - 21.95     | 45 D  | SPT(S) 21.50m, N=16 (3,2/5,4,4,3) |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 22.50             | 47 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 23.00 - 23.45     | 48 UT | 50 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 23.45             | 49 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 24.00             | 50 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 24.50 - 24.95     | 51 D  | SPT(S) 24.50m, N=13 (4,3/3,4,3,3) |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 24.50 - 25.00     | 52 B  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 25.50             | 53 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 26.00 - 26.45     | 54 UT | 63 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 26.45             | 55 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 27.00             | 56 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 27.50 - 27.95     | 57 D  | SPT(S) 27.50m, N=19 (5,6/4,5,6,4) |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 27.50 - 28.00     | 58 B  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 28.50             | 59 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 29.00 - 29.45     | 60 UT | 67 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 29.45             | 61 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 30.00             | 62 D  |                                   |        |          |     |     |     |    |  |  |  |

Continued on Next Page

|                        |       |                   |      |           |            |           |           |               |              |                      |         |               |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|---------------|--------------|----------------------|---------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |               |              | Installations        |         |               |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)        | Material     | Instrument Details   |         | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 0.50          | Concrete     | Standpipe Piezometer |         | 14.00 - 16.00 | 15.00     |      |
|                        |       |                   |      |           |            |           | 0.50      | 14.00         | Bentonite    |                      |         |               |           |      |
|                        |       |                   |      |           | 14.00      | 16.00     | Sand      |               |              |                      |         |               |           |      |
|                        |       |                   |      |           | 16.00      | 70.00     | Bentonite |               |              |                      |         |               |           |      |
|                        |       |                   |      |           |            |           |           | Water Strikes |              |                      |         |               |           |      |
|                        |       |                   |      |           |            |           |           | Strike (m)    | Rises To (m) | Time (min)           | Remarks |               |           |      |
|                        |       |                   |      |           |            |           |           | 43.50         | 37.00        | 20                   |         |               |           |      |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed







|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425199.25</b>   | Northing: <b>558485.11</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.43mAOD</b> | Final Depth: <b>70.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ALB+GS</b>    | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 11/12/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 11/12/2017 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Legend             | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |          |     |     |     |    |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                               |                      |                       |                         |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run | TCR | SCR | RQD | If |  |
| <b>Destructured to residual very weak to weak dark grey MUDSTONE and fine grained SANDSTONE.</b><br><i>From 50.00m to 52.10m recovered as slightly sandy clayey subangular to subrounded fine to coarse gravel with low cobble content. Sand is medium to coarse. Cobbles are subangular to subrounded.</i>                                                                                                                                                                                                                                                                                                                                                                                                        | [Dotted Pattern]   | 50.40                         |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | 51.30                         |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <i>From 51.00m to 52.40m Assumed Zone of Core Loss.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <i>From 52.40m to 53.00m, non-intact.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | [Dotted Pattern]   | 53.70                         | -37.27               |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | 53.85                         |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <i>From 53.00m to 53.35m, Assumed Zone of Core Loss</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <b>Medium strong to strong thinly laminated light and dark grey fine to medium grained SANDSTONE. Discontinuities are set 1) extremely closely spaced subvertical (80-90 degrees) undulating rough and set 2) extremely to very close subhorizontal (15-20 degrees) undulating smooth.</b><br><i>From 54.15m to 54.50m Assumed Zone of Core Loss.</i><br><i>From 54.50m to 54.63m recovered as subangular to subrounded fine to coarse gravel and cobbles.</i><br><i>From 54.78m to 54.83m recovered as slightly sandy clayey subangular to subrounded fine to coarse gravel. Sand is fine to coarse.</i><br><i>From 55.20m to 55.50m recovered as subangular to subrounded fine to coarse gravel and cobbles.</i> | [Dotted Pattern]   | 54.83 - 55.20                 |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | 55.60                         |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <i>From 55.87m to 56.00m recovered as slightly gravelly slightly sandy silty clay. Gravel is subangular to subrounded fine to medium with rare calcite. Sand is fine to coarse.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <i>From 56.45m to 56.50m recovered as subangular to subrounded fine to coarse gravel and cobbles.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | [Dotted Pattern]   | 56.60                         |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | 57.25                         | -40.82               |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <i>From 57.25m to 57.32m recovered as slightly silty gravelly clay. Gravel is subangular to subrounded fine to medium.</i><br><i>From 57.50m to 57.77m recovered as subangular fine to coarse gravel and cobbles.</i><br><i>From 57.97m to 58.17m recovered as subangular fine to coarse gravel and cobbles.</i>                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <i>From 58.50m to 58.56m Assumed Zone of Core Loss.</i><br><i>From 58.56m to 58.62m recovered as slightly sandy slightly clayey subangular to subrounded fine to medium gravel. Sand is fine to coarse.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | [Dotted Pattern]   | 57.75                         |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | 58.60                         |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <i>From 58.50m to 58.56m Assumed Zone of Core Loss.</i><br><i>From 58.56m to 58.62m recovered as slightly sandy slightly clayey subangular to subrounded fine to medium gravel. Sand is fine to coarse.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
| <b>Interbedded dark grey MUDSTONE and SILTSTONE (Driller's Description).</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | [Horizontal Lines] | 59.00                         | -42.57               |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | 59.00                         |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |

|                                                                        |  |       |                   |      |           |            |            |              |            |          |                      |               |            |           |      |
|------------------------------------------------------------------------|--|-------|-------------------|------|-----------|------------|------------|--------------|------------|----------|----------------------|---------------|------------|-----------|------|
| Observations / Remarks                                                 |  | Misc. | Shift Information |      |           |            | Backfill   |              |            |          | Installations        |               |            |           |      |
| Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |  |       | Date              | Time | Depth (m) | Casing (m) | Water (m)  | From (m)     | To (m)     | Material | Instrument Details   |               | Resp. Zone | Depth (m) | Diam |
|                                                                        |  |       |                   |      |           |            |            |              |            |          | Standpipe Piezometer | 14.00 - 16.00 | 15.00      |           |      |
|                                                                        |  |       | Water Strikes     |      |           |            | Strike (m) | Rises To (m) | Time (min) | Remarks  |                      |               |            |           |      |
|                                                                        |  |       |                   |      |           |            |            |              |            |          | 43.50                | 37.00         | 20         |           |      |



CENTRAL ALLIANCE

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Wakefield WF2 0XJ
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Log Type
Combined Borehole

Sheet 7 of 7

Exploratory Hole Number

BH17-14

FINAL



CENTRAL ALLIANCE
GEO

Summary table with columns: Project No, Name, Location, Client, Location Details (Easting, Elevation, Logged By, Orientation), Methodology & Plant (From, Method, Plant Used), Scale, Checked By, Approved By, Start Date, Finish Date.

Main borehole log table with columns: Strata Description, Legend, Depth (m), Reduced Level (m), Hole phi (mm), Casing phi (mm), Water Level (m), Installation/Backfill, Samples & Testing (Depth, Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If).

Observations / Remarks table with columns: Misc., Shift Information (Date, Time, Depth, Casing, Water), Backfill (From, To, Material), Installations (Instrument Details, Resp. Zone, Depth, Diam), Water Strikes (Strike, Rises To, Time, Remarks).



|                                      |                              |                            |                       |                        |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------|------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant   |                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425272.04</b>    | Northing: <b>558473.26</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit | Plant Used: Hand Tools |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.22m AOD</b> | Final Depth: <b>43.95m</b> | 1.20 - 40.00          | Cable Percussion       | Dando 2000             |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                       |                        |                        |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                       |                        |                        |
|                                      |                              |                            |                       |                        | Checked: RPH           |
|                                      |                              |                            |                       |                        | Approved: BH           |
|                                      |                              |                            |                       |                        | Start Date: 29/11/2017 |
|                                      |                              |                            |                       |                        | End Date: 04/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 40.00         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 3.00            | 250       |
| 16.50           | 200       |
| 43.50           | 150       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 40.30               | -          | 16.50      | 20         | 20.10       |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 04/12/2017                        | Standpipe          | 10.00  | 0.00 - 10.00   | 50mm      |

If Methodology includes Dynamic Sampling refer to Runs table for info.

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 0.20   | Concrete    |
| 0.20 - 1.20   | Bentonite   |
| 1.20 - 10.00  | Gravel      |
| 10.00 - 43.95 | Bentonite   |

| Sample Summary             |    |                  |    |
|----------------------------|----|------------------|----|
| Environmental Samples      |    |                  |    |
| Soil                       | 3  | Water            | 0  |
| Geotechnical Samples       |    |                  |    |
| Bulk                       | 19 | Large Bulk       | 0  |
| Disturbed                  | 49 | Disturbed (NR)   | 0  |
| Piston                     | 0  | Piston (NR)      | 0  |
| Undisturbed                | 2  | Undisturbed (NR) | 0  |
| Undisturbed Thin Wall      |    |                  | 15 |
| Undisturbed Thin Wall (NR) |    |                  | 1  |
| Core Sample                |    |                  | 0  |

| Standard Penetration Test Summary |           |            |           |               |            |                        |     |                             |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|-----|-----------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N   | Reported Result             | Hammer Ref |
| Split Spoon                       | 2.50      | 2.50       | DRY       | 3             | 8          | 450                    | 8   | N=8 (1,2/2,2,2,2)           | AR1134     |
| Split Spoon                       | 4.50      | 3.00       | DRY       | 5             | 10         | 450                    | 10  | N=10 (3,2/2,2,3,3)          | AR1134     |
| Split Spoon                       | 6.50      | 3.00       | DRY       | 4             | 9          | 450                    | 9   | N=9 (2,2/2,3,2,2)           | AR1134     |
| Split Spoon                       | 8.50      | 3.00       | DRY       | 5             | 14         | 450                    | 14  | N=14 (2,3/3,3,4,4)          | AR1134     |
| Split Spoon                       | 10.50     | 3.00       | DRY       | 4             | 15         | 450                    | 15  | N=15 (2,2/3,3,4,4)          | AR1134     |
| Split Spoon                       | 13.50     | 3.00       | DRY       | 4             | 14         | 450                    | 14  | N=14 (2,2/3,3,4,4)          | AR1134     |
| Split Spoon                       | 16.50     | 15.00      | DRY       | 5             | 16         | 450                    | 16  | N=16 (2,3/3,4,4,5)          | AR1134     |
| Split Spoon                       | 19.50     | 16.50      | DRY       | 4             | 14         | 450                    | 14  | N=14 (2,2/3,3,4,4)          | AR1134     |
| Split Spoon                       | 22.50     | 16.50      | DRY       | 5             | 16         | 450                    | 16  | N=16 (2,3/4,4,4,4)          | AR1134     |
| Split Spoon                       | 25.50     | 16.50      | DRY       | 5             | 17         | 450                    | 17  | N=17 (2,3/4,4,4,5)          | AR1134     |
| Split Spoon                       | 28.50     | 16.50      | DRY       | 4             | 18         | 450                    | 18  | N=18 (2,2/4,4,4,6)          | AR1134     |
| Split Spoon                       | 31.50     | 16.50      | DRY       | 6             | 13         | 450                    | 18  | N=18 (2,4/4,5,4,5)          | AR1134     |
| Split Spoon                       | 34.50     | 16.50      | DRY       | 6             | 11         | 450                    | 16  | N=16 (2,4/4,3,4,5)          | AR1134     |
| Split Spoon                       | 37.50     | 16.50      | DRY       | 8             | 12         | 450                    | 17  | N=17 (4,4/4,4,5,7)          | AR1134     |
| Split Spoon                       | 40.50     | 40.50      | 20.70     | 10            | 34         | 450                    | 34  | N=34 (5,5/9,10,8,7)         | AR1134     |
| Split Spoon                       | 43.50     | 43.50      | 21.30     | 25            | 100        | 230                    | 100 | (25 for 75mm/100 for 155mm) | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Chiselling    |                 | Water Added |        |
|---------------|-----------------|-------------|--------|
| Depth (m)     | Duration (mins) | Depth (m)   | Litres |
| 43.30 - 43.50 | 60              |             |        |

| Drilling Flush |            |              |          |
|----------------|------------|--------------|----------|
| Depth (m)      | Flush Type | Flush Colour | Return % |
|                |            |              |          |

| Dynamic Sampling Runs |           |            |         |
|-----------------------|-----------|------------|---------|
| Depth (m)             | Diam (mm) | Recovery % | Remarks |
|                       |           |            |         |





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Log Type  
**Cable Percussion**  
Sheet 1 of 5

Exploratory Hole Number  
**BH17-15**  
**FINAL**



|                                      |                             |                            |                        |                                         |                                   |                         |
|--------------------------------------|-----------------------------|----------------------------|------------------------|-----------------------------------------|-----------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant    |                                         |                                   | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425272.04</b>   | Northing: <b>558473.26</b> | Depth (m): 0.00 - 1.20 | Method: Inspection Pit Cable Percussion | Plant Used: Hand Tools Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.22mAOD</b> | Final Depth: <b>43.95m</b> | 1.20 - 40.00           |                                         |                                   | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                        |                                         |                                   | Start Date: 29/11/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                        |                                         |                                   | Finish Date: 04/12/2017 |

| Strata Description                                                                                                        | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |            |                                  |
|---------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|------------|----------------------------------|
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref        | Test Results                     |
| MADE GROUND: TOPSOIL.                                                                                                     |        | 0.15                          |                      |                   |                      |                       |                         |                 |                         |                   |            |                                  |
| MADE GROUND: Stiff brownish grey gravelly CLAY. Gravel is subangular to subrounded fine to medium limestone and mudstone. |        | 0.15                          | 17.07                |                   |                      |                       |                         |                 |                         | 0.20              | 1 ES       | PID 0.20m = 0.1ppm               |
| MADE GROUND: Brownish grey clayey subangular to subrounded fine to coarse mudstone and limestone GRAVEL.                  |        | 0.35                          |                      |                   |                      |                       |                         |                 |                         | 0.30              | 2 D        |                                  |
| Firm to stiff laminated grey CLAY.                                                                                        |        | 0.50                          | 16.72                |                   |                      |                       |                         |                 |                         | 0.70              | 3 ES       | PID 0.70m = 0.0ppm               |
|                                                                                                                           |        | 0.80                          | 16.42                |                   |                      |                       |                         |                 |                         | 0.70 - 1.20       | 4 D<br>5 B |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 1.50              | 6 ES       | 15 blows, 100% Recovery          |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 1.50 - 1.95       | 7 UT       | PID 1.50m = 0.2ppm               |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.00              | 8 D        |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.50 - 2.95       | 10 B       | SPT(S) 2.50m, N=8 (1,2/2,2,2,2)  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.50 - 2.95       | 9 D        |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.00              | 11 D       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       | 250                     |                 |                         | 3.50 - 3.95       | 12 UT      | 30 blows, 100% Recovery          |
|                                                                                                                           |        |                               |                      |                   |                      |                       | 3.00                    |                 |                         | 4.00              | 13 D       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.50 - 4.95       | 14 D       | SPT(S) 4.50m, N=10 (3,2/2,3,3,3) |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.50 - 4.95       | 15 B       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.00              | 16 D       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.50 - 5.95       | 17 UT      | 30 blows, 100% Recovery          |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.00              | 18 D       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.50 - 6.95       | 19 D       | SPT(S) 6.50m, N=9 (2,2/2,3,2,2)  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.50 - 6.95       | 20 B       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.00              | 21 D       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.50              | U          | 32 blows, 100% Recovery          |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.50 - 7.95       | 22 UT      |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.00              | 23 D       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.50 - 8.95       | 24 D       | SPT(S) 8.50m, N=14 (2,3/3,3,4,4) |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.50 - 8.95       | 25 B       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.00              | 26 B       |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.50              | U          | 30 blows, 100% Recovery          |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.50 - 9.95       | 27 UT      |                                  |
|                                                                                                                           |        |                               |                      |                   |                      |                       |                         |                 |                         | 10.00             | 28 D       |                                  |

Continued on Next Page

|                                                                           |                                                                                                                                                                          |                   |         |           |            |           |           |        |           |                    |              |           |       |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------|-----------|------------|-----------|-----------|--------|-----------|--------------------|--------------|-----------|-------|
| Observations / Remarks<br>1. 01/12/17 Sand blew from 40.30m up to 32.00m. | Misc.<br><i>Groundwater Encountered</i><br><i>Casing Used</i><br><i>Monitoring Point/s Installed</i><br><i>Hammer Ref. &amp; Energy Ratio (%)</i><br><i>AR1134 (56%)</i> | Shift Information |         |           |            |           | Backfill  |        |           | Installations      |              |           |       |
|                                                                           |                                                                                                                                                                          | Date              | Time    | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m) | Material  | Instrument Details | Resp. Zone   | Depth (m) | Diam. |
|                                                                           |                                                                                                                                                                          | 29/11             | 17:00   | 17.00     | 15.00      | DRY       | 0.00      | 0.20   | Concrete  | Standpipe          | 0.00 - 10.00 | 10.00     | 50mm  |
|                                                                           |                                                                                                                                                                          | 30/11             | 08:00   | 17.00     | 15.00      | DRY       | 0.20      | 1.20   | Bentonite |                    |              |           |       |
| 30/11                                                                     | 17:00                                                                                                                                                                    | 40.00             | 16.50   | DRY       | 1.20       | 10.00     | Gravel    |        |           |                    |              |           |       |
| 01/12                                                                     | 08:00                                                                                                                                                                    | 40.00             | 16.50   | DRY       | 10.00      | 43.95     | Bentonite |        |           |                    |              |           |       |
| Groundwater Strikes                                                       |                                                                                                                                                                          |                   |         |           |            |           |           |        |           |                    |              |           |       |
| Strike (m)                                                                | Rises To (m)                                                                                                                                                             | Time (min)        | Remarks |           |            |           |           |        |           |                    |              |           |       |
| 40.30                                                                     | 20.10                                                                                                                                                                    | 20                |         |           |            |           |           |        |           |                    |              |           |       |



**CENTRAL ALLIANCE**  
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Log Type  
**Cable Percussion**  
Sheet 2 of 5

Exploratory Hole Number  
**BH17-15**  
FINAL



|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425272.04</b>   | Northing: <b>558473.26</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.22mAOD</b> | Final Depth: <b>43.95m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 29/11/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 04/12/2017 |

| Strata Description                 | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                                   |                                   |                                   |
|------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref                               | Test Results                      |                                   |
| Firm to stiff laminated grey CLAY. |        |                               |                      |                   |                      |                       |                         |                 |                         | 10.50 - 10.95     | 29 D                              | SPT(S) 10.50m, N=15 (2,2/3,4,4,4) |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 10.50 - 10.95     | 30 B                              |                                   |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         |                   | 11.00                             | 31 D                              |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         |                   | 12.00 - 12.45                     | 32 UT                             | 30 blows, 100% Recovery           |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         |                   | 12.50                             | 33 D                              |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         |                   | 13.50 - 13.95                     | 34 D                              | SPT(S) 13.50m, N=14 (2,2/3,3,4,4) |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         |                   | 13.50 - 13.95                     | 35 B                              |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         |                   | 14.50                             | 36 D                              |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         |                   | 15.00 - 15.45                     | 37 UT                             | 30 blows, 100% Recovery           |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         |                   | 15.50                             | 38 D                              |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 | 16.50 - 16.95           | 39 D              | SPT(S) 16.50m, N=16 (2,3/3,4,4,5) |                                   |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 | 16.50 - 16.95           | 40 B              |                                   |                                   |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 | 17.00                   | 41 D              |                                   |                                   |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 | 18.00 - 18.45           | 42 UT             | 32 blows, 100% Recovery           |                                   |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 | 18.50                   | 43 D              |                                   |                                   |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 | 19.50 - 19.95           | 44 D              | SPT(S) 19.50m, N=14 (2,2/3,3,4,4) |                                   |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 | 19.50 - 19.95           | 45 B              |                                   |                                   |                                   |
|                                    |        |                               |                      |                   |                      |                       |                         |                 | 20.00                   | 46 D              |                                   |                                   |                                   |

Continued on Next Page

|                                                                           |                                                                                                                                                  |                     |      |            |            |           |          |        |          |                    |              |            |           |       |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------|------------|------------|-----------|----------|--------|----------|--------------------|--------------|------------|-----------|-------|
| Observations / Remarks<br>1. 01/12/17 Sand blew from 40.30m up to 32.00m. | Misc.<br><i>Groundwater Encountered<br/>Casing Used<br/>Monitoring Point/s Installed<br/>Hammer Ref. &amp; Energy Ratio (%)<br/>AR1134 (56%)</i> | Shift Information   |      |            |            |           | Backfill |        |          | Installations      |              |            |           |       |
|                                                                           |                                                                                                                                                  | Date                | Time | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |              | Resp. Zone | Depth (m) | Diam. |
|                                                                           |                                                                                                                                                  |                     |      |            |            |           |          |        |          | Standpipe          | 0.00 - 10.00 | 10.00      | 50mm      |       |
|                                                                           |                                                                                                                                                  | Groundwater Strikes |      |            |            |           |          |        |          |                    |              |            |           |       |
| Strike (m)                                                                |                                                                                                                                                  | Rises To (m)        |      | Time (min) |            | Remarks   |          |        |          |                    |              |            |           |       |
|                                                                           |                                                                                                                                                  |                     |      |            |            |           |          |        |          |                    |              |            |           |       |



**CENTRAL ALLIANCE**  
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Log Type  
**Cable Percussion**  
Sheet 3 of 5

Exploratory Hole Number  
**BH17-15**  
FINAL



|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425272.04</b>   | Northing: <b>558473.26</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.22mAOD</b> | Final Depth: <b>43.95m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 29/11/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 04/12/2017 |

| Strata Description                 | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   |    |
|------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|----|
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      |    |
| Firm to stiff laminated grey CLAY. |        | (39.50)                       |                      |                   |                      |                       |                         | 20.10           |                         |                   |       |                                   |    |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 21.00 - 21.45     | 47 UT | 20 blows, 100% Recovery           | 21 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 21.50             | 48 D  |                                   | 22 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 22.50 - 22.95     | 49 D  | SPT(S) 22.50m, N=16 (2,3/4,4,4,4) | 23 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 22.50 - 22.95     | 50 B  |                                   | 23 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 23.50             | 51 D  |                                   | 25 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 24.00 - 24.45     | 52 UT | 25 blows, 100% Recovery           | 24 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 24.50             | 53 D  |                                   | 25 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 25.50 - 25.95     | 54 D  | SPT(S) 25.50m, N=17 (2,3/4,4,4,5) | 26 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 25.50 - 25.95     | 55 B  |                                   | 26 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 26.50             | 56 D  |                                   | 26 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 27.00 - 27.45     | 57 UT | 20 blows, 100% Recovery           | 27 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 27.50             | 58 D  |                                   | 28 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 28.50 - 28.95     | 59 D  | SPT(S) 28.50m, N=18 (2,2/4,4,4,6) | 29 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 28.50 - 28.95     | 60 B  |                                   | 29 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 29.50             | 61 D  |                                   | 29 |
|                                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 30.00 - 30.45     | 62 UT | 18 blows, 100% Recovery           | 30 |

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|                                                 |       |                   |      |           |            |           |          |        |               |                     |              |            |         |
|-------------------------------------------------|-------|-------------------|------|-----------|------------|-----------|----------|--------|---------------|---------------------|--------------|------------|---------|
| Observations / Remarks                          | Misc. | Shift Information |      |           |            | Backfill  |          |        | Installations |                     |              |            |         |
| 1. 01/12/17 Sand blew from 40.30m up to 32.00m. |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details  | Resp. Zone   | Depth (m)  | Diam.   |
|                                                 |       |                   |      |           |            |           |          |        |               | Standpipe           | 0.00 - 10.00 | 10.00      | 50mm    |
|                                                 |       |                   |      |           |            |           |          |        |               | Groundwater Strikes |              |            |         |
|                                                 |       |                   |      |           |            |           |          |        |               | Strike (m)          | Rises To (m) | Time (min) | Remarks |
|                                                 |       |                   |      |           |            |           |          |        |               |                     |              |            |         |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425272.04</b>   | Northing: <b>558473.26</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.22mAOD</b> | Final Depth: <b>43.95m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 29/11/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 04/12/2017 |

| Strata Description                 | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Chiselling<br>(mins) | Water Added<br>(Litres) | Hole Ø<br>(mm)<br>Depth (m) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing                 |       |                                   |
|------------------------------------|--------|----------------------------------|-------------------------|----------------------|-------------------------|-----------------------------|-------------------------------|-----------------|----------------------------|-----------------------------------|-------|-----------------------------------|
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | Depth (m)                         | Ref   | Test Results                      |
| Firm to stiff laminated grey CLAY. |        |                                  |                         |                      |                         |                             |                               |                 |                            | 30.50                             | 63 D  |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 31.50 - 31.95                     | 64 D  | SPT(S) 31.50m, N=18 (2,4/4,5,4,5) |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 31.50 - 31.95                     | 65 B  |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 32.50                             | 66 D  |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 33.00 - 33.45                     | 67 UT | 21 blows, 100% Recovery           |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 33.50                             | 68 D  |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 34.50 - 34.95                     | 69 D  | SPT(S) 34.50m, N=16 (2,4/4,3,4,5) |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 34.50 - 34.95                     | 70 B  |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 35.50                             | 71 D  |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               |                 |                            | 36.00 - 36.45                     | 72 UT | 15 blows, 100% Recovery           |
|                                    |        |                                  |                         |                      |                         |                             |                               | 36.50           | 73 D                       |                                   |       |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               | 37.50 - 37.95   | 74 D                       | SPT(S) 37.50m, N=17 (4,4/4,4,4,5) |       |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               | 37.50 - 37.95   | 75 B                       |                                   |       |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               | 38.50           | 76 D                       |                                   |       |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               | 39.00 - 39.45   | 77 UT                      | 20 blows, 100% Recovery           |       |                                   |
|                                    |        |                                  |                         |                      |                         |                             |                               | 39.50           | 78 D                       |                                   |       |                                   |
| Continued on Next Page             |        |                                  |                         |                      |                         | 150                         |                               |                 |                            |                                   |       |                                   |
|                                    |        |                                  |                         |                      |                         | 40.00                       |                               |                 |                            |                                   |       |                                   |

|                                                                           |                                                                                                                                                  |                     |      |            |            |           |          |        |          |                    |              |            |           |       |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------|------------|------------|-----------|----------|--------|----------|--------------------|--------------|------------|-----------|-------|
| Observations / Remarks<br>1. 01/12/17 Sand blew from 40.30m up to 32.00m. | Misc.<br><i>Groundwater Encountered<br/>Casing Used<br/>Monitoring Point/s Installed<br/>Hammer Ref. &amp; Energy Ratio (%)<br/>AR1134 (56%)</i> | Shift Information   |      |            |            |           | Backfill |        |          | Installations      |              |            |           |       |
|                                                                           |                                                                                                                                                  | Date                | Time | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |              | Resp. Zone | Depth (m) | Diam. |
|                                                                           |                                                                                                                                                  |                     |      |            |            |           |          |        |          | Standpipe          | 0.00 - 10.00 | 10.00      | 50mm      |       |
|                                                                           |                                                                                                                                                  | Groundwater Strikes |      |            |            |           |          |        |          |                    |              |            |           |       |
| Strike (m)                                                                |                                                                                                                                                  | Rises To (m)        |      | Time (min) |            | Remarks   |          |        |          |                    |              |            |           |       |
|                                                                           |                                                                                                                                                  |                     |      |            |            |           |          |        |          |                    |              |            |           |       |



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EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Cable Percussion**  
Sheet 5 of 5

Exploratory Hole Number  
**BH17-15**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425272.04</b>    | Northing: <b>558473.26</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.22m AOD</b> | Final Depth: <b>43.95m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 29/11/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 04/12/2017 |

| Strata Description                                                                                           | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                       |                                                                |
|--------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-----------------------------------------|----------------------------------------------------------------|
|                                                                                                              |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)                               | Ref                                                            |
| Firm to stiff laminated grey CLAY.                                                                           |        | 40.30                         | -23.08                |                   |                      |                       |                         | 40.30           |                         |                                         |                                                                |
| Dense yellowish grey fine to coarse SAND.                                                                    |        | (0.70)                        |                       |                   |                      |                       |                         |                 |                         | 40.50<br>40.50 - 40.95<br>40.50 - 40.95 | 79 D<br>80 D<br>81 B<br>SPT(S) 40.50m, N=34 (5,5/9,10,8,7)     |
| Stiff grey weakly laminated CLAY.                                                                            |        | 41.00                         | -23.78                |                   |                      |                       |                         |                 |                         | 41.50                                   | 82 D                                                           |
|                                                                                                              |        | (1.70)                        |                       |                   |                      |                       |                         |                 |                         | 42.00 - 42.45<br>42.00 - 42.45          | 83 UT-NR<br>84 B<br>100 blows, 0% Recovery                     |
| Stiff to very stiff grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone. |        | 42.70                         | -25.48                |                   |                      |                       |                         |                 |                         | 43.00                                   | 85 D                                                           |
|                                                                                                              |        | (1.00)                        |                       | 60                |                      |                       | 150<br>43.50            |                 |                         | 43.50 - 43.95<br>43.50 - 43.95          | 86 D<br>87 B<br>SPT(S) 43.50m, 100 (25 for 75mm/100 for 155mm) |
| Weak grey MUDSTONE.                                                                                          |        | 43.70                         | -26.48                |                   |                      |                       |                         |                 |                         |                                         |                                                                |
|                                                                                                              |        | (0.25)                        |                       |                   |                      |                       |                         |                 |                         |                                         |                                                                |
| EOH at 43.95m - Scheduled Depth                                                                              |        | 43.95                         | -26.73                |                   |                      |                       |                         |                 |                         |                                         |                                                                |

|                                                                           |                                                                                                                                   |                     |              |            |            |           |          |        |               |                    |              |           |       |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------|------------|------------|-----------|----------|--------|---------------|--------------------|--------------|-----------|-------|
| Observations / Remarks<br>1. 01/12/17 Sand blew from 40.30m up to 32.00m. | Misc.<br>Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed<br>Hammer Ref. & Energy Ratio (%)<br>AR1134 (56%) | Shift Information   |              |            |            |           | Backfill |        | Installations |                    |              |           |       |
|                                                                           |                                                                                                                                   | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details | Resp. Zone   | Depth (m) | Diam. |
|                                                                           |                                                                                                                                   |                     |              |            |            |           |          |        |               | Standpipe          | 0.00 - 10.00 | 10.00     | 50mm  |
|                                                                           |                                                                                                                                   | Groundwater Strikes |              |            |            |           |          |        |               |                    |              |           |       |
|                                                                           |                                                                                                                                   | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                    |              |           |       |
|                                                                           |                                                                                                                                   |                     |              |            |            |           |          |        |               |                    |              |           |       |



|                                      |                              |                            |                     |                               |               |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|---------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |               | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425273.88</b>    | Northing: <b>558524.60</b> | From (m)            | Method                        | Plant Used    | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.63m AOD</b> | Final Depth: <b>8.45m</b>  | 0.00 - 1.20         | Inspection Pit                | Hand Tools    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   | 1.20 - 3.20         | Dynamic Sampling (Windowless) | Massenza MIP3 | Start Date: 18/01/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 3.20 - 8.45         | Rotary Coring                 | Massenza MIP3 | End Date: 22/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 8.45          | 87        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 4.00            | 87        |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 8.45 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 4  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 8  | Large Bulk       | 0 |
| Disturbed                  | 13 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                            |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|----------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result            | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 3             | 17         | 450                    | 17 | N=17 (1,2/3,5,4,5)         | DG01       |
| Split Spoon                       | 1.80      | 1.80       | -         | 15            | 28         | 450                    | 28 | N=28 (4,11/10,9,5,4)       | DG01       |
| Split Spoon                       | 2.80      | 2.00       | -         | 10            | 31         | 450                    | 31 | N=31 (3,7/5,5,6,15)        | DG01       |
| Split Spoon                       | 4.00      | 2.00       | -         | 15            | 50         | 340                    |    | 50 (8,7/50 for 190mm)      | DG01       |
| Cone                              | 5.00      | 4.00       | -         | 25            | 0          | 115                    |    | 0 (25 for 115mm/0 for 0mm) | DG01       |
| Split Spoon                       | 6.50      | 4.00       | -         | 8             | 19         | 450                    | 19 | N=19 (4,4/5,5,4,5)         | DG01       |
| Split Spoon                       | 8.00      | 4.00       | -         | 8             | 18         | 450                    | 18 | N=18 (4,4/4,5,5,4)         | DG01       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| DG01            | 61               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.80                         | 128       | 100        |         |
| 1.80 - 2.80                         | 113       | 100        |         |



|                                      |                             |                            |                                           |                                                                  |                                              |                         |
|--------------------------------------|-----------------------------|----------------------------|-------------------------------------------|------------------------------------------------------------------|----------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                       |                                                                  |                                              | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425273.88</b>   | Northing: <b>558524.60</b> | From (m)                                  | Method                                                           | Plant Used                                   | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.63mAOD</b> | Final Depth: <b>8.45m</b>  | 0.00 - 1.20<br>1.20 - 3.20<br>3.20 - 8.45 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Rotary Coring | Hand Tools<br>Massenza MIP3<br>Massenza MIP3 | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                           |                                                                  |                                              | Start Date: 18/01/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                           |                                                                  |                                              | Finish Date: 22/01/2018 |

| Strata Description                                                                                                                                                                                                   | Legend | Depth (m) (Stratum Thickness)      | Reduced Level (mAOD)    | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing         |                                                          |              | Coring |              |     |     |     |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------|-------------------------|-----------------------|-------------------------|-----------------|-------------------------|---------------------------|----------------------------------------------------------|--------------|--------|--------------|-----|-----|-----|----|
|                                                                                                                                                                                                                      |        |                                    |                         |                       |                         |                 |                         | Depth (m)                 | Ref                                                      | Test Results | Method | Core Run     | TCR | SCR | RQD | If |
| MADE GROUND: Dark brown slightly silty CLAY with rootlets.                                                                                                                                                           |        | 0.10<br>0.20                       |                         |                       |                         |                 |                         | 1 D<br>2 ES               | PID 0.20m = 0.4ppm                                       |              |        |              |     |     |     |    |
| MADE GROUND: Dark brown and grey subangular to subrounded fine to medium limestone, sandstone, clinker and siltstone GRAVEL.                                                                                         |        | 0.40<br>0.60                       | 22.23<br>22.03          |                       |                         |                 |                         | 7 B<br>3 D<br>4 ES        | PID 0.70m = 0.4ppm                                       |              |        |              |     |     |     |    |
| MADE GROUND: Dark to light brown greyish gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to medium sandstone limestone and siltstone. Cobbles are subangular to subrounded sandstone. |        | 1.00<br>1.20                       | 21.43                   |                       |                         |                 |                         | 5 D<br>6 ES<br>8 D<br>9 B | PID 1.00m = 0.3ppm<br>SPT(S) 1.20m, N=17 (1,2/3,5,4,5)   |              |        |              |     |     |     | 1  |
| MADE GROUND: Brown and grey subangular to subrounded fine to coarse limestone sandstone and siltstone GRAVEL.                                                                                                        |        | 1.80<br>2.00                       | 20.63                   |                       |                         |                 |                         | 10 D<br>11 ES             | SPT(S) 1.80m, N=28 (4,11/10,9,5,4)<br>PID 2.00m = 0.4ppm |              |        |              |     |     |     | 2  |
| MADE GROUND: Dark to light brownish grey slightly sandy very gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse limestone, sandstone and siltstone.                            |        | 2.20<br>2.50                       |                         |                       |                         |                 |                         | 12 D                      |                                                          |              |        |              |     |     |     |    |
| MADE GROUND: Dark grey gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and coal. Sand is fine to coarse.                                                                 |        | 3.20<br>3.35<br>3.65               | 19.43<br>19.28<br>18.98 |                       |                         |                 |                         | 14 B                      |                                                          |              |        | 3.20<br>4.00 | 60  | 0   | 0   |    |
| No Recovery.                                                                                                                                                                                                         |        | 3.85<br>4.00                       | 18.63                   |                       | 87<br>4.00              |                 |                         | 15 D<br>16 B              | SPT(S) 4.00m, 50 (8,7/50 for 190mm)                      |              |        |              |     |     |     | 4  |
| MADE GROUND: Sandstone BOULDER.<br>From 3.85m to 4.00m recovered as clayey subangular to subrounded medium to coarse gravel and cobbles.                                                                             |        | 4.00<br>5.00                       |                         |                       |                         |                 |                         | 17 D<br>19 B              | SPT(C) 5.00m, 0 (25 for 115mm/0 for 0mm)                 |              |        |              |     |     |     | 5  |
| Brown subangular to subrounded fine to coarse sandstone, limestone and siltstone GRAVEL with low cobble content. Cobbles are subangular to subrounded sandstone and limestone.                                       |        | 5.00<br>5.50                       | 17.63<br>17.13          |                       |                         |                 |                         | 18 D                      |                                                          |              |        | 5.00<br>6.50 | 89  | 0   | 0   | NI |
| Soft grey gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone siltstone and coal. Sand is medium to coarse.                                                                             |        | 6.50<br>6.50 - 6.95<br>6.50 - 7.50 | 16.13                   |                       |                         |                 |                         | 21 D<br>20 D<br>22 B      | SPT(S) 6.50m, N=19 (4,4/5,5,4,5)                         |              |        |              |     |     |     | 7  |
| Firm to stiff thinly laminated grey orangish CLAY.                                                                                                                                                                   |        | 7.50<br>7.50 - 8.00                |                         |                       |                         |                 |                         | 23 D<br>24 B              |                                                          |              |        | 6.50<br>8.00 | 67  | 0   | 0   |    |
| Soft to firm grey gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone siltstone and coal. Sand is fine to coarse.                                                                       |        | 8.00 - 8.45                        |                         |                       |                         |                 |                         | 25 D                      | SPT(S) 8.00m, N=18 (4,4/4,5,5,4)                         |              |        |              |     |     |     | 8  |
| EOH at 8.45m - Scheduled depth                                                                                                                                                                                       |        | 8.45                               | 14.18                   | 87<br>8.45            |                         |                 |                         |                           |                                                          |              |        |              |     |     |     |    |

|                                                                                                |                                                                                              |                   |              |            |            |           |          |        |           |                    |  |            |           |      |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|--------------------|--|------------|-----------|------|
| Observations / Remarks<br>Drilling continued by Rotary Coring through base of embankment fill. | Misc.<br><i>No Groundwater Encountered<br/>Casing Used<br/>No Monitoring Point Installed</i> | Shift Information |              |            |            |           | Backfill |        |           | Installations      |  |            |           |      |
|                                                                                                |                                                                                              | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                                                                                                |                                                                                              |                   |              |            |            |           | 0.00     | 8.45   | Bentonite |                    |  |            |           |      |
|                                                                                                |                                                                                              | Water Strikes     |              |            |            |           |          |        |           |                    |  |            |           |      |
|                                                                                                |                                                                                              | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                    |  |            |           |      |



|                                      |                             |                            |                                                               |                                                     |                                                                                |
|--------------------------------------|-----------------------------|----------------------------|---------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                                           |                                                     | Scale: 1:50                                                                    |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425273.31</b>   | Northing: <b>558509.04</b> | From (m)                                                      | Method                                              | Plant Used                                                                     |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.02mAOD</b> | Final Depth: <b>65.00m</b> | 0.00 - 1.20<br>1.20 - 41.90<br>41.90 - 51.50<br>51.50 - 65.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000<br>Frasse PLG<br>Frasse PLG                           |
| Client: <b>SLIV</b>                  | Logger: <b>GS+NE</b>        | Grid System: <b>OSGB</b>   |                                                               |                                                     |                                                                                |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                                               |                                                     |                                                                                |
|                                      |                             |                            |                                                               |                                                     | Checked: RPH<br>Approved: BH<br>Start Date: 05/12/2017<br>End Date: 21/12/2017 |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 3.00          | 250       |
| 15.00         | 200       |
| 41.90         | 150       |
| 51.50         | 140       |
| 65.00         | 120       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 3.00            | 250       |
| 15.00           | 200       |
| 41.70           | 150       |
| 49.50           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 39.80               | -          | 37.50      | 20         | 24.20       |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 65.00 | Bentonite   |

| Sample Summary               |    |                  |    |
|------------------------------|----|------------------|----|
| <i>Environmental Samples</i> |    |                  |    |
| Soil                         | 3  | Water            | 0  |
| <i>Geotechnical Samples</i>  |    |                  |    |
| Bulk                         | 17 | Large Bulk       | 0  |
| Disturbed                    | 50 | Disturbed (NR)   | 0  |
| Piston                       | 0  | Piston (NR)      | 0  |
| Undisturbed                  | 0  | Undisturbed (NR) | 0  |
| Undisturbed Thin Wall        |    |                  | 16 |
| Undisturbed Thin Wall (NR)   |    |                  | 0  |
| Core Sample                  |    |                  | 0  |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|---------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                 | Hammer Ref |
| Split Spoon                       | 2.50      | 2.50       | Dry       | 5             | 15         | 450                    | 15 | N=15 (2,3/3,4,4,4)              | AR1134     |
| Split Spoon                       | 4.50      | 3.00       | Dry       | 5             | 16         | 450                    | 16 | N=16 (2,3/4,4,4,4)              | AR1134     |
| Split Spoon                       | 7.50      | 3.00       | Dry       | 3             | 14         | 450                    | 14 | N=14 (1,2/3,3,4,4)              | AR1134     |
| Split Spoon                       | 10.50     | 3.00       | Dry       | 3             | 13         | 450                    | 13 | N=13 (1,2/3,3,4,3)              | AR1134     |
| Split Spoon                       | 13.50     | 3.00       | Dry       | 4             | 15         | 450                    | 15 | N=15 (2,2/3,4,4,4)              | AR1134     |
| Split Spoon                       | 16.50     | 15.00      | Dry       | 3             | 15         | 450                    | 15 | N=15 (1,2/3,4,5,3)              | AR1134     |
| Split Spoon                       | 19.50     | 15.00      | Dry       | 5             | 16         | 450                    | 16 | N=16 (2,3/4,4,4,4)              | AR1134     |
| Split Spoon                       | 22.50     | 15.00      | Dry       | 5             | 16         | 450                    | 16 | N=16 (2,3/4,4,4,5)              | AR1134     |
| Split Spoon                       | 25.50     | 15.00      | Dry       | 7             | 17         | 450                    | 17 | N=17 (3,4/4,5,4,4)              | AR1134     |
| Split Spoon                       | 28.50     | 15.00      | Dry       | 6             | 18         | 450                    | 18 | N=18 (3,3/4,4,5,5)              | AR1134     |
| Split Spoon                       | 31.50     | 15.00      | Dry       | 5             | 18         | 450                    | 18 | N=18 (2,3/4,4,5,5)              | AR1134     |
| Split Spoon                       | 34.50     | 15.00      | Dry       | 5             | 17         | 450                    | 17 | N=17 (2,3/4,4,5,4)              | AR1134     |
| Split Spoon                       | 37.50     | 37.50      | Dry       | 5             | 19         | 450                    | 19 | N=19 (2,3/4,4,4,7)              | AR1134     |
| Split Spoon                       | 40.50     | 40.50      | 23.70     | 6             | 26         | 450                    | 26 | N=26 (3,3/5,6,7,8)              | AR1134     |
| Split Spoon                       | 41.70     | 41.70      | 27.00     | 20            | 100        | 285                    |    | 100 (10,10/100 for 135mm)       | AR1134     |
| Split Spoon                       | 41.90     | 41.70      | 26.50     | 25            | 100        | 135                    |    | 100 (25 for 30mm/100 for 105mm) | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| In-Situ Tests              |       |
|----------------------------|-------|
| PID                        | Count |
| PID                        | 3     |
| Hand Vane*                 | 0     |
| Standard Penetration Tests | 16    |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 41.50 - 41.70                       | 60              |             |        |
| 41.70 - 41.90                       | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 42.00 - 43.50             | Air/Mist   | Grey         | 90       |
| 43.50 - 45.00             | Air/Mist   | Grey         | 90       |
| 45.00 - 45.50             | Air/Mist   | Grey         | 50       |
| 45.50 - 46.50             | Air/Mist   | Grey         | 50       |
| 46.50 - 48.00             | Air/Mist   | Grey         | 95       |
| 48.00 - 49.50             | Air/Mist   | Grey         | 95       |
| 49.50 - 50.00             | Air/Mist   | Grey         | 95       |
| 50.00 - 51.50             | Air/Mist   | Grey         | 95       |
| 51.50 - 53.70             | Air/Mist   | Grey         | 95       |
| 53.70 - 54.10             | Air/Mist   | Grey         | 95       |
| 54.10 - 65.00             | Air/Mist   | Black/Grey   | 95       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |







**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Combined Borehole**  
Sheet 2 of 7

Exploratory Hole Number  
**BH17-16a**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425273.31</b>    | Northing: <b>558509.04</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.02m AOD</b> | Final Depth: <b>65.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS+NE</b>      | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 05/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 21/12/2017 |

| Strata Description | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   | Method | Coring   |     |     |     |    |  |  |  |
|--------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|--------|----------|-----|-----|-----|----|--|--|--|
|                    |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      |        | Core Run | TCR | SCR | RQD | If |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 10.50 - 10.95     | 24 D  | SPT(S) 10.50m, N=13 (1,2/3,3,4,3) |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 10.50 - 10.95     | 25 B  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 11.00             | 26 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 12.00 - 12.45     | 27 UT | 27 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 12.50             | 28 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 13.50 - 13.95     | 29 D  | SPT(S) 13.50m, N=15 (2,2/3,4,4,4) |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 13.50 - 13.95     | 30 B  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 14.00             | 31 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 15.00 - 15.45     | 32 UT | 25 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 15.00             | 33 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 16.50 - 16.95     | 34 D  | SPT(S) 16.50m, N=15 (1,2/3,4,5,3) |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 16.50 - 16.95     | 35 B  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 17.00             | 36 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 18.00 - 18.45     | 37 UT | 24 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 18.50             | 38 D  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 19.50 - 19.95     | 39 D  | SPT(S) 19.50m, N=16 (2,3/4,4,4,4) |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 19.50 - 19.95     | 40 B  |                                   |        |          |     |     |     |    |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 20.00             | 41 D  |                                   |        |          |     |     |     |    |  |  |  |

Continued on Next Page

|                        |       |                   |              |            |            |           |          |        |           |                    |  |            |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations      |  |            |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       | 21/12             | 07:30        | 49.50      | 46.50      | 16.10     | 0.00     | 65.00  | Bentonite |                    |  |            |           |      |
|                        |       | 21/12             | 18:00        | 65.00      | -          | -         |          |        |           |                    |  |            |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |           |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                    |  |            |           |      |
|                        |       | 39.80             | 24.20        | 20         |            |           |          |        |           |                    |  |            |           |      |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed











CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type
Combined Borehole
Sheet 7 of 7

Exploratory Hole Number
BH17-16a
FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425273.31, Northing: 558509.04, Elevation: 17.02m AOD, Final Depth: 65.00m, Logged By: GS+NE, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 05/12/2017
Finish Date: 21/12/2017

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole ø (mm) Depth (m), Casing ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If).
Row 65: EOH at 65.00m - Scheduled depth. Values: Depth 65.00, Reduced Level -47.98, Hole ø 120/65.00.

Observations / Remarks: Groundwater encountered Casing Used No Monitoring Point Installed
Shift Information: Date, Time, Depth (m), Casing (m), Water (m)
Backfill: From (m) 0.00, To (m) 65.00, Material Bentonite
Installations: Instrument Details, Resp. Zone, Depth (m), Diam
Water Strikes: Strike (m) 39.80, Rises To (m) 24.20, Time (min) 20, Remarks



|                                      |                             |                            |                                        |                                              |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|----------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                              |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425403.08</b>   | Northing: <b>558435.14</b> | From (m)<br>0.00 - 1.20<br>1.20 - 2.95 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.39mAOD</b> | Final Depth: <b>2.95m</b>  |                                        |                                              |                                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>          | Grid System: <b>OSGB</b>   |                                        |                                              |                                        | Start Date: 11/12/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                              |                                        | End Date: 11/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 2.95          | 250       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.50            | 250       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 2.95 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 4 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 2 | Large Bulk       | 0 |
| Disturbed                    | 4 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 1 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                     |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|---------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result     | Hammer Ref |
| Split Spoon                       | 2.50      | 2.50       | Dry       | 6             | 40         | 450                    | 40 | N=40 (2,4/10,10,10) | AR1134     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





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Log Type  
**Cable Percussion**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-17**  
FINAL



|                                      |                              |                            |                                         |                                              |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant                     |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425403.08</b>    | Northing: <b>558435.14</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 2.95 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.39m AOD</b> | Final Depth: <b>2.95m</b>  |                                         |                                              |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                                         |                                              |                                        | Start Date: 11/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                              |                                        | Finish Date: 11/12/2017 |

| Strata Description                                                                                                          | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                  |                      |                                                               |
|-----------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------|-------------------|----------------------|--------------------------|----------------------------|-----------------|-------------------------|------------------------------------|----------------------|---------------------------------------------------------------|
|                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | Depth (m)                          | Ref                  | Test Results                                                  |
| MADE GROUND: TOPSOIL.                                                                                                       |        | (0.10)                           | 16.29                 |                   |                      |                          |                            |                 |                         |                                    |                      |                                                               |
| MADE GROUND: Soft dark brown silty CLAY with occasional gravel. Gravel is subangular fine to medium of various lithologies. |        | 0.10<br>(0.40)                   |                       |                   |                      |                          |                            |                 |                         | 0.30<br>0.30                       | 1 ES<br>2 D          | PID 0.30m = 0.2ppm                                            |
| MADE GROUND: Firm grey slightly sandy slightly silty CLAY. Sand is fine to coarse.                                          |        | 0.50<br>(0.80)                   | 15.89                 |                   |                      |                          |                            |                 |                         | 0.70<br>0.70<br>0.70 - 1.50        | 3 ES<br>4 D<br>5 B   | PID 0.70m = 0.2ppm                                            |
| MADE GROUND: Firm to stiff laminated orangish grey reworked CLAY with occasional sand partings. Sand is fine.               |        | 1.30                             | 15.09                 |                   |                      |                          |                            |                 |                         | 1.50<br>1.50 - 1.95                | 6 ES<br>7 UT         | 20 blows, 75% Recovery<br>PID 1.50m = 0.2ppm                  |
| From 2.50m with rare subangular fine to coarse brick fragments                                                              |        | (1.65)                           |                       |                   |                      |                          |                            |                 |                         | 2.00                               | 8 D                  |                                                               |
| EOH at 2.95m - Abandoned due to obstruction                                                                                 |        | 2.95                             | 13.44                 |                   |                      | 250<br>2.95              | 250<br>2.95                |                 |                         | 2.50<br>2.50 - 2.95<br>2.50 - 2.95 | 9 ES<br>10 D<br>11 B | SPT(S) 2.50m, N=40<br>(2,4/10,10,10,10)<br>PID 2.50m = 0.2ppm |

|                                            |       |                     |       |           |            |           |          |        |           |                    |            |           |       |
|--------------------------------------------|-------|---------------------|-------|-----------|------------|-----------|----------|--------|-----------|--------------------|------------|-----------|-------|
| Observations / Remarks                     | Misc. | Shift Information   |       |           |            |           | Backfill |        |           | Installations      |            |           |       |
|                                            |       | Date                | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                                            |       | 11/12               | 17:00 | 2.95      | 2.50       | Dry       | 0.00     | 2.95   | Bentonite |                    |            |           |       |
|                                            |       | Groundwater Strikes |       |           |            |           |          |        |           |                    |            |           |       |
| Strike (m) Rises To (m) Time (min) Remarks |       |                     |       |           |            |           |          |        |           |                    |            |           |       |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                             |                            |                       |                                            |                                      |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------|--------------------------------------------|--------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant   |                                            |                                      | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425404.24</b>   | Northing: <b>558436.69</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit<br>Cable Percussion | Plant Used: Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.74mAOD</b> | Final Depth: <b>36.65m</b> | 1.20 - 36.65          |                                            |                                      | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>          | Grid System: <b>OSGB</b>   |                       |                                            |                                      | Start Date: 12-12-2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                       |                                            |                                      | End Date: 13-12-2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 36.65         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.00            | 200       |
| 36.20           | 150       |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
| 35.20               | 36.20      | 6.00       | 20         | 22.20       |  |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 13-12-2017                        | Standpipe Piezometer | 19.00  | 18.00 - 20.00  | 19mm      |

If Methodology includes Dynamic Sampling refer to Runs table for info.

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 0.50   | Concrete    |
| 0.50 - 18.00  | Bentonite   |
| 18.00 - 20.00 | Sand        |
| 20.00 - 36.65 | Bentonite   |

| Sample Summary             |    |                  |    |
|----------------------------|----|------------------|----|
| Environmental Samples      |    |                  |    |
| Soil                       |    | Water            |    |
|                            | 8  |                  | 0  |
| Geotechnical Samples       |    |                  |    |
| Bulk                       |    | Large Bulk       |    |
|                            | 12 |                  | 0  |
| Disturbed                  |    | Disturbed (NR)   |    |
|                            | 61 |                  | 0  |
| Piston                     |    | Piston (NR)      |    |
|                            | 0  |                  | 0  |
| Undisturbed                |    | Undisturbed (NR) |    |
|                            | 0  |                  | 0  |
| Undisturbed Thin Wall      |    |                  |    |
|                            |    |                  | 12 |
| Undisturbed Thin Wall (NR) |    |                  |    |
|                            |    |                  | 0  |
| Core Sample                |    |                  |    |
|                            |    |                  | 0  |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                  |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|----------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                  | Hammer Ref |
| Split Spoon                       | 2.50      | 2.50       | Dry       | 5             | 13         | 450                    | 13 | N=13 (2,3/3,3,3,4)               | AR1134     |
| Split Spoon                       | 4.50      | 2.50       | Dry       | 4             | 12         | 450                    | 12 | N=12 (2,2/3,3,3,3)               | AR1134     |
| Split Spoon                       | 7.50      | 6.00       | Dry       | 4             | 14         | 450                    | 14 | N=14 (2,2/3,3,4,4)               | AR1134     |
| Split Spoon                       | 10.50     | 6.00       | Dry       | 5             | 18         | 450                    | 18 | N=18 (2,3/4,5,5,4)               | AR1134     |
| Split Spoon                       | 13.50     | 6.00       | Dry       | 6             | 18         | 450                    | 18 | N=18 (3,3/4,5,5,5)               | AR1134     |
| Split Spoon                       | 16.50     | 6.00       | Dry       | 7             | 25         | 450                    | 25 | N=25 (3,4/5,6,6,8)               | AR1134     |
| Split Spoon                       | 19.50     | 6.00       | Dry       | 7             | 28         | 450                    | 28 | N=28 (3,4/7,7,7,7)               | AR1134     |
| Split Spoon                       | 22.50     | 6.00       | Dry       | 8             | 24         | 450                    | 24 | N=24 (4,4/6,6,6,6)               | AR1134     |
| Split Spoon                       | 25.50     | 6.00       | Dry       | 7             | 29         | 450                    | 29 | N=29 (4,3/7,7,7,8)               | AR1134     |
| Split Spoon                       | 28.50     | 6.00       | Dry       | 7             | 25         | 450                    | 25 | N=25 (3,4/5,6,6,8)               | AR1134     |
| Split Spoon                       | 31.50     | 6.00       | Dry       | 7             | 23         | 450                    | 23 | N=23 (3,4/5,6,6,6)               | AR1134     |
| Split Spoon                       | 34.50     | 6.00       | Dry       | 16            | 56         | 450                    | 56 | N=56 (6,10/16,12,13,15)          | AR1134     |
| Split Spoon                       | 36.00     | 36.00      | 22.80     | 25            | 100        | 325                    |    | 100 (10,15/100 for 175mm)        | AR1134     |
| Split Spoon                       | 36.20     | 36.20      | 23        | 25            | 100        | 295                    |    | 100 (25 for 115mm/100 for 180mm) | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                              |                            |                             |                                    |                          |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------|------------------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant         |                                    |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425404.24</b>    | Northing: <b>558436.69</b> | Depth (m)                   | Method                             | Plant Used               | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.74m AOD</b> | Final Depth: <b>36.65m</b> | 0.00 - 1.20<br>1.20 - 36.65 | Inspection Pit<br>Cable Percussion | Hand Tools<br>Dando 2000 | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                             |                                    |                          | Start Date: 12-12-2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                             |                                    |                          | Finish Date: 13-12-2017 |

| Strata Description                                                                                                                                                                | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                  |                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|------------------------------------|---------------------------------------------------------------------------------|
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)                          | Ref                                                                             |
| <b>MADE GROUND: TOPSOIL.</b>                                                                                                                                                      |        | (0.10)                        | 16.64                |                   |                      |                       |                         |                 |                         |                                    |                                                                                 |
| <b>MADE GROUND: Soft to firm dark brown slightly gravelly slightly silty CLAY. Gravel is subangular fine to coarse of various lithologies.</b>                                    |        | 0.10<br>(0.60)                |                      |                   |                      |                       |                         |                 |                         | 0.30<br>0.30                       | 1 ES<br>2 D<br>PID 0.30m = 0.6ppm                                               |
| <b>MADE GROUND: Firm laminated orangish grey slightly gravelly CLAY with some roots. Gravel is subangular to subrounded fine to coarse sandstone.</b>                             |        | 0.70<br>(0.80)                | 16.04                |                   |                      |                       |                         |                 |                         | 0.70<br>0.70<br>0.70 - 1.50        | 3 ES<br>5 B<br>4 D<br>PID 0.70m = 0.5ppm                                        |
| <b>MADE GROUND: Firm laminated grey reworked slightly sandy CLAY with occasional gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium sandstone.</b> |        | 1.50<br>(2.50)                | 15.24                |                   |                      |                       |                         |                 |                         | 1.50<br>1.50 - 1.95                | 6 ES<br>7 UT<br>20 blows, 100% Recovery<br>PID 1.50m = 0.5ppm                   |
| <i>At 3.50m hydrocarbon odour.</i>                                                                                                                                                |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.00                               | 8 D                                                                             |
| <b>Firm to stiff laminated grey CLAY.</b>                                                                                                                                         |        | 4.00<br>(2.50)                | 12.74                |                   |                      |                       |                         |                 |                         | 2.50<br>2.50 - 2.95<br>2.50 - 2.95 | 9 ES<br>10 D<br>11 B<br>SPT(S) 2.50m, N=12 (2,2/3,3,3,4)<br>PID 2.50m = 3.6ppm  |
| <i>At 4.50m hydrocarbon odour.</i>                                                                                                                                                |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.00                               | 12 D                                                                            |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.50<br>3.50 - 3.95                | 13 ES<br>14 UT<br>25 blows, 100% Recovery<br>PID 3.50m = 1.0ppm                 |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.00                               | 15 D                                                                            |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.50<br>4.50 - 4.95<br>4.50 - 4.95 | 18 ES<br>16 D<br>17 B<br>SPT(S) 4.50m, N=12 (2,2/3,3,3,3)<br>PID 4.50m = 0.7ppm |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.00                               | 19 D                                                                            |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.50<br>5.50                       | 20 D<br>21 ES<br>PID 5.50m = 0.6ppm                                             |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         | 200<br>6.00     |                         | 6.00 - 6.45                        | 22 UT<br>30 blows, 100% Recovery                                                |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.50<br>6.50                       | 23 D<br>24 ES<br>PID 6.50m = 0.4ppm                                             |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.00                               | 25 D                                                                            |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.50 - 7.95<br>7.50 - 7.95         | 26 D<br>27 B<br>SPT(S) 7.50m, N=14 (2,2/3,3,4,4)                                |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.00                               | 28 D                                                                            |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.50                               | 29 D                                                                            |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.00 - 9.45                        | 30 UT<br>30 blows, 100% Recovery                                                |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.50                               | 31 D                                                                            |
|                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 10.00                              | 32 D                                                                            |

Continued on Next Page

|                        |       |                   |       |           |            |           |          |           |                     |                      |               |           |       |
|------------------------|-------|-------------------|-------|-----------|------------|-----------|----------|-----------|---------------------|----------------------|---------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information |       |           |            |           | Backfill |           |                     | Installations        |               |           |       |
|                        |       | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m)    | Material            | Instrument Details   | Resp. Zone    | Depth (m) | Diam. |
|                        |       | 12-12             | 17:00 | 27.50     | 6.00       | Dry       | 0.00     | 0.50      | Concrete            | Standpipe Piezometer | 18.00 - 20.00 | 19.00     | 19mm  |
|                        |       | 13-12             | 08:00 | 27.50     | 6.00       | Dry       | 0.50     | 18.00     | Bentonite           |                      |               |           |       |
|                        |       |                   |       |           |            | 18.00     | 20.00    | Sand      | Groundwater Strikes |                      |               |           |       |
|                        |       |                   |       |           |            | 20.00     | 36.65    | Bentonite | Strike (m)          | Rises To (m)         | Time (min)    | Remarks   |       |
|                        |       |                   |       |           |            |           |          |           | 35.20               | 22.20                | 20            |           |       |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
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Log Type  
**Cable Percussion**  
Sheet 2 of 4

Exploratory Hole Number  
**BH17-17a**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425404.24</b>    | Northing: <b>558436.69</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.74m AOD</b> | Final Depth: <b>36.65m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 12-12-2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 13-12-2017 |

| Strata Description | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   |    |
|--------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|----|
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 10.50 - 10.95     | 33 D  | SPT(S) 10.50m, N=18 (2,3/4,5,5,4) |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 10.50 - 10.95     | 34 B  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 11.00             | 35 D  | 11                                |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 11.50             | 36 D  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 12.00 - 12.45     | 37 UT | 30 blows, 100% Recovery           | 12 |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 12.50             | 38 D  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 13.50 - 13.95     | 39 D  | SPT(S) 13.50m, N=18 (3,3/4,4,5,5) |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 13.50 - 13.95     | 40 B  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 14.00             | 41 D  | 14                                |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 14.50             | 42 D  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 15.00 - 15.45     | 43 UT | 27 blows, 100% Recovery           | 15 |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 15.50             | 44 D  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 16.00             | 45 D  | 16                                |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 16.50 - 16.95     | 46 D  | SPT(S) 16.50m, N=25 (3,4/5,6,6,8) |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 17.00             | 47 D  | 17                                |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 17.50             | 48 D  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 18.00 - 18.45     | 49 UT | 23 blows, 100% Recovery           | 18 |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 18.50             | 50 D  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 19.00             | 51 D  | 19                                |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 19.50 - 19.95     | 52 D  | SPT(S) 19.50m, N=28 (3,4/7,7,7,7) |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 19.50 - 19.95     | 53 B  |                                   |    |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 20.00             | 54 D  | 20                                |    |

Continued on Next Page

|                        |       |                     |              |            |            |           |          |        |               |                      |               |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|---------------|----------------------|---------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        | Installations |                      |               |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details   | Resp. Zone    | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           |          |        |               | Standpipe Piezometer | 18.00 - 20.00 | 19.00     | 19mm  |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |               |                      |               |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                      |               |           |       |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Cable Percussion**  
Sheet 3 of 4

Exploratory Hole Number  
**BH17-17a**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425404.24</b>    | Northing: <b>558436.69</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.74m AOD</b> | Final Depth: <b>36.65m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 12-12-2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 13-12-2017 |

| Strata Description | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   |
|--------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 20.50             | 55 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 21.00 - 21.45     | 56 UT | 27 blows, 100% Recovery           |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 21.50             | 57 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 22.00             | 58 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         | 22.20           |                         | 22.50 - 22.95     | 59 D  | SPT(S) 22.50m, N=24 (4,4/6,6,6,6) |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 22.50 - 22.95     | 60 B  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 23.00             | 61 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 23.50             | 62 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 24.00 - 24.45     | 63 UT | 27 blows, 100% Recovery           |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 24.50             | 64 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 25.00             | 65 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 25.50 - 25.95     | 66 D  | SPT(S) 25.50m, N=29 (4,3/7,7,7,8) |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 25.50 - 25.95     | 67 B  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 26.00             | 68 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 26.50             | 69 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 27.00 - 27.45     | 70 UT | 32 blows, 100% Recovery           |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 27.50             | 71 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 28.00             | 72 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 28.50 - 28.95     | 73 D  | SPT(S) 28.50m, N=25 (3,4/5,6,6,8) |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 28.50 - 28.95     | 74 B  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 29.00             | 75 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 29.50             | 76 D  |                                   |
|                    |        |                               |                       |                   |                      |                       |                         |                 |                         | 30.00 - 30.45     | 78 UT | 29 blows, 100% Recovery           |

Continued on Next Page

|                        |       |                     |              |            |            |           |          |        |               |                      |               |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|---------------|----------------------|---------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        | Installations |                      |               |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details   | Resp. Zone    | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           |          |        |               | Standpipe Piezometer | 18.00 - 20.00 | 19.00     | 19mm  |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |               |                      |               |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                      |               |           |       |
|                        |       |                     |              |            |            |           |          |        |               |                      |               |           |       |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Cable Percussion**  
Sheet 4 of 4

Exploratory Hole Number  
**BH17-17a**  
**FINAL**



|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425404.24</b>   | Northing: <b>558436.69</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.74mAOD</b> | Final Depth: <b>36.65m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ALB</b>       | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 12-12-2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 13-12-2017 |

| Strata Description                                                                                            | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                                                                             |
|---------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|---------------------------------------------------------------------------------------------|
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                                                                                |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 30.50             | 79 D  |                                                                                             |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 31.00             | 80 D  |                                                                                             |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 31.50 - 31.95     | 81 D  | SPT(S) 31.50m, N=23 (3,4/5,6,6,6)                                                           |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 31.50 - 31.95     | 82 B  |                                                                                             |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 32.00             | 83 D  |                                                                                             |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 32.50             | 84 D  |                                                                                             |
| <i>From 32.50m to 34.00m with rare gravel. Gravel is subangular to subrounded fine to coarse sandstone.</i>   |        |                               |                      |                   |                      |                       |                         |                 |                         | 33.00 - 33.45     | 85 UT | 28 blows, 100% Recovery                                                                     |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 33.50             | 86 D  |                                                                                             |
| Grey slightly gravelly clayey fine to coarse SAND. Gravel is subrounded fine to coarse sandstone.             |        | 34.00                         | -17.26               |                   |                      |                       |                         |                 |                         | 34.00             | 87 D  |                                                                                             |
|                                                                                                               |        | (0.50)                        |                      |                   |                      |                       |                         |                 |                         |                   |       |                                                                                             |
| Firm thinly laminated grey gravelly silty CLAY. Gravel is subrounded fine sandstone.                          |        | 34.50                         | -17.76               |                   |                      |                       |                         |                 |                         | 34.50 - 34.95     | 88 D  | SPT(S) 34.50m, N=56 (6,10/16,12,13,15)                                                      |
|                                                                                                               |        | (1.20)                        |                      |                   |                      |                       |                         |                 |                         | 34.50 - 34.95     | 89 B  |                                                                                             |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 35.40             | 90 D  |                                                                                             |
| Grey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone.      |        | 35.70                         | -18.96               |                   |                      |                       |                         |                 |                         | 35.70             | 91 D  |                                                                                             |
|                                                                                                               |        | (0.60)                        |                      |                   |                      |                       |                         |                 |                         |                   |       |                                                                                             |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 36.00 - 36.45     | 92 D  | SPT(S) 36.00m, 100 (10,15/100 for 175mm)<br>SPT(S) 36.20m, 100 (25 for 115mm/100 for 180mm) |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 36.20             | 93 D  |                                                                                             |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 36.20 - 36.65     | 94 D  |                                                                                             |
| Dark grey slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to medium sandstone. |        | 36.30                         | -19.56               |                   |                      |                       |                         |                 |                         | 150               |       |                                                                                             |
|                                                                                                               |        | (0.35)                        |                      |                   |                      |                       |                         |                 |                         | 36.20             |       |                                                                                             |
| EOH at 36.65m - Scheduled Depth                                                                               |        | 36.65                         | -19.91               |                   |                      |                       |                         |                 |                         | 150               |       |                                                                                             |
|                                                                                                               |        |                               |                      |                   |                      |                       |                         |                 |                         | 36.65             |       |                                                                                             |

|                        |       |                     |              |            |            |           |          |        |          |                      |               |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|----------------------|---------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        |          | Installations        |               |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details   | Resp. Zone    | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           |          |        |          | Standpipe Piezometer | 18.00 - 20.00 | 19.00     | 19mm  |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |          |                      |               |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                      |               |           |       |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                             |                            |                                         |                                              |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                              |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425461.04</b>   | Northing: <b>558471.34</b> | From (m)<br>0.00 - 1.20<br>1.20 - 28.50 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.13mAOD</b> | Final Depth: <b>27.70m</b> |                                         |                                              |                                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                         |                                              |                                        | Start Date: 21/11/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                              |                                        | End Date: 22/11/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 27.70         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 3.00            | 250       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 27.70 | Bentonite   |

| Sample Summary               |    |                  |    |
|------------------------------|----|------------------|----|
| <i>Environmental Samples</i> |    |                  |    |
| Soil                         | 4  | Water            | 0  |
| <i>Geotechnical Samples</i>  |    |                  |    |
| Bulk                         | 24 | Large Bulk       | 0  |
| Disturbed                    | 32 | Disturbed (NR)   | 1  |
| Piston                       | 0  | Piston (NR)      | 0  |
| Undisturbed                  | 2  | Undisturbed (NR) | 0  |
| Undisturbed Thin Wall        |    |                  | 10 |
| Undisturbed Thin Wall (NR)   |    |                  | 0  |
| Core Sample                  |    |                  | 0  |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        | Hammer Ref |
| Split Spoon                       | 2.50      | 1.50       | DRY       | 4             | 10         | 450                    | 10 | N=10 (2,2/2,2,3,3)     | AR1134     |
| Split Spoon                       | 4.50      | 2.50       | DRY       | 4             | 9          | 450                    | 9  | N=9 (2,2/2,2,3)        | AR1134     |
| Split Spoon                       | 7.50      | 2.50       | DRY       | 4             | 12         | 450                    | 12 | N=12 (2,2/3,3,3,3)     | AR1134     |
| Split Spoon                       | 10.50     | 2.50       | DRY       | 4             | 16         | 450                    | 16 | N=16 (2,2/4,4,4,4)     | AR1134     |
| Split Spoon                       | 13.50     | 2.50       | DRY       | 7             | 20         | 450                    | 20 | N=20 (3,4/4,6,6,6)     | AR1134     |
| Split Spoon                       | 16.50     | 2.50       | DRY       | 5             | 22         | 450                    | 22 | N=22 (2,3/4,6,6,6)     | AR1134     |
| Split Spoon                       | 19.50     | 3.00       | DRY       | 6             | 22         | 450                    | 22 | N=22 (3,3/5,6,6,5)     | AR1134     |
| Split Spoon                       | 22.50     | 3.00       | DRY       | 7             | 24         | 450                    | 24 | N=24 (3,4/6,6,6,6)     | AR1134     |
| Split Spoon                       | 25.50     | 3.00       | DRY       | 8             | 53         | 450                    | 53 | N=53 (5,3/12,12,14,15) | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Cable Percussion**  
Sheet 1 of 3

Exploratory Hole Number  
**BH17-18**  
FINAL



|                                      |                             |                            |                                          |                                              |                                        |                         |
|--------------------------------------|-----------------------------|----------------------------|------------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant                      |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425461.04</b>   | Northing: <b>558471.34</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 28.50 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.13mAOD</b> | Final Depth: <b>27.70m</b> |                                          |                                              |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                          |                                              |                                        | Start Date: 21/11/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                          |                                              |                                        | Finish Date: 22/11/2017 |

| Strata Description                                                                                          | Legend    | Depth (m)<br>(Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                                        |
|-------------------------------------------------------------------------------------------------------------|-----------|----------------------------------|----------------------|-------------------|----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|-------|--------------------------------------------------------|
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | Depth (m)         | Ref   | Test Results                                           |
| MADE GROUND: Yellowish brown very sandy subangular fine to medium limestone GRAVEL. Sand is fine to coarse. | [Pattern] | (0.35)                           |                      |                   |                      |                          |                            |                 |                         | 0.20              | 1 ES  | PID 0.20m = 10.6ppm                                    |
|                                                                                                             |           | 0.35                             | 19.78                |                   |                      |                          |                            |                 |                         | 0.30              | 3 D   |                                                        |
| MADE GROUND: Stiff dark grey CLAY with occasional gravel. Gravel is subangular to subrounded fine coal.     | [Pattern] | (1.15)                           |                      |                   |                      |                          |                            |                 |                         | 0.40              | 4 D   |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 0.50 - 0.70       | 5 B   |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 0.70              | 2 ES  |                                                        |
| Firm to stiff thinly laminated dark grey CLAY.                                                              | [Pattern] | 1.50                             | 18.63                |                   |                      |                          |                            |                 |                         | 1.20              | 6 D   | 30 blows, 100% Recovery<br>PID 1.50m = 1.4ppm          |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 1.30 - 1.50       | 8 B   |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 1.50              | 7 ES  | SPT(S) 2.50m, N=10 (2,2/2,2,3,3)<br>PID 2.50m = 0.0ppm |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 1.50 - 1.95       | 9 UT  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 2.00              | 10 D  | 28 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 2.00 - 2.50       | 11 B  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 2.50              | 12 ES | SPT(S) 4.50m, N=9 (2,2/2,2,3,3)                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 2.50 - 2.95       | 13 D  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 250               |       | 20 blows, 89% Recovery                                 |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 3.00              |       |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 3.00 - 3.50       | 14 B  | 20 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 3.50              | U     |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 3.50              | 15 D  | SPT(S) 7.50m, N=12 (2,2/3,3,3,3)                       |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 3.50 - 3.95       | 16 UT |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 4.00              | 17 D  | 20 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 4.00 - 4.50       | 19 B  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 4.50 - 4.95       | 18 D  | 20 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 5.00 - 5.50       | 20 B  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 5.90              | 21 D  | 20 blows, 89% Recovery                                 |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 6.00 - 6.45       | 22 UT |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 6.50              | 23 D  | 20 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 6.50 - 7.00       | 24 B  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 7.00 - 7.50       | 25 B  | 20 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 7.50 - 7.95       | 26 D  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 8.00 - 8.50       | 27 B  | 20 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 8.90              | 28 D  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 9.00 - 9.45       | 29 UT | 20 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 9.50              | 30 D  |                                                        |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 9.50              | 31 B  | 20 blows, 100% Recovery                                |
|                                                                                                             |           |                                  |                      |                   |                      |                          |                            |                 |                         | 10.00 - 10.50     | 32 B  |                                                        |

Continued on Next Page

|                                                                                                                              |                     |                   |            |           |            |           |          |        |           |                    |            |           |       |
|------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|------------|-----------|------------|-----------|----------|--------|-----------|--------------------|------------|-----------|-------|
| Observations / Remarks                                                                                                       | Misc.               | Shift Information |            |           |            |           | Backfill |        |           | Installations      |            |           |       |
|                                                                                                                              |                     | Date              | Time       | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                                                                                                                              |                     | 21/11             | 17:00      | 18.50     | 2.50       | -         | 0.00     | 27.70  | Bentonite |                    |            |           |       |
|                                                                                                                              |                     | 22/11             | 08:00      | 18.50     | 3.00       | DRY       |          |        |           |                    |            |           |       |
| No Groundwater Encountered<br>Casing Used<br>No Monitoring Point Installed<br>Hammer Ref. & Energy Ratio (%)<br>AR1134 (56%) | Groundwater Strikes |                   |            |           |            |           |          |        |           |                    |            |           |       |
|                                                                                                                              | Strike (m)          | Rises To (m)      | Time (min) | Remarks   |            |           |          |        |           |                    |            |           |       |
|                                                                                                                              |                     |                   |            |           |            |           |          |        |           |                    |            |           |       |





|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425461.04</b>   | Northing: <b>558471.34</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.13mAOD</b> | Final Depth: <b>27.70m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 21/11/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 22/11/2017 |

| Strata Description                             | Legend  | Depth (m) (Stratum Thickness)     | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   |
|------------------------------------------------|---------|-----------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      |
| Firm to stiff thinly laminated dark grey CLAY. |         |                                   |                      |                   |                      |                       |                         |                 |                         | 10.50 - 10.95     | 33 D  | SPT(S) 10.50m, N=16 (2,2/4,4,4,4) |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 11.00 - 11.50     | 34 B  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 11.90             | 35 D  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 12.00 - 12.45     | 36 UT | 24 blows, 100% Recovery           |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 12.50             | 37 D  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 12.50 - 13.00     | 38 B  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 13.00 - 13.50     | 39 B  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 13.50 - 13.95     | 40 D  | SPT(S) 13.50m, N=20 (3,4/4,4,6,6) |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 14.00 - 14.50     | 41 B  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 14.90             | 42 D  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 15.00             | U     |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 15.00 - 15.45     | 43 UT | 22 blows, 100% Recovery           |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 15.50             | 44 D  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 15.50 - 16.00     | 45 B  |                                   |
|                                                |         |                                   |                      |                   |                      |                       |                         |                 |                         | 16.00 - 16.50     | 46 B  |                                   |
| 16.50 - 16.95                                  | 46 D-NR | SPT(S) 16.50m, N=22 (2,3/4,4,6,6) |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 16.90                                          | 47 D    |                                   |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 17.00 - 17.50                                  | 48 B    | 24 blows, 100% Recovery           |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 17.90                                          | 49 D    |                                   |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 18.00 - 18.45                                  | 50 UT   |                                   |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 18.50                                          | 51 D    |                                   |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 18.50 - 19.00                                  | 52 B    |                                   |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 19.00 - 19.50                                  | 53 B    |                                   |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 19.50 - 19.95                                  | 54 D    | SPT(S) 19.50m, N=22 (3,3/5,6,6,5) |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 20.00                                          | 56 D    |                                   |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |
| 20.00 - 20.50                                  | 55 B    |                                   |                      |                   |                      |                       |                         |                 |                         |                   |       |                                   |

Continued on Next Page

|                        |       |                     |              |            |            |           |          |        |          |                    |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        |          | Installations      |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |          |                    |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |            |           |       |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Cable Percussion**  
Sheet 3 of 3

Exploratory Hole Number  
**BH17-18**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425461.04</b>    | Northing: <b>558471.34</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.13m AOD</b> | Final Depth: <b>27.70m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 21/11/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 22/11/2017 |

| Strata Description                                                  | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins)                     | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |
|---------------------------------------------------------------------|--------|-------------------------------|-----------------------|---------------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|
|                                                                     |        |                               |                       |                                       |                      |                       |                         |                 |                         | Depth (m)         | Ref |
| Firm to stiff thinly laminated dark grey CLAY.                      |        |                               |                       |                                       |                      |                       |                         |                 |                         |                   |     |
|                                                                     |        | 21.00 - 21.45                 | 57 UT                 | 40 blows, 100% Recovery               | 21                   |                       |                         |                 |                         |                   |     |
|                                                                     |        | 21.50 - 22.00                 | 58 D<br>59 B          |                                       |                      |                       |                         |                 |                         |                   |     |
|                                                                     |        | 22.50 - 22.95                 | 60 D                  | SPT(S) 22.50m, N=24 (3,4/6,6,6,6)     |                      |                       |                         |                 |                         |                   |     |
|                                                                     |        | 23.00 - 23.50                 | 61 D<br>62 B          |                                       |                      |                       |                         |                 |                         |                   |     |
|                                                                     |        | 24.00 - 24.45                 | 63 UT                 | 40 blows, 100% Recovery               | 24                   |                       |                         |                 |                         |                   |     |
|                                                                     |        | 24.50 - 25.00                 | 64 D<br>65 B          |                                       |                      |                       |                         |                 |                         |                   |     |
|                                                                     |        | 25.50 - 25.95                 | 66 D<br>67 D          | SPT(S) 25.50m, N=53 (5,3/12,12,14,15) |                      |                       |                         |                 |                         |                   |     |
|                                                                     |        | 26.00                         | 68 D                  |                                       |                      |                       |                         |                 |                         |                   |     |
|                                                                     |        | 27.00 - 27.45                 | 69 D<br>70 UT         | 50 blows, 100% Recovery               | 27                   |                       |                         |                 |                         |                   |     |
| EOH at 27.70m - Abandoned due to issues with alignment/verticality. |        | 27.70                         | -7.57                 |                                       |                      | 150<br>27.70          |                         |                 |                         |                   |     |

|                        |       |                     |              |            |            |           |          |        |          |                    |  |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        |          | Installations      |  |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam. |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |          |                    |  |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |  |            |           |       |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                             |                            |                                                               |                                                     |                                                      |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                                           |                                                     |                                                      | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425462.16</b>   | Northing: <b>558470.26</b> | From (m)                                                      | Method                                              | Plant Used                                           | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.07mAOD</b> | Final Depth: <b>70.00m</b> | 0.00 - 1.20<br>1.20 - 35.00<br>35.00 - 48.90<br>48.90 - 70.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000<br>Frasse PLG<br>Frasse PLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS+ALB+NE</b>    | Grid System: <b>OSGB</b>   |                                                               |                                                     |                                                      | Start Date: 23/11/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                                               |                                                     |                                                      | End Date: 05/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 35.50         | 150       |
| 48.90         | 140       |
| 70.00         | 121       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 3.00            | 250       |
| 7.50            | 200       |
| 39.90           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 27.00               | -          | -          | 20         | 25.50       |         |
| 34.00               | -          | -          | 20         | 31.20       |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 05/12/2017                        | Standpipe Piezometer | 28.00  | 0.00 - 28.00   | 19mm      |

If Methodology includes Dynamic Sampling refer to Runs table for info.

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 0.50   | Concrete    |
| 0.50 - 27.00  | Bentonite   |
| 27.00 - 29.00 | Sand        |
| 29.00 - 70.00 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 0  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 1  | Large Bulk       | 0 |
| Disturbed                    | 13 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 1                |   |
| Core Sample                  |    | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                | Hammer Ref |
| Split Spoon                       | 27.50     | 28.50      | 25.00     | 13            | 42         | 450                    | 42 | N=42 (5,8/10,10,10,12)         | AR1134     |
| Split Spoon                       | 28.00     | 28.00      | 22.00     | 25            | 50         | 220                    |    | 50 (25 for 50mm/50 for 170mm)  | AR1134     |
| Split Spoon                       | 30.00     | 30.00      | 25.00     | 12            | 50         | 325                    |    | 50 (6,6/50 for 175mm)          | AR1134     |
| Split Spoon                       | 31.50     | 31.00      | DRY       | 20            | 50         | 310                    |    | 50 (9,11/50 for 160mm)         | AR1134     |
| Cone                              | 34.50     | 31.00      | DRY       | 25            | 50         | 265                    |    | 50 (25 for 105mm/50 for 160mm) | AR1134     |
| Split Spoon                       | 34.80     | 34.50      | 21.20     | 25            | 35         | 175                    |    | 35 (25 for 85mm/35 for 90mm)   | AR1134     |
| Split Spoon                       | 35.00     | 34.50      | 23.00     | 25            | 50         | 285                    |    | 50 (10,15/50 for 135mm)        | AR1134     |

| In-Situ Tests              |       |
|----------------------------|-------|
| Test                       | Count |
| PID                        | 0     |
| Hand Vane*                 | 0     |
| Standard Penetration Tests | 7     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Chiselling    |                 | Water Added |        |
|---------------|-----------------|-------------|--------|
| Depth (m)     | Duration (mins) | Depth (m)   | Litres |
| 28.00 - 28.25 | 120             |             |        |
| 31.00 - 31.30 | 60              |             |        |
| 33.00 - 33.30 | 60              |             |        |
| 34.60 - 35.00 | 165             |             |        |

| Drilling Flush |            |               |          |
|----------------|------------|---------------|----------|
| Depth (m)      | Flush Type | Flush Colour  | Return % |
| 34.50 - 35.40  | Air/Mist   | Brown         | 99       |
| 35.40 - 36.90  | Air/Mist   | Brownish Grey | 99       |
| 36.90 - 37.90  | Air/Mist   | Brownish Grey | 99       |
| 36.90 - 38.40  | Air/Mist   | Dark Grey     | 90       |
| 38.40 - 39.90  | Air/Mist   |               | 0        |
| 39.90 - 41.40  | Air/Mist   | Dark Grey     | 95       |
| 41.40 - 42.90  | Air/Mist   | Grey          | 95       |
| 42.90 - 44.40  | Air/Mist   | Grey          | 95       |
| 44.40 - 45.90  | Air/Mist   | Grey          | 95       |
| 45.90 - 47.40  | Air/Mist   | Grey          | 95       |
| 47.40 - 48.90  | Air/Mist   | Grey          | 95       |
| 48.90 - 51.20  | Air/Mist   | Light Grey    | 95       |
| 51.20 - 52.00  | Air/Mist   | Light Grey    | 95       |
| 52.00 - 57.10  | Air/Mist   | Grey          | 95       |
| 57.10 - 57.40  | Air/Mist   | Grey          | 95       |
| 57.40 - 60.00  | Air/Mist   | Grey          | 95       |
| 60.00 - 70.00  | Air/Mist   | Grey          | 95       |

| Dynamic Sampling Runs |           |            |         |
|-----------------------|-----------|------------|---------|
| Depth (m)             | Diam (mm) | Recovery % | Remarks |
|                       |           |            |         |



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type
Combined Borehole

Sheet 1 of 7

Exploratory Hole Number

BH17-18a

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details, Methodology & Plant, Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 23/11/2017, Finish Date: 05/12/2017

Main borehole log table with columns: Strata Description, Legend, Depth (m), Reduced Level (m), Hole Ø (mm), Casing Ø (mm), Water Level (m), Installation / Backfill, Samples & Testing, Coring. Includes depth scale from 0 to 10m.

Observations / Remarks, Misc., Shift Information, Backfill, Installations. Includes a table for shift data with columns: Date, Time, Depth (m), Casing (m), Water (m), From (m), To (m), Material, Instrument Details, Resp. Zone, Depth (m), Diam.



CENTRAL ALLIANCE

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Log Type
Combined Borehole
Sheet 2 of 7

Exploratory Hole Number
BH17-18a
FINAL



Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425462.16, Northing: 558470.26, Elevation: 20.07m AOD, Final Depth: 70.00m, Logged By: GS+ALB+NE, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 23/11/2017
Finish Date: 05/12/2017

Main data table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole ø (mm) Depth (m), Casing ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Content includes 'OPEN HOLE DRILLING BY CABLE PERCUSSION TECHNIQUES.' and '(27.70)'.

Continued on Next Page

Observations / Remarks: At 37.90m, gas alarm triggered. Drilling temporarily suspended.
Misc.
Shift Information: Date, Time, Depth (m), Casing (m), Water (m)
Backfill: From (m), To (m), Material
Installations: Instrument Details, Resp. Zone, Depth (m), Diam
Water Strikes: Strike (m), Rises To (m), Time (min), Remarks





|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425462.16</b>    | Northing: <b>558470.26</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.07m AOD</b> | Final Depth: <b>70.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS+ALB+NE</b>  | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 23/11/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 05/12/2017 |

| Strata Description                                                                                                                                                                                                                                                                                 | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |          |                                               | Coring |          |     |     |     |    |  |  |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|----------|-----------------------------------------------|--------|----------|-----|-----|-----|----|--|--|----|
|                                                                                                                                                                                                                                                                                                    |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref      | Test Results                                  | Method | Core Run | TCR | SCR | RQD | If |  |  |    |
| Destructed light to dark grey MUDSTONE.                                                                                                                                                                                                                                                            |        | (1.00)                        |                       |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  |    |
| Dark greyish brown gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and rare coal.                                                                                                                                                                       |        | 31.00                         | -10.93                |                       |                         | 31.20           |                         | 31.00             | 10 D     |                                               |        |          |     |     |     |    |  |  | 31 |
| Destructed interbedded light grey MUDSTONE and medium to coarse grained SANDSTONE recovered as subangular cobbles.<br><i>From 32.00m to 33.00m 1 no sandstone boulder.</i>                                                                                                                         |        | 32.00                         | -11.93                |                       |                         |                 |                         | 31.50 - 31.95     | 11 D     | SPT(S) 31.50m, 50 (9,11/50 for 160mm)         |        |          |     |     |     |    |  |  | 32 |
| <i>From 33.00m becomes very gravelly.</i>                                                                                                                                                                                                                                                          |        | 33.00                         |                       |                       |                         |                 |                         | 33.00             | 13 D     | 100 blows, 0% Recovery                        |        |          |     |     |     |    |  |  | 33 |
| <i>From 33.00 - 33.20</i>                                                                                                                                                                                                                                                                          |        |                               |                       |                       |                         |                 |                         |                   | 14 UT-NR |                                               |        |          |     |     |     |    |  |  |    |
| <i>From 33.00 - 33.45</i>                                                                                                                                                                                                                                                                          |        |                               |                       |                       |                         |                 |                         |                   | 15 B     |                                               |        |          |     |     |     |    |  |  |    |
| <i>From 34.50m to 35.05m recovered as sandy subangular fine to coarse gravel and subangular cobbles. Sand is fine to coarse.</i>                                                                                                                                                                   |        | 34.00                         |                       |                       |                         | 34.00           |                         | 34.00             | 16 D     | SPT(C) 34.50m, 50 (25 for 105mm/50 for 160mm) |        |          |     |     |     |    |  |  | 34 |
| Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained SANDSTONE. Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to medium spaced inclined (50-70 degrees) planar rough. |        | 35.00                         | -14.93                |                       |                         |                 |                         |                   |          | SPT(S) 34.80m, 35 (25 for 85mm/35 for 90mm)   |        |          |     |     |     |    |  |  | 35 |
| Dark brown and black gravelly sandy clay. Sand is fine to coarse. Gravel is subangular fine to coarse. (Possible Mine Workings)                                                                                                                                                                    |        | 35.60                         | -15.53                | 150<br>35.50          |                         |                 |                         |                   |          | SPT(S) 35.00m, 50 (10,15/50 for 135mm)        |        |          |     |     |     |    |  |  | 35 |
| <i>From 36.16m to 36.56m very fractured with an irregular structure.</i>                                                                                                                                                                                                                           |        | (0.60)                        |                       |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 7  |
| Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained SANDSTONE. Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to medium spaced inclined (50-70 degrees) planar rough. |        | 36.56                         | -16.49                |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 36 |
| <i>From 36.76m to 36.90m 1 no. discontinuity subvertical (80-90 degrees) undulating rough with light brown fine sand infill.</i>                                                                                                                                                                   |        | (0.96)                        |                       |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 6  |
| <i>From 37.35m to 37.47m recovered as gravelly sandy clay. Sand is fine to coarse. Gravel is subangular coarse.</i>                                                                                                                                                                                |        | 37.47                         | -17.40                |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 36 |
| COAL seam and mine workings recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.                                                                                                                                                                                           |        | (0.13)                        |                       |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 24 |
| Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained SANDSTONE. Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to medium spaced inclined (50-70 degrees) planar rough. |        | 37.60                         | -17.53                |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 37 |
| <i>At 37.90m, gas alarm triggered. Drilling temporarily suspended.</i>                                                                                                                                                                                                                             |        | (0.80)                        |                       |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | NR |
| COAL seam and mine workings recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.                                                                                                                                                                                           |        | 38.40                         | -18.33                |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 38 |
| Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained SANDSTONE. Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to medium spaced inclined (50-70 degrees) planar rough. |        | (0.75)                        |                       |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | NR |
| COAL seam and mine workings recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.                                                                                                                                                                                           |        | 39.15                         | -19.08                |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 39 |
| Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained SANDSTONE. Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to medium spaced inclined (50-70 degrees) planar rough. |        |                               |                       |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | NR |
| <i>From 39.15m to 40.80m No Recovery.</i>                                                                                                                                                                                                                                                          |        |                               |                       |                       |                         |                 |                         |                   |          |                                               |        |          |     |     |     |    |  |  | 40 |

|                                                                 |       |                   |      |           |            |           |          |        |           |                      |              |            |         |
|-----------------------------------------------------------------|-------|-------------------|------|-----------|------------|-----------|----------|--------|-----------|----------------------|--------------|------------|---------|
| Observations / Remarks                                          | Misc. | Shift Information |      |           |            | Backfill  |          |        |           | Installations        |              |            |         |
| At 37.90m, gas alarm triggered. Drilling temporarily suspended. |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details   | Resp. Zone   | Depth (m)  | Diam    |
|                                                                 |       |                   |      |           |            |           | 0.00     | 0.50   | Concrete  | Standpipe Piezometer | 0.00 - 28.00 | 28.00      | 19mm    |
|                                                                 |       |                   |      |           |            |           | 0.50     | 27.00  | Bentonite |                      |              |            |         |
|                                                                 |       |                   |      |           |            |           | 27.00    | 29.00  | Sand      |                      |              |            |         |
|                                                                 |       |                   |      |           |            |           | 29.00    | 70.00  | Bentonite |                      |              |            |         |
|                                                                 |       |                   |      |           |            |           |          |        |           | Water Strikes        |              |            |         |
|                                                                 |       |                   |      |           |            |           |          |        |           | Strike (m)           | Rises To (m) | Time (min) | Remarks |
|                                                                 |       |                   |      |           |            |           |          |        |           | 27.00                | 25.50        | 20         |         |
|                                                                 |       |                   |      |           |            |           |          |        |           | 34.00                | 31.20        | 20         |         |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Wakefield 41 Business Park  
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Web: www.central-alliance.co.uk

Log Type  
**Combined Borehole**  
Sheet 5 of 7

Exploratory Hole Number  
**BH17-18a**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425462.16</b>    | Northing: <b>558470.26</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.07m AOD</b> | Final Depth: <b>70.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS+ALB+NE</b>  | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 23/11/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 05/12/2017 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |          |     |     |     |    |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run | TCR | SCR | RQD | If |  |  |  |
| medium spaced inclined (50-70 degrees) planar rough.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                               |                       |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| <p>From 40.80m to 40.92m recovered as slightly sandy subangular fine to coarse gravel. Sand is fine to coarse.</p> <p>From 41.02m to 41.10m recovered as subangular fine to coarse gravel.</p> <p>From 41.18m to 41.29m recovered as slightly gravelly sandy clay. Sand is fine to coarse. Gravel is subangular fine to medium.</p>                                                                                                                                                                                                                                                                                                                   | (3.56) |                               |                       |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| <p>From 41.70m to 41.75m, 41.95m to 42.00m and 42.23m to 42.29m recovered as subangular fine to medium gravel.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                               |                       |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| <b>COAL seam.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        | 42.71 (0.19)                  | -22.64                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| <p>From 42.71m to 42.77m recovered as angular to subangular fine to medium gravel.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 42.90                         | -22.83                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained SANDSTONE. Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to medium spaced inclined (50-70 degrees) planar rough.                                                                                                                                                                                                                                                                                                                                                    |        |                               |                       |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| <p>From 42.90m to 43.03m No Recovery.</p> <p>From 43.03m to 43.17m recovered as subangular fine to coarse gravel.</p> <p>From 43.17m to 43.48m 1 no. discontinuity subvertical (75-85 degrees) planar rough with sandy clay infill. Sand is fine.</p> <p>From 43.72m to 43.93m recovered as clayey subangular fine to coarse gravel.</p> <p>From 44.09m to 44.14m recovered as sandy silty subangular fine to medium gravel. Sand is fine to coarse.</p> <p>From 44.14m to 44.32m 1 no. discontinuity vertical (80-90 degrees) undulating rough.</p> <p>From 44.32m to 44.40m and 44.59m to 44.68m recovered as subangular fine to coarse gravel.</p> |        |                               |                       |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| From 45.90m to 47.00m, no recovery.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (6.00) |                               |                       |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| From 47.40m to 48.05m, no recovery.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |                               |                       |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |
| Grey MUDSTONE/SILTSTONE/SANDSTONE (Driller's Description).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        | 48.90                         | -28.83                | 140<br>48.90          |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |

Continued on Next Page

|                                                                                           |                                                                                 |                   |         |           |            |           |           |        |           |                      |              |           |      |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------|---------|-----------|------------|-----------|-----------|--------|-----------|----------------------|--------------|-----------|------|
| Observations / Remarks<br>At 37.90m, gas alarm triggered. Drilling temporarily suspended. | Misc.<br>Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed | Shift Information |         |           |            |           | Backfill  |        |           | Installations        |              |           |      |
|                                                                                           |                                                                                 | Date              | Time    | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m) | Material  | Instrument Details   | Resp. Zone   | Depth (m) | Diam |
|                                                                                           |                                                                                 |                   |         |           |            |           | 0.00      | 0.50   | Concrete  | Standpipe Piezometer | 0.00 - 28.00 | 28.00     | 19mm |
|                                                                                           |                                                                                 |                   |         |           |            |           | 0.50      | 27.00  | Bentonite |                      |              |           |      |
|                                                                                           |                                                                                 |                   |         |           | 27.00      | 29.00     | Sand      |        |           |                      |              |           |      |
|                                                                                           |                                                                                 |                   |         |           | 29.00      | 70.00     | Bentonite |        |           |                      |              |           |      |
| Water Strikes                                                                             |                                                                                 |                   |         |           |            |           |           |        |           |                      |              |           |      |
| Strike (m)                                                                                | Rises To (m)                                                                    | Time (min)        | Remarks |           |            |           |           |        |           |                      |              |           |      |
| 27.00                                                                                     | 25.50                                                                           | 20                |         |           |            |           |           |        |           |                      |              |           |      |
| 34.00                                                                                     | 31.20                                                                           | 20                |         |           |            |           |           |        |           |                      |              |           |      |







CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Combined Borehole
Sheet 7 of 7

Exploratory Hole Number
BH17-18a
FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425462.16, Northing: 558470.26, Elevation: 20.07m AOD, Final Depth: 70.00m, Logged By: GS+ALB+NE, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 23/11/2017
Finish Date: 05/12/2017

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole ø (mm) Depth (m), Casing ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Includes depth scale from 61 to 70m and a note 'EOH at 70.00m - Scheduled Depth'.

Observations / Remarks: At 37.90m, gas alarm triggered. Drilling temporarily suspended.
Misc.
Shift Information: Date, Time, Depth (m), Casing (m), Water (m)
Backfill: From (m), To (m), Material (Concrete, Bentonite, Sand, Bentonite)
Installations: Instrument Details (Standpipe Piezometer), Resp. Zone (0.00 - 28.00), Depth (m) (28.00), Diam (19mm)
Water Strikes: Strike (m) (27.00, 34.00), Rises To (m) (25.50, 31.20), Time (min) (20, 20), Remarks



|                                      |                              |                            |                                                               |                                                     |                                                      |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                           |                                                     |                                                      | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425457.61</b>    | Northing: <b>558442.56</b> | From (m)                                                      | Method                                              | Plant Used                                           | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.75m AOD</b> | Final Depth: <b>65.00m</b> | 0.00 - 1.20<br>1.20 - 30.50<br>30.50 - 42.70<br>42.70 - 65.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000<br>Frasse PLG<br>Frasse PLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS+ALB+NE</b>     | Grid System: <b>OSGB</b>   |                                                               |                                                     |                                                      | Start Date: 06/12/2017 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                                               |                                                     |                                                      | End Date: 14/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 4.00          | 250       |
| 15.00         | 200       |
| 30.90         | 150       |
| 42.70         | 140       |
| 65.00         | 120       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 4.00            | 250       |
| 15.00           | 200       |
| 30.00           | 150       |
| 35.00           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 28.00               | -          | 15.00      | 20         | 15.00       |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 65.00 | Bentonite   |

| Sample Summary               |    |                  |    |
|------------------------------|----|------------------|----|
| <i>Environmental Samples</i> |    |                  |    |
| Soil                         | 4  | Water            | 0  |
| <i>Geotechnical Samples</i>  |    |                  |    |
| Bulk                         | 13 | Large Bulk       | 0  |
| Disturbed                    | 41 | Disturbed (NR)   | 0  |
| Piston                       | 0  | Piston (NR)      | 0  |
| Undisturbed                  | 0  | Undisturbed (NR) | 0  |
| Undisturbed Thin Wall        |    |                  | 11 |
| Undisturbed Thin Wall (NR)   |    |                  | 2  |
| Core Sample                  |    |                  | 6  |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                    | Hammer Ref |
| Split Spoon                       | 2.00      | 2.00       | -         | 2             | 7          | 450                    | 7  | N=7 (1,1/2,1,3,1)                  | AR1710     |
| Split Spoon                       | 4.00      | 4.00       | -         | 1             | 4          | 450                    | 4  | N=4 (1,0/0,1,2,1)                  | AR1710     |
| Split Spoon                       | 6.50      | 4.00       | -         | 1             | 4          | 450                    | 4  | N=4 (1,0/2,0,1,1)                  | AR1710     |
| Split Spoon                       | 9.50      | 4.00       | -         | 3             | 9          | 450                    | 9  | N=9 (2,1/3,2,2,2)                  | AR1710     |
| Split Spoon                       | 12.50     | 4.00       | -         | 5             | 7          | 450                    | 7  | N=7 (3,2/3,2,1,1)                  | AR1710     |
| Split Spoon                       | 15.50     | 15.00      | -         | 5             | 9          | 450                    | 9  | N=9 (2,3/1,2,3,3)                  | AR1710     |
| Split Spoon                       | 18.50     | 15.00      | -         | 7             | 15         | 450                    | 15 | N=15 (3,4/5,4,3,3)                 | AR1710     |
| Split Spoon                       | 21.50     | 15.00      | -         | 6             | 17         | 450                    | 17 | N=17 (3,3/3,4,5,5)                 | AR1710     |
| Split Spoon                       | 24.50     | 15.00      | -         | 9             | 22         | 450                    | 22 | N=22 (5,4/5,7,6,4)                 | AR1710     |
| Split Spoon                       | 27.50     | 15.00      | -         | 11            | 27         | 450                    | 27 | N=27 (5,6/5,6,7,9)                 | AR1710     |
| Split Spoon                       | 30.00     | 30.00      | 24.00     | 25            | 100        | 430                    |    | N=100 (10,15/100 for 280mm)        | AR1710     |
| Split Spoon                       | 30.45     | 30.00      | 24.00     | 25            | 100        | 370                    |    | N=100 (25 for 105mm/100 for 265mm) | AR1710     |

| In-Situ Tests              |       |
|----------------------------|-------|
| Test                       | Count |
| PID                        | 4     |
| Hand Vane*                 | 0     |
| Standard Penetration Tests | 12    |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1710          | 61               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 30.00 - 30.45                       | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 30.50 - 32.00             | Air/Mist   | Grey         | 95       |
| 32.00 - 33.50             | Air/Mist   | Grey         | 95       |
| 33.50 - 35.00             | Air/Mist   | Grey         | 95       |
| 35.00 - 36.50             | Air/Mist   | Grey         | 95       |
| 36.50 - 38.00             | Air/Mist   | Grey/Black   | 95       |
| 38.00 - 39.50             | Air/Mist   | Grey/Black   | 95       |
| 39.50 - 40.20             | Air/Mist   | Grey         | 95       |
| 40.20 - 41.70             | Air/Mist   | Grey         | 95       |
| 41.70 - 42.70             | Air/Mist   | Grey         | 95       |
| 42.70 - 51.20             | Air/Mist   | Grey         | 95       |
| 51.20 - 51.50             | Air/Mist   | Grey         | 95       |
| 51.50 - 51.70             | Air/Mist   | Grey         | 95       |
| 51.70 - 52.20             | Air/Mist   | Grey/Black   | 95       |
| 52.20 - 56.70             | Air/Mist   | Grey         | 95       |
| 56.70 - 57.50             | Air/Mist   | Black        | 80       |
| 57.50 - 65.00             | Air/Mist   | Grey         | 95       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425457.61</b>    | Northing: <b>558442.56</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.75m AOD</b> | Final Depth: <b>65.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS+ALB+NE</b>  | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 06/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 14/12/2017 |

| Strata Description | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                      | Coring |          |     |     |     |    |  |  |  |  |
|--------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|--------------------------------------|--------|----------|-----|-----|-----|----|--|--|--|--|
|                    |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                         | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 10.50             | 28 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 11.00 - 11.45     | 29 UT | 37 blows                             |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 12.00             | 30 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 12.50 - 12.95     | 31 D  | SPT(S) 12.50m, N=7<br>(3,2/3,2,1,1)  |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 12.50 - 13.00     | 32 B  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 13.50             | 33 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 14.00 - 14.45     | 34 UT | 39 blows                             |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 14.45             | 35 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 15.00             | 36 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 15.50 - 15.95     | 37 D  | SPT(S) 15.50m, N=9<br>(2,3/1,2,3,3)  |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 15.50 - 16.00     | 38 B  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 16.50             | 39 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 17.00 - 17.45     | 40 UT | 42 blows                             |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 17.45             | 41 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 18.00             | 42 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 18.50 - 18.95     | 43 D  | SPT(S) 18.50m, N=15<br>(3,4/5,4,3,3) |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 18.50 - 19.00     | 44 B  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 19.50             | 45 D  |                                      |        |          |     |     |     |    |  |  |  |  |
|                    |        |                               |                       |                       |                         |                 |                         | 20.00 - 20.45     | 46 UT | 61 blows                             |        |          |     |     |     |    |  |  |  |  |

Continued on Next Page

|                        |       |                   |              |            |            |           |          |        |           |                    |  |            |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations      |  |            |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00     | 65.00  | Bentonite |                    |  |            |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |           |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                    |  |            |           |      |
|                        |       | 28.00             | 15.00        | 20         |            |           |          |        |           |                    |  |            |           |      |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425457.61</b>    | Northing: <b>558442.56</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.75m AOD</b> | Final Depth: <b>65.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS+ALB+NE</b>  | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 06/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 14/12/2017 |

| Strata Description                                                                                                                                                                    | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |               |                     | Coring              |          |     |     |     |    |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|---------------|---------------------|---------------------|----------|-----|-----|-----|----|--|--|--|--|--|
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref           | Test Results        | Method              | Core Run | TCR | SCR | RQD | If |  |  |  |  |  |
| From 21.00m with rare subrounded fine to medium sandstone and siltstone gravel.                                                                                                       |        |                               |                       |                       |                         |                 |                         | 20.45             | 47 D          |                     |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 21.00         | 48 D                |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 21.50 - 21.95 | 49 D                | SPT(S) 21.50m, N=17 |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 21.50 - 22.00 | 50 B                | (3,3/3,4,5,5)       |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 22.50         | 51 D                |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 23.00 - 23.45 | 52 UT               | 65 blows            |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 23.45         | 53 D                |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 24.00         | 54 D                |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 24.50 - 24.95 | 55 D                | SPT(S) 24.50m, N=22 |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         |                   | 24.50 - 25.00 | 56 B                | (5,4/5,7,6,4)       |          |     |     |     |    |  |  |  |  |  |
| From 25.00m becomes slightly silty.                                                                                                                                                   |        |                               |                       |                       |                         |                 |                         | 25.50             | 57 D          |                     |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 26.00 - 26.45     | 58 UT         | 72 blows            |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 26.45             | 59 D          |                     |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 27.00             | 60 D          |                     |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 27.50 - 27.95     | 61 D          | SPT(S) 27.50m, N=27 |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 27.50 - 28.00     | 62 B          | (5,6/5,6,7,9)       |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 28.00             | Water Level   |                     |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 28.50             | 63 D          |                     |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 29.00 - 29.45     | 64 UT-NR      | 100 blows           |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | 29.00 - 29.45     | 65 B          |                     |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         | 29.45 - 29.90   | 66 UT-NR                | 100 blows         |               |                     |                     |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                       |        |                               |                       |                       |                         | 29.45 - 29.90   | 67 B                    |                   |               |                     |                     |          |     |     |     |    |  |  |  |  |  |
| Firm to stiff dark grey slightly gravelly slightly sandy CLAY with occasional cobbles. Sand is fine to coarse. Gravel is subangular to subrounded sandstone and mudstone. Cobbles are |        | 29.50                         | -9.75                 |                       |                         |                 |                         |                   |               |                     |                     |          |     |     |     |    |  |  |  |  |  |
| Continued on Next Page                                                                                                                                                                |        | (1.00)                        |                       |                       |                         | 150<br>30.00    |                         |                   |               |                     |                     |          |     |     |     |    |  |  |  |  |  |

|                        |       |                   |              |            |            |           |          |        |           |                    |  |            |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations      |  |            |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00     | 65.00  | Bentonite |                    |  |            |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |           |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                    |  |            |           |      |
|                        |       | 28.00             | 15.00        | 20         |            |           |          |        |           |                    |  |            |           |      |



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425457.61</b>    | Northing: <b>558442.56</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.75m AOD</b> | Final Depth: <b>65.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS+ALB+NE</b>  | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 06/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 14/12/2017 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                 | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing              |             |                                                   | Coring |          |     |     |     |    |  |  |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|--------------------------------|-------------|---------------------------------------------------|--------|----------|-----|-----|-----|----|--|--|----|
|                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                               |                       |                       |                         |                 |                         | Depth (m)                      | Ref         | Test Results                                      | Method | Core Run | TCR | SCR | RQD | If |  |  |    |
| subangular sandstone.                                                                                                                                                                                                                                                                                                                                                                                              |        |                               |                       |                       |                         |                 |                         | 30.30                          | 69 D        |                                                   |        |          |     |     |     |    |  |  |    |
| Very weak to medium strong dark and light grey MUDSTONE and fine grained SANDSTONE. Discontinuities are closely spaced subvertical (0-10 degrees) undulating rough.<br><i>From 30.50m to 31.05m recovered as slightly gravelly slightly sandy clay. Gravel is fine to coarse. Sand is fine to coarse.</i><br><i>From 31.05m to 32.00m recovered as very clayey subangular to subrounded fine to coarse gravel.</i> |        | 30.50                         | -10.75                | 150<br>30.90          |                         |                 |                         | 30.45 - 30.90<br>30.50 - 30.67 | 70 D<br>4 C | SPT(S) 30.45m, N=100 (25 for 105mm/100 for 265mm) |        |          |     |     |     |    |  |  |    |
| 31<br><i>From 30.50m to 31.05m recovered as slightly gravelly slightly sandy clay. Gravel is fine to coarse. Sand is fine to coarse.</i><br><i>From 31.05m to 32.00m recovered as very clayey subangular to subrounded fine to coarse gravel.</i>                                                                                                                                                                  |        |                               |                       |                       |                         |                 |                         |                                |             |                                                   |        |          |     |     |     |    |  |  | 31 |
| 32<br><i>From 32.00m to 32.75m Assumed Zone of Core Loss.</i>                                                                                                                                                                                                                                                                                                                                                      |        |                               |                       |                       |                         |                 |                         |                                |             |                                                   |        |          |     |     |     |    |  |  | 32 |
| 33<br><i>From 32.75m to 33.05m recovered as slightly gravelly slightly sandy clay.</i><br><i>From 33.05m to 33.50m recovered as subangular to subrounded fine to coarse gravel.</i><br><i>From 33.50m to 34.40m Assumed Zone of Core Loss.</i>                                                                                                                                                                     |        | (6.30)                        |                       |                       |                         |                 |                         | 31.80                          |             |                                                   |        |          |     |     |     |    |  |  | 33 |
| 34<br><i>From 34.40m to 35.00m recovered as subangular to subrounded fine to coarse gravel.</i><br><i>From 35.00m to 36.30m Assumed Zone of Core Loss.</i>                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 33.20<br>33.28 - 33.35         | 1 C         |                                                   |        |          |     |     |     |    |  |  | 34 |
| 35<br><i>From 36.30m to 36.40m recovered as subangular to subrounded fine to coarse gravel.</i><br><i>From 36.42m to 36.80m, strong to very strong.</i><br><i>From 36.50m to 36.80m recovered as slightly sandy clay. Sand is fine to coarse.</i>                                                                                                                                                                  |        |                               |                       |                       |                         |                 |                         |                                |             |                                                   |        |          |     |     |     |    |  |  | 35 |
| 36<br><i>From 36.30m to 36.40m recovered as subangular to subrounded fine to coarse gravel.</i><br><i>From 36.42m to 36.80m, strong to very strong.</i><br><i>From 36.50m to 36.80m recovered as slightly sandy clay. Sand is fine to coarse.</i>                                                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 140<br>35.00                   |             |                                                   |        |          |     |     |     |    |  |  | 36 |
| 37<br><b>Very weak black COAL.</b><br><i>From 36.80m to 37.07m and 37.60m to 38.21m recovered as sandy subangular to subrounded fine to coarse gravel. Sand is fine to coarse.</i>                                                                                                                                                                                                                                 |        | 36.80                         | -17.05                |                       |                         |                 |                         | 36.42 - 36.50                  | 5 C         |                                                   |        |          |     |     |     |    |  |  | 37 |
| 38<br><i>From 38.97m to 39.30m recovered as subangular to subrounded fine to coarse gravel.</i>                                                                                                                                                                                                                                                                                                                    |        |                               |                       |                       |                         |                 |                         | 37.53 - 37.60<br>37.60         | 6 C         |                                                   |        |          |     |     |     |    |  |  | 38 |
| 39<br><i>From 38.97m to 39.30m recovered as subangular to subrounded fine to coarse gravel.</i>                                                                                                                                                                                                                                                                                                                    |        |                               |                       |                       |                         |                 |                         | 38.40                          |             |                                                   |        |          |     |     |     |    |  |  | 39 |
| 40<br><b>Strong dark and light grey MUDSTONE and fine grained SANDSTONE. Discontinuities are closely spaced subvertical (0-10 degrees) undulating rough.</b><br><i>From 39.30m to 39.50m Assumed Zone of Core Loss.</i><br><i>From 39.50m to 39.60m recovered as subangular to subrounded medium to coarse gravel.</i>                                                                                             |        | (2.20)                        |                       |                       |                         |                 |                         | 39.55                          |             |                                                   |        |          |     |     |     |    |  |  | 40 |
| Continued on Next Page                                                                                                                                                                                                                                                                                                                                                                                             |        |                               |                       |                       |                         |                 |                         | 39.87 - 39.97                  | 2 C         |                                                   |        |          |     |     |     |    |  |  | 40 |

| Observations / Remarks                                                  | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations      |  |            |           |      |
|-------------------------------------------------------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|--------------------|--|------------|-----------|------|
|                                                                         |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                                                                         |       |                   |              |            |            |           | 0.00     | 65.00  | Bentonite |                    |  |            |           |      |
| Groundwater Encountered<br>Casing Used<br>No Monitoring Point Installed |       | Water Strikes     |              |            |            |           |          |        |           |                    |  |            |           |      |
|                                                                         |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                    |  |            |           |      |
|                                                                         |       | 28.00             | 15.00        | 20         |            |           |          |        |           |                    |  |            |           |      |



# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
Wakefield WF2 0XJ  
Tel +44(0)1924 229889  
Web: www.central-alliance.co.uk

Log Type  
**Combined  
Borehole**  
Sheet 5 of 7

Exploratory Hole Number  
**BH17-19**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425457.61</b>    | Northing: <b>558442.56</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.75m AOD</b> | Final Depth: <b>65.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS+ALB+NE</b>  | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 06/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 14/12/2017 |

| Strata Description                                                                                                                                                         | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing      |     |              | Coring |          |     |     |     |    |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------|--------------------------|----------------------------|-----------------|-------------------------|------------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|--|--|
|                                                                                                                                                                            |        |                                  |                       |                          |                            |                 |                         | Depth (m)              | Ref | Test Results | Method | Core Run | TCR | SCR | RQD | If |  |  |  |
| From 39.75m to 39.82m and 40.05m to 40.10m recovered as subangular to subrounded fine to coarse gravel.                                                                    |        | (2.70)                           |                       |                          |                            |                 |                         | 40.15<br>40.20 - 40.39 | 3 C |              |        |          |     |     |     |    |  |  |  |
| From 40.44m to 40.48m recovered as subangular fine to coarse gravel.                                                                                                       |        |                                  |                       |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
| From 41.37m to 41.39m recovered as subangular to subrounded fine to medium gravel.                                                                                         |        |                                  |                       |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
| From 41.59m to 41.70m recovered as subangular fine to coarse gravel.                                                                                                       |        |                                  |                       |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
| <b>COAL Seam.</b><br>From 41.70m to 41.88m recovered as subangular to subrounded fine to coarse gravel.                                                                    |        | 41.70                            | -21.95                |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                            |        | (0.50)                           |                       |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
| Weak to medium strong interbedded dark and light grey MUDSTONE and fine grained SANDSTONE. Discontinuities are closely spaced subvertical (0-10 degrees) undulating rough. |        | 42.20                            | -22.45                |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
| From 42.20m to 42.23m recovered as subangular fine to medium gravel.                                                                                                       |        | (0.50)                           |                       |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
| From 42.30m to 42.36m and 42.47m to 42.50m recovered as subangular to subrounded fine to coarse gravel.                                                                    |        | 42.70                            | -22.95                | 140<br>42.70             |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
| Interbedded MUDSTONE and light grey SANDSTONE (Driller's Description).                                                                                                     |        |                                  |                       |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                            |        | (8.50)                           |                       |                          |                            |                 |                         |                        |     |              |        |          |     |     |     |    |  |  |  |

Continued on Next Page

|                        |       |                   |              |            |            |           |          |        |               |                    |  |            |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        | Installations |                    |  |            |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00     | 65.00  | Bentonite     |                    |  |            |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |               |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                    |  |            |           |      |
|                        |       | 28.00             | 15.00        | 20         |            |           |          |        |               |                    |  |            |           |      |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed





CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Wakefield WF2 0XJ
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Log Type
Combined Borehole

Sheet 6 of 7

Exploratory Hole Number

BH17-19

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, etc.), Methodology & Plant, Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 06/12/2017, Finish Date: 14/12/2017

Main borehole log table with columns: Strata Description, Legend, Depth (m), Reduced Level (m), Hole Ø (mm), Casing Ø (mm), Water Level (m), Installation / Backfill, Samples & Testing (Depth, Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Includes descriptions like 'Interbedded MUDSTONE and light grey SANDSTONE' and 'Broken Ground - Possible VOID'.

Observations / Remarks, Misc., Shift Information (Date, Time, Depth, Casing, Water), Backfill (From, To, Material), Installations (Instrument Details, Resp. Zone, Depth, Diam), Water Strikes (Strike, Rises To, Time, Remarks)







# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
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Web: www.central-alliance.co.uk

Log Type  
**Combined  
Borehole**

Sheet 1 of 7

Exploratory Hole Number

## BH17-20

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |                    |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------------------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                    |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425462.87</b>    | Northing: <b>558418.32</b> | From (m)            | Method             | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.04m AOD</b> | Final Depth: <b>65.00m</b> | 0.00 - 1.20         | Inspection Pit     | Hand Tools | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB+GS</b>     | Grid System: <b>OSGB</b>   | 1.20 - 32.50        | Cable Percussion   | Dando 2000 | Start Date: 27/11/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 32.50 - 44.50       | Rotary Coring      | Fraze PLG  | Finish Date: 08/12/2017 |
|                                      |                              |                            | 44.50 - 65.00       | Rotary Open Holing | Fraze PLG  |                         |

| Strata Description                                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(m AOD) | Hole Ø<br>(mm)<br>Depth (m) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                  | Coring |          |     |     |     |    |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|--------------------------|-----------------------------|-------------------------------|-----------------|-------------------------|-------------------|-------|----------------------------------|--------|----------|-----|-----|-----|----|--|--|--|
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | Depth (m)         | Ref   | Test Results                     | Method | Core Run | TCR | SCR | RQD | If |  |  |  |
| <b>MADE GROUND: TOPSOIL.</b>                                                                                                                                                                        |        | (0.05)                           | 18.99                    |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |
| <b>MADE GROUND: Dark brown slightly gravelly sandy CLAY with occasional cobbles. Gravel is subangular fine to coarse sandstone and brick. Sand is fine to coarse. Cobbles are subangular brick.</b> |        | 0.05                             |                          |                             |                               |                 |                         | 0.20              | 1 D   | PID 0.20m = 0.2ppm               |        |          |     |     |     |    |  |  |  |
| <b>Possible MADE GROUND: Light brown and grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and siltstone.</b>                                |        | (0.65)                           | 18.34                    |                             |                               |                 |                         | 0.20 - 0.30       | 2 ES  |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 0.20 - 1.20       | 5 B   |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        | 0.70                             | 18.34                    |                             |                               |                 |                         | 0.30              | 1 ES  | HV 0.50m, (p)=52 kPa (r) =8 kPa  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 0.70              | 3 ES  | PID 0.70m = 0.1ppm               |        |          |     |     |     |    |  |  |  |
| <b>Soft to firm weakly thinly laminated dark grey and brown sandy CLAY with occasional gravel. Sand is fine to coarse. Gravel is subangular fine sandstone and siltstone.</b>                       |        | (0.80)                           | 17.54                    |                             |                               |                 |                         | 0.70              | 4 D   |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        | 1.50                             | 17.54                    |                             |                               |                 |                         | 1.50              | 7 ES  | SPT(S) 1.50m, N=12 (1,1/2,3,4,3) |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 1.50 - 1.95       | 6 D   |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 1.50 - 2.00       | 8 B   | PID 1.50m = 0.0ppm               |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 2.50              | 9 ES  | 50 blows, 100% Recovery          |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 2.50 - 2.95       | 10 UT | PID 2.50m = 0.0ppm               |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 2.95              | 11 D  |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 3.50 - 3.95       | 12 D  | SPT(S) 3.50m, N=5 (1,1/1,2,1,1)  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 3.50 - 4.00       | 13 B  |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 4.50 - 4.95       | 14 UT | 33 blows, 100% Recovery          |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 4.95              | 15 D  |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 6.00 - 6.45       | 16 D  | SPT(S) 6.00m, N=9 (1,1/2,1,3,3)  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 6.00 - 6.50       | 17 B  |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 7.50 - 7.95       | 18 UT | 40 blows, 100% Recovery          |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 7.95              | 19 D  |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 9.00 - 9.45       | 20 D  | SPT(S) 9.00m, N=11 (1,2/3,2,2,3) |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                     |        |                                  |                          |                             |                               |                 |                         | 9.00 - 9.50       | 21 B  |                                  |        |          |     |     |     |    |  |  |  |
| Continued on Next Page                                                                                                                                                                              |        |                                  |                          |                             |                               |                 |                         |                   |       |                                  |        |          |     |     |     |    |  |  |  |

| Observations / Remarks                                                 | Misc. | Shift Information |       |           |            |           | Backfill |        |           | Installations        |               |           |      |
|------------------------------------------------------------------------|-------|-------------------|-------|-----------|------------|-----------|----------|--------|-----------|----------------------|---------------|-----------|------|
|                                                                        |       | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
| Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |       | 27/11             | 17:00 | 3.95      | 2.00       | Dry       | 0.00     | 0.50   | Concrete  | Standpipe Piezometer | 15.00 - 17.00 | 16.00     |      |
|                                                                        |       | 28/11             | 08:00 | 3.95      | 2.00       | Dry       | 0.50     | 15.00  | Bentonite |                      |               |           |      |
|                                                                        |       | 28/11             | 17:00 | 15.00     | 4.00       | Dry       | 15.00    | 17.00  | Sand      |                      |               |           |      |
|                                                                        |       | 29/11             | 08:00 | 15.00     | 4.00       | Dry       | 17.00    | 65.00  | Bentonite |                      |               |           |      |
|                                                                        |       | 29/11             | 17:00 | 19.95     | 6.00       | Dry       |          |        |           |                      |               |           |      |
|                                                                        |       | 30/11             | 08:00 | 19.95     | 6.00       | Dry       |          |        |           |                      |               |           |      |
|                                                                        |       | 30/11             | 17:00 | 27.95     | 19.00      | 25.50     |          |        |           |                      |               |           |      |
|                                                                        |       | 01/12             | 08:00 | 27.95     | 19.00      | 25.50     |          |        |           |                      |               |           |      |
|                                                                        |       | 01/12             | 17:00 | 32.50     | 19.00      | 25.50     |          |        |           |                      |               |           |      |
|                                                                        |       | 07/12             | 07:30 | 32.50     | 30.50      | 30.60     |          |        |           |                      |               |           |      |
|                                                                        |       | 07/12             | 16:30 | 41.50     | 30.50      | 30.60     |          |        |           |                      |               |           |      |

| Water Strikes |              |            |         |
|---------------|--------------|------------|---------|
| Strike (m)    | Rises To (m) | Time (min) | Remarks |
| 27.00         | 25.50        | 20         |         |















CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
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Log Type
Combined Borehole

Sheet 7 of 7

Exploratory Hole Number

BH17-20

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425462.87, Northing: 558418.32, Elevation: 19.04m AOD, Final Depth: 65.00m, Logged By: ALB+GS, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 27/11/2017
Finish Date: 08/12/2017

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If).
Row 65: EOH at 65.00m - Scheduled Depth. Values: Depth 65.00, Reduced Level -45.96, Hole Ø 120 mm, Casing Ø 65.00 mm.

Observations / Remarks, Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Instrument Details (Standpipe Piezometer, Resp. Zone, Depth (m), Diam), Water Strikes (Strike (m), Rises To (m), Time (min), Remarks).



|                                      |                             |                            |                                              |                                                     |                                         |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------------|-----------------------------------------------------|-----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                          |                                                     |                                         | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425536.32</b>   | Northing: <b>558420.13</b> | From (m)                                     | Method                                              | Plant Used                              | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.44mAOD</b> | Final Depth: <b>70.00m</b> | 0.00 - 1.20<br>1.20 - 22.75<br>23.00 - 35.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000<br>Beretta T41 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>          | Grid System: <b>OSGB</b>   |                                              |                                                     |                                         | Start Date: 22/02/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                              |                                                     |                                         | End Date: 02/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 4.50          | 250       |
| 15.00         | 200       |
| 22.75         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 4.50            | 250       |
| 15.00           | 200       |
| 21.00           | 150       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 0.90                | -          | -          | 20         | 0.70        |         |
| 21.20               | -          | -          | 20         | 19.50       |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 70.00 | Grout       |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 5  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 10 | Large Bulk       | 0 |
| Disturbed                  | 31 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 6                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 6                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|---------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                 | Hammer Ref |
| Split Spoon                       | 1.50      | 1.50       | 0.70      | 6             | 31         | 450                    | 31 | N=31 (2,4/4,3,4,20)             | AR1134     |
| Split Spoon                       | 2.50      | 2.50       | 1.00      | 12            | 13         | 450                    | 13 | N=13 (8,4/3,3,3,4)              | AR1134     |
| Split Spoon                       | 3.50      | 3.50       | DRY       | 5             | 16         | 450                    | 16 | N=16 (2,3/4,4,4,4)              | AR1134     |
| Split Spoon                       | 6.00      | 4.50       | DRY       | 4             | 19         | 450                    | 19 | N=19 (1,3/4,5,5,5)              | AR1134     |
| Split Spoon                       | 9.00      | 4.50       | 6.50      | 6             | 20         | 450                    | 20 | N=20 (2,4/4,5,6,5)              | AR1134     |
| Split Spoon                       | 12.00     | 4.50       | DRY       | 6             | 18         | 450                    | 18 | N=18 (2,4/4,5,5,5)              | AR1134     |
| Split Spoon                       | 15.00     | 4.50       | DRY       | 8             | 20         | 450                    | 20 | N=20 (3,5/5,5,5,5)              | AR1134     |
| Split Spoon                       | 18.00     | 4.50       | DRY       | 8             | 21         | 450                    | 21 | N=21 (3,5/5,5,5,6)              | AR1134     |
| Split Spoon                       | 21.00     | 4.50       | 19.10     | 15            | 100        | 375                    |    | 100 (5,10/100 for 225mm)        | AR1134     |
| Split Spoon                       | 22.50     | 4.50       | 19.30     | 25            | 100        | 250                    |    | 100 (25 for 50mm/100 for 200mm) | AR1134     |

| In-Situ Tests              |    |
|----------------------------|----|
| PID                        | 5  |
| Hand Vane*                 | 0  |
| Standard Penetration Tests | 10 |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 1.20 - 1.70                         | 90              |             |        |
| 21.20 - 21.50                       | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 23.00 - 25.50             | Air/Mist   | Grey         | 80       |
| 25.50 - 27.00             | Air/Mist   | Grey         | 20       |
| 27.00 - 27.50             | Air/Mist   |              | 0        |
| 27.50 - 29.00             | Air/Mist   | Grey         | 50       |
| 29.00 - 35.00             | Air/Mist   | Grey         | 100      |
| 35.00 - 70.00             | Air/Mist   |              | 0        |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                              |                            |                                                        |                                                             |                                                     |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                    |                                                             |                                                     | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425536.32</b>    | Northing: <b>558420.13</b> | From (m): 0.00 - 1.20<br>1.20 - 22.75<br>23.00 - 35.00 | Method: Inspection Pit<br>Cable Percussion<br>Rotary Coring | Plant Used: Hand Tools<br>Dando 2000<br>Beretta T41 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.44m AOD</b> | Final Depth: <b>70.00m</b> |                                                        |                                                             |                                                     | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                                                        |                                                             |                                                     | Start Date: 22/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                                        |                                                             |                                                     | Finish Date: 02/05/2018 |

| Strata Description                                                                                                                                                                                                       | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |             |                                      | Coring |          |     |     |     |    |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|-------------|--------------------------------------|--------|----------|-----|-----|-----|----|--|
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | Depth (m)         | Ref         | Test Results                         | Method | Core Run | TCR | SCR | RQD | If |  |
| MADE GROUND: ROADSTONE (6FS) Yellowish brown sandy subangular fine to coarse limestone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular limestone.                                      |        | 0.50                             | 21.94                 |                          |                            |                 |                         | 0.50              | 1 ES        | PID 0.50m = 1.4ppm                   |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        | 0.70 - 1.00                      |                       |                          |                            |                 |                         | 0.70 - 1.00       | 1 D<br>3 B  |                                      |        |          |     |     |     |    |  |
| MADE GROUND: Grey and brown slightly sandy gravelly CLAY with roots. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone, siltstone, coal and brick.                                                   |        | 1.00                             |                       |                          |                            |                 |                         | 0.90              | 2 ES        | PID 0.90m = 2.2ppm                   |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        | 1.20                             |                       |                          |                            |                 |                         | 1.20              | 4 D         |                                      |        |          |     |     |     |    |  |
| MADE GROUND: Light brown silty very sandy angular to subangular fine to coarse brick, sandstone and limestone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular limestone and sandstone. |        | 1.50                             | 20.94                 |                          |                            |                 |                         | 1.50              | 3 ES        | SPT(S) 1.50m, N=31<br>(2,4/4,3,4,20) |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        | 1.50 - 1.95                      |                       |                          |                            |                 |                         | 1.50 - 1.95       | 5 B         | PID 1.50m = 3.4ppm                   |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        | 2.00                             |                       |                          |                            |                 |                         | 2.00              | 6 D         |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        | 2.50                             |                       |                          |                            |                 |                         | 2.50 - 2.95       | 4 ES<br>7 B | SPT(S) 2.50m, N=13<br>(8,4/3,3,3,4)  |        |          |     |     |     |    |  |
| Soft to firm thinly laminated bluish grey and brown slightly sandy CLAY with occasional 1-2mm silt bands. Sand is fine to coarse.                                                                                        |        | 2.80                             | 19.64                 |                          |                            |                 |                         | 3.00              | 8 D         |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        | 3.10                             |                       |                          |                            |                 |                         | 3.10              | 9 B         |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       | 250                      | 250                        |                 |                         | 4.50              | 12 UT       | 20 blows, 100% Recovery              |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       | 4.50                     | 4.50                       |                 |                         | 5.00              | 13 D        |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 5.50              | 14 B        |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 6.00              | 15 D        |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 6.00 - 6.45       | 16 D        |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 6.00 - 6.45       | 17 B        | SPT(S) 6.00m, N=19<br>(1,3/4,5,5,5)  |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 7.00              | 18 D        |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 7.50 - 7.95       | 19 UT       | 20 blows, 100% Recovery              |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 8.00              | 20 D        |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 9.00              | 21 D        |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 9.00 - 9.45       | 22 D        |                                      |        |          |     |     |     |    |  |
|                                                                                                                                                                                                                          |        |                                  |                       |                          |                            |                 |                         | 9.00 - 9.45       | 23 B        | SPT(S) 9.00m, N=20<br>(2,4/4,5,6,5)  |        |          |     |     |     |    |  |
| Continued on Next Page                                                                                                                                                                                                   |        |                                  |                       |                          |                            |                 |                         | 10.00             | 24 D        |                                      |        |          |     |     |     |    |  |

|                        |       |                   |              |            |            |           |          |        |          |                    |  |            |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |          | Installations      |  |            |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       | 20/02             | 17:00        | 8.00       | 4.50       | -         | 0.00     | 70.00  | Grout    |                    |  |            |           |      |
|                        |       | 21/02             | 08:00        | 8.00       | 4.50       | 6.50      |          |        |          |                    |  |            |           |      |
|                        |       | 21/02             | 17:00        | 22.75      | 15.00      | 19.30     |          |        |          |                    |  |            |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |          |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |  |            |           |      |
|                        |       | 0.90              | 0.70         | 20         |            |           |          |        |          |                    |  |            |           |      |
|                        |       | 21.20             | 19.50        | 20         |            |           |          |        |          |                    |  |            |           |      |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Combined Borehole**  
Sheet 2 of 7

Exploratory Hole Number  
**BH17-21**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425536.32</b>    | Northing: <b>558420.13</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.44m AOD</b> | Final Depth: <b>70.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 22/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 02/05/2018 |

| Strata Description                                                             | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   | Coring |          |     |     |     |    |  |  |  |  |  |  |
|--------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|--------|----------|-----|-----|-----|----|--|--|--|--|--|--|
|                                                                                |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |  |  |
|                                                                                |        | (16.20)                       |                       |                       |                         |                 |                         | 10.50 - 10.95     | 25 UT | 10 blows, 78% Recovery            |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 11.00             | 26 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 12.00             | 27 D  | SPT(S) 12.00m, N=18 (2,4/4,4,5,5) |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 12.00 - 12.45     | 28 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 12.00 - 12.45     | 29 B  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 13.00             | 30 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 13.50 - 13.95     | 31 UT | 20 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 14.00             | 32 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 15.00             | 33 D  | SPT(S) 15.00m, N=20 (3,5/5,5,5,5) |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 15.00 - 15.45     | 34 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 15.00 - 15.45     | 35 B  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
| From 15.50m with rare subrounded fine to medium sandstone and mudstone gravel. |        |                               |                       | 200<br>15.00          | 200<br>15.00            |                 |                         | 16.00             | 36 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 16.50 - 16.95     | 37 UT | 20 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 17.00             | 38 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 18.00             | 39 D  | SPT(S) 18.00m, N=21 (3,5/5,5,5,6) |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 18.00 - 18.45     | 40 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 18.00 - 18.45     | 41 B  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
| From 18.00m becomes silty.                                                     |        |                               |                       |                       |                         |                 |                         | 19.00             | 42 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |
| Soft dark bluish grey sandy clayey SILT. Sand is fine to coarse.               |        | 19.00                         | 3.44                  |                       |                         |                 |                         | 19.50 - 19.95     | 43 UT | 30 blows, 100% Recovery           |        |          |     |     |     |    |  |  |  |  |  |  |
|                                                                                |        |                               |                       |                       |                         |                 |                         | 20.00             | 44 D  |                                   |        |          |     |     |     |    |  |  |  |  |  |  |

| Observations / Remarks | Misc.        | Shift Information                                                                                                                                                                                                                                                                                                                 |         |           |            |           | Backfill |        |          | Installations      |  |            |           |      |               |  |  |  |            |              |            |         |      |      |    |  |       |       |
|------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|------|---------------|--|--|--|------------|--------------|------------|---------|------|------|----|--|-------|-------|
|                        |              | Date                                                                                                                                                                                                                                                                                                                              | Time    | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam |               |  |  |  |            |              |            |         |      |      |    |  |       |       |
|                        |              |                                                                                                                                                                                                                                                                                                                                   |         |           |            |           | 0.00     | 70.00  | Grout    |                    |  |            |           |      |               |  |  |  |            |              |            |         |      |      |    |  |       |       |
|                        |              | <table border="1"> <thead> <tr> <th colspan="4">Water Strikes</th> </tr> <tr> <th>Strike (m)</th> <th>Rises To (m)</th> <th>Time (min)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>0.90</td> <td>0.70</td> <td>20</td> <td></td> </tr> <tr> <td>21.20</td> <td>19.50</td> <td>20</td> <td></td> </tr> </tbody> </table> |         |           |            |           |          |        |          |                    |  |            |           |      | Water Strikes |  |  |  | Strike (m) | Rises To (m) | Time (min) | Remarks | 0.90 | 0.70 | 20 |  | 21.20 | 19.50 |
| Water Strikes          |              |                                                                                                                                                                                                                                                                                                                                   |         |           |            |           |          |        |          |                    |  |            |           |      |               |  |  |  |            |              |            |         |      |      |    |  |       |       |
| Strike (m)             | Rises To (m) | Time (min)                                                                                                                                                                                                                                                                                                                        | Remarks |           |            |           |          |        |          |                    |  |            |           |      |               |  |  |  |            |              |            |         |      |      |    |  |       |       |
| 0.90                   | 0.70         | 20                                                                                                                                                                                                                                                                                                                                |         |           |            |           |          |        |          |                    |  |            |           |      |               |  |  |  |            |              |            |         |      |      |    |  |       |       |
| 21.20                  | 19.50        | 20                                                                                                                                                                                                                                                                                                                                |         |           |            |           |          |        |          |                    |  |            |           |      |               |  |  |  |            |              |            |         |      |      |    |  |       |       |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed

19.50

Continued on Next Page



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425536.32</b>    | Northing: <b>558420.13</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.44m AOD</b> | Final Depth: <b>70.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 22/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 02/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                  | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing      |              |                                                | Coring |          |     |     |     |    |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|------------------------|--------------|------------------------------------------------|--------|----------|-----|-----|-----|----|--|--|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         | Depth (m)              | Ref          | Test Results                                   | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |
| Soft dark bluish grey sandy clayey SILT. Sand is fine to coarse.                                                                                                                                                                                                                                                                                                                                                                    |        | (2.20)                        |                       |                       |                         |                 |                         |                        |              |                                                |        |          |     |     |     |    |  |  |  |  |
| Firm to stiff dark blue grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse mudstone and coal.<br><i>From 21.86m to 21.99m, non-intact recovered as clayey subangular fine to coarse gravel.<br/>From 22.06m to 22.12m, non-intact recovered as clayey subangular fine to coarse gravel.<br/>From 22.12m to 22.20m, 1No. Discontinuity subvertical (85-90 degrees) undulating rough.</i> |        | 21.20<br>(1.55)               | 1.24                  |                       |                         | 150<br>21.00    |                         | 21.00<br>21.00 - 21.45 | 45 D<br>46 D | SPT(S) 21.00m, 100 (5,10/100 for 225mm)        |        |          |     |     |     |    |  |  |  |  |
| Extremely weak to weak non-intact core recovered as slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone coal mudstone and siltstone. Cobbles are subangular sandstone.<br><i>From 23.00m to 23.50m, no recovery.</i>                                                                                                                          |        | 22.75<br>(2.25)               | -0.31                 | 150<br>22.75          |                         |                 |                         | 22.50 - 22.75          | 47 D         | SPT(S) 22.50m, 100 (25 for 50mm/100 for 200mm) |        |          |     |     |     |    |  |  |  |  |
| Extremely to very weak light grey MUDSTONE recovered as slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse mudstone sandstone and coal.<br><i>From 25.50m to 26.60m, no recovery.</i>                                                                                                                                                                                          |        | 25.00<br>(4.00)               | -2.56                 |                       |                         |                 |                         | 24.30 - 24.40          | 5 C          |                                                |        |          |     |     |     |    |  |  |  |  |
| Extremely to very weak light grey MUDSTONE recovered as slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse mudstone sandstone and coal.<br><i>From 26.60m to 27.70m, non-intact recovered as slightly clayey sandy subangular to subrounded fine to coarse gravel with low cobble content.</i>                                                                                 |        | 27.00<br>(4.00)               |                       |                       |                         |                 |                         | 24.93 - 25.03          | 1 C          |                                                |        |          |     |     |     |    |  |  |  |  |
| Weak to medium strong dark grey interbedded SILTSTONE and MUDSTONE. Discontinuities are: 1) Closely spaced subhorizontal (0-15 degrees) planar smooth. 2) Closely to medium spaced inclined (40-55 degrees) planar smooth.<br><i>From 29.00m to 29.50m, non-intact recovered as clayey subangular fine to coarse gravel.<br/>From 29.50m to 29.71m, 1No. Discontinuity subvertical (85-90 degrees)</i>                              |        | 29.00                         | -6.56                 |                       |                         |                 |                         | 26.80 - 26.90          | 6 C          |                                                |        |          |     |     |     |    |  |  |  |  |
| Weak to medium strong dark grey interbedded SILTSTONE and MUDSTONE. Discontinuities are: 1) Closely spaced subhorizontal (0-15 degrees) planar smooth. 2) Closely to medium spaced inclined (40-55 degrees) planar smooth.<br><i>From 29.00m to 29.50m, non-intact recovered as clayey subangular fine to coarse gravel.<br/>From 29.50m to 29.71m, 1No. Discontinuity subvertical (85-90 degrees)</i>                              |        | 29.00<br>30.50                |                       |                       |                         |                 |                         | 27.00 - 27.50          | 100          |                                                |        |          |     |     |     |    |  |  |  |  |
| Weak to medium strong dark grey interbedded SILTSTONE and MUDSTONE. Discontinuities are: 1) Closely spaced subhorizontal (0-15 degrees) planar smooth. 2) Closely to medium spaced inclined (40-55 degrees) planar smooth.<br><i>From 29.00m to 29.50m, non-intact recovered as clayey subangular fine to coarse gravel.<br/>From 29.50m to 29.71m, 1No. Discontinuity subvertical (85-90 degrees)</i>                              |        | 29.00<br>30.50                |                       |                       |                         |                 |                         | 27.65 - 27.80          | 3 C          |                                                |        |          |     |     |     |    |  |  |  |  |
| Weak to medium strong dark grey interbedded SILTSTONE and MUDSTONE. Discontinuities are: 1) Closely spaced subhorizontal (0-15 degrees) planar smooth. 2) Closely to medium spaced inclined (40-55 degrees) planar smooth.<br><i>From 29.00m to 29.50m, non-intact recovered as clayey subangular fine to coarse gravel.<br/>From 29.50m to 29.71m, 1No. Discontinuity subvertical (85-90 degrees)</i>                              |        | 29.00<br>30.50                |                       |                       |                         |                 |                         | 28.20 - 28.35          | 2 C          |                                                |        |          |     |     |     |    |  |  |  |  |
| Continued on Next Page                                                                                                                                                                                                                                                                                                                                                                                                              |        |                               |                       |                       |                         |                 |                         |                        |              |                                                |        |          |     |     |     |    |  |  |  |  |

|                        |       |                   |               |            |            |           |          |        |          |                    |  |            |           |      |
|------------------------|-------|-------------------|---------------|------------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |               |            |            |           | Backfill |        |          | Installations      |  |            |           |      |
|                        |       | Date              | Time          | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       |                   |               |            |            |           | 0.00     | 70.00  | Grout    |                    |  |            |           |      |
|                        |       | Water Strikes     |               |            |            |           |          |        |          |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m)  | Time (min) | Remarks    |           |          |        |          |                    |  |            |           |      |
|                        |       | 0.90<br>21.20     | 0.70<br>19.50 | 20<br>20   |            |           |          |        |          |                    |  |            |           |      |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed











CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Combined Borehole
Sheet 7 of 7

Exploratory Hole Number
BH17-21
FINAL



Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425536.32, Northing: 558420.13, Elevation: 22.44m AOD, Final Depth: 70.00m, Logged By: ALB, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 22/02/2018
Finish Date: 02/05/2018

Main data table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole ø (mm) Depth (m), Casing ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If).
Row 70: EOH at 70.00m - Scheduled Depth

Observations / Remarks
Misc.
Shift Information: Date, Time, Depth (m), Casing (m), Water (m)
Backfill: From (m), To (m), Material
Installations: Instrument Details, Resp. Zone, Depth (m), Diam
Water Strikes: Strike (m), Rises To (m), Time (min), Remarks



|                                      |                             |                            |                     |                    |                      |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------------------|----------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                    |                      | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425546.52</b>   | Northing: <b>558398.63</b> | From (m)            | Method             | Plant Used           | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>21.94mAOD</b> | Final Depth: <b>70.00m</b> | 0.00 - 1.20         | Inspection Pit     | Hand Tools           | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>          | Grid System: <b>OSGB</b>   | 1.20 - 20.20        | Cable Percussion   | Pitcon Wayfarer 1500 | Start Date: 23/02/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    | 20.20 - 36.20       | Rotary Coring      | Beretta T41          | End Date: 10/05/2018   |
|                                      |                             |                            | 36.20 - 70.00       | Rotary Open Holing | Beretta T41          |                        |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 6.00          | 250       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.00            | 250       |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
| 1.20                | -          | 3.00       | 20         | 0.75        |  |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 10/05/2018                        | Standpipe Piezometer | 18.00  | 17.00 - 19.00  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 0.50   | Concrete    |
| 0.50 - 17.00  | Bentonite   |
| 17.00 - 19.00 | Sand        |
| 19.00 - 70.00 | Bentonite   |

| Sample Summary             |    |                  |    |
|----------------------------|----|------------------|----|
| Environmental Samples      |    |                  |    |
| Soil                       |    | Water            |    |
|                            | 4  |                  | 0  |
| Geotechnical Samples       |    |                  |    |
| Bulk                       |    | Large Bulk       |    |
|                            | 11 |                  | 0  |
| Disturbed                  |    | Disturbed (NR)   |    |
|                            | 20 |                  | 0  |
| Piston                     |    | Piston (NR)      |    |
|                            | 0  |                  | 0  |
| Undisturbed                |    | Undisturbed (NR) |    |
|                            | 0  |                  | 0  |
| Undisturbed Thin Wall      |    |                  |    |
|                            |    |                  | 5  |
| Undisturbed Thin Wall (NR) |    |                  |    |
|                            |    |                  | 0  |
| Core Sample                |    |                  |    |
|                            |    |                  | 11 |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | 1.20       | 0.75      | 3             | 10         | 450                    | 10 | N=10 (1,2/1,4,3,2) | BS07       |
| Split Spoon                       | 2.00      | 2.00       | 1.70      | 3             | 7          | 450                    | 7  | N=7 (2,1/1,2,2,2)  | BS07       |
| Split Spoon                       | 3.00      | 3.00       | DRY       | 4             | 10         | 450                    | 10 | N=10 (2,2/2,2,4)   | BS07       |
| Split Spoon                       | 5.00      | 5.00       | DRY       | 3             | 12         | 450                    | 12 | N=12 (2,1/2,3,4,3) | BS07       |
| Split Spoon                       | 8.00      | 6.00       | DRY       | 3             | 10         | 450                    | 10 | N=10 (1,2/2,2,3,3) | BS07       |

| In-Situ Tests              |       |
|----------------------------|-------|
| Test                       | Count |
| PID                        | 0     |
| Hand Vane*                 | 0     |
| Standard Penetration Tests | 5     |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| BS07            | 64               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                              |                            |                                                               |                                                                           |                                                                  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                           |                                                                           |                                                                  | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425546.52</b>    | Northing: <b>558398.63</b> | From (m)                                                      | Method                                                                    | Plant Used                                                       | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>21.94m AOD</b> | Final Depth: <b>70.00m</b> | 0.00 - 1.20<br>1.20 - 20.20<br>20.20 - 36.20<br>36.20 - 70.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring<br>Rotary Open Holing | Hand Tools<br>Pitcon Wayfarer 1500<br>Beretta T41<br>Beretta T41 | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                                                               |                                                                           |                                                                  | Start Date: 23/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                                               |                                                                           |                                                                  | Finish Date: 10/05/2018 |

| Strata Description                                                                                                                                                                     | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(m AOD) | Hole Ø<br>(mm)<br>Depth (m) | Casing Ø<br>(mm)<br>Depth (m) | Water Level<br>(m) | Installation / Backfill | Samples & Testing |       |                                     | Coring |          |     |     |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|--------------------------|-----------------------------|-------------------------------|--------------------|-------------------------|-------------------|-------|-------------------------------------|--------|----------|-----|-----|-----|
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | Depth (m)         | Ref   | Test Results                        | Method | Core Run | TCR | SCR | RQD |
| MADE GROUND: Yellowish brown sandy subangular fine to coarse limestone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular limestone.                    |        | 0.25                             | 21.69                    |                             |                               |                    |                         | 0.30              | 1 ES  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        | 0.25                             |                          |                             |                               |                    |                         | 0.50              | 2 D   |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        | (0.10)                           |                          |                             |                               |                    |                         | 0.50 - 1.00       | 4 B   |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        | 0.35                             |                          |                             |                               |                    |                         | 0.80              | 3 ES  |                                     |        |          |     |     |     |
| MADE GROUND: Dark grey gravelly sandy slightly organic CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and brick.                                          |        | (2.15)                           | 19.44                    |                             |                               |                    |                         | 1.20              | 5 D   | SPT(S) 1.20m, N=10<br>(1,2/1,4,3,2) |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 1.20 - 1.70       | 6 B   |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 1.50              | 7 ES  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 2.00              | 8 D   | SPT(S) 2.00m, N=7<br>(2,1/1,2,2,2)  |        |          |     |     |     |
| MADE GROUND: Dark grey and dark brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse slate, brick, clinker, sandstone and siltstone. |        | (0.50)                           | 18.94                    |                             |                               |                    |                         | 2.50              | 10 ES |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 2.50 - 3.00       | 12 B  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 2.70              | 11 D  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 3.00              | 13 D  | SPT(S) 3.00m, N=10<br>(2,2/2,2,2,4) |        |          |     |     |     |
| Soft brown and bluish grey fissured slightly gravelly slightly sandy slightly organic CLAY. Sand is fine to coarse. Gravel is subrounded fine sandstone and mudstone.                  |        | 3.00                             | 18.94                    |                             |                               |                    |                         | 3.50 - 4.00       | 14 B  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 4.00 - 4.45       | 15 UT | 60 blows, 100% Recovery             |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 4.50              | 16 D  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 5.00              | 17 D  | SPT(S) 5.00m, N=12<br>(2,1/2,3,4,3) |        |          |     |     |     |
| Soft to firm bluish grey thinly laminated slightly sandy CLAY with silt laminations and occasional 1-2mm silt bands.                                                                   |        | 6.00                             | 250<br>6.00              |                             |                               |                    |                         | 5.50 - 6.00       | 18 B  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 6.00              | 19 D  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 6.50 - 6.95       | 20 UT | 45 blows, 100% Recovery             |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 7.00              | 21 D  |                                     |        |          |     |     |     |
| Continued on Next Page                                                                                                                                                                 |        | 8.00                             |                          |                             |                               |                    |                         | 8.00              | 22 D  | SPT(S) 8.00m, N=10<br>(1,2/2,2,3,3) |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 8.50 - 9.00       | 23 B  |                                     |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 9.50 - 9.95       | 24 UT | 30 blows, 100% Recovery             |        |          |     |     |     |
|                                                                                                                                                                                        |        |                                  |                          |                             |                               |                    |                         | 10.00             | 25 D  |                                     |        |          |     |     |     |

|                                                                        |       |                   |              |            |            |           |          |        |           |                      |               |           |      |
|------------------------------------------------------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|----------------------|---------------|-----------|------|
| Observations / Remarks                                                 | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations        |               |           |      |
|                                                                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                                                                        |       | 22/02             | 17:00        | 10.00      | 6.00       | DRY       | 0.00     | 0.50   | Concrete  | Standpipe Piezometer | 17.00 - 19.00 | 18.00     |      |
|                                                                        |       |                   |              |            |            |           | 0.50     | 17.00  | Bentonite |                      |               |           |      |
| Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |       | Water Strikes     |              |            |            |           |          |        |           |                      |               |           |      |
|                                                                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                      |               |           |      |
|                                                                        |       | 1.20              | 0.75         | 20         |            |           |          |        |           |                      |               |           |      |













CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Combined Borehole
Sheet 6 of 7

Exploratory Hole Number
BH17-22
FINAL



Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425546.52, Northing: 558398.63, Elevation: 21.94m AOD, Final Depth: 70.00m, Logged By: ALB, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 23/02/2018
Finish Date: 10/05/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Row 59 contains 'MUDSTONE. (Driller's Description)' and 'Continued on Next Page'.

Observations / Remarks, Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Installations (Instrument Details, Resp. Zone, Depth (m), Diam), Water Strikes (Strike (m), Rises To (m), Time (min), Remarks)



CENTRAL ALLIANCE

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Log Type
Combined Borehole
Sheet 7 of 7

Exploratory Hole Number
BH17-22
FINAL



Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425546.52, Northing: 558398.63, Elevation: 21.94m AOD, Final Depth: 70.00m, Logged By: ALB, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 23/02/2018
Finish Date: 10/05/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If).
Content: MUDSTONE. (Driller's Description)
Depth markers: 61, 62, 63, 64, 65, 66, 67, 68, 69, 70
Bottom note: EOH at 70.00m - Scheduled Depth

Observations / Remarks, Misc., Shift Information, Backfill, Installations
Misc. text: Groundwater Encountered, Casing Used, Monitoring Point/s Installed
Shift Information: Date, Time, Depth (m), Casing (m), Water (m)
Backfill: From (m), To (m), Material (Concrete, Bentonite, Sand, Bentonite)
Installations: Instrument Details (Standpipe Piezometer), Resp. Zone (17.00 - 19.00), Depth (m) (18.00), Diam
Water Strikes: Strike (m) (1.20), Rises To (m) (0.75), Time (min) (20), Remarks



|                                      |                              |                            |                                       |                                            |                                      |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------------------------|--------------------------------------------|--------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                   |                                            |                                      | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425560.00</b>    | Northing: <b>558417.42</b> | From (m): 0.00 - 1.20<br>1.20 - 19.98 | Method: Inspection Pit<br>Cable Percussion | Plant Used: Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>26.13m AOD</b> | Final Depth: <b>19.98m</b> |                                       |                                            |                                      | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                       |                                            |                                      | Start Date: 19/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                       |                                            |                                      | End Date: 20/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 19.70         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.00            | 250       |
| 19.50           | 150       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                           |        |                |           |
|-----------------------------------|---------------------------|--------|----------------|-----------|
| Date                              | Instrument Details        | To (m) | Resp. Zone (m) | Diam (mm) |
| 19/04/2018                        | Vibrating Wire Piezometer | 15.80  | 15.30 - 16.30  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 0.50   | Concrete    |
| 0.50 - 14.30  | Grout       |
| 14.30 - 15.30 | Bentonite   |
| 15.30 - 16.30 | Gravel      |
| 16.30 - 21.05 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       |    | Water            |   |
|                            | 9  |                  | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       |    | Large Bulk       |   |
|                            | 11 |                  | 0 |
| Disturbed                  |    | Disturbed (NR)   |   |
|                            | 31 |                  | 0 |
| Piston                     |    | Piston (NR)      |   |
|                            | 0  |                  | 0 |
| Undisturbed                |    | Undisturbed (NR) |   |
|                            | 0  |                  | 0 |
| Undisturbed Thin Wall      |    |                  | 5 |
| Undisturbed Thin Wall (NR) |    |                  | 0 |
| Core Sample                |    |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                         |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|-------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result         | Hammer Ref |
| Cone                              | 1.50      | 1.50       | DRY       | 9             | 21         | 450                    | 21 | N=21 (4,5/10,5,2,4)     | AR1134     |
| Cone                              | 2.50      | 2.50       | DRY       | 5             | 14         | 450                    | 14 | N=14 (2,3/4,4,2,4)      | AR1134     |
| Cone                              | 3.50      | 3.50       | DRY       | 14            | 50         | 395                    |    | N=50 (5,9/50 for 245mm) | AR1134     |
| Cone                              | 4.50      | 4.50       | 3.50      | 7             | 16         | 450                    | 16 | N=16 (3,4/4,4,4,4)      | AR1134     |
| Cone                              | 5.50      | 4.50       | 3.90      | 7             | 14         | 450                    | 14 | N=14 (3,4/3,4,4,3)      | AR1134     |
| Cone                              | 6.50      | 6.00       | DRY       | 7             | 24         | 450                    | 24 | N=24 (3,4/5,6,6,7)      | AR1134     |
| Split Spoon                       | 8.50      | 6.00       | DRY       | 5             | 15         | 450                    | 15 | N=15 (2,3/4,3,4,4)      | AR1134     |
| Split Spoon                       | 10.50     | 6.00       | DRY       | 5             | 15         | 450                    | 15 | N=15 (2,3/3,4,4,4)      | AR1134     |
| Split Spoon                       | 13.50     | 6.00       | DRY       | 4             | 15         | 450                    | 15 | N=15 (2,2/4,2,4,5)      | AR1134     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                              |                            |                                        |                                            |                                      |                         |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|--------------------------------------------|--------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant                    |                                            |                                      | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>42560.00</b>     | Northing: <b>558417.42</b> | Depth (m): 0.00 - 1.20<br>1.20 - 19.98 | Method: Inspection Pit<br>Cable Percussion | Plant Used: Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>26.13m AOD</b> | Final Depth: <b>19.98m</b> |                                        |                                            |                                      | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                                        |                                            |                                      | Start Date: 19/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                            |                                      | Finish Date: 20/04/2018 |

| Strata Description                                                                                                                                                                                                       | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                    |                                   |                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|--------------------------------------|-----------------------------------|--------------------------------------------|
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)                            | Ref                               | Test Results                               |
| <b>MADE GROUND: TOPSOIL</b><br>MADE GROUND: Firm dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse mudstone, sandstone, coal and brick.                  |        | (0.10)<br>0.10                | 26.03                 |                   |                      |                       |                         |                 |                         | 0.30<br>0.30<br>0.30<br>0.50<br>0.60 | 1 D<br>2 ES<br>3 D<br>4 ES<br>5 B | PID 0.30m = 12.4ppm<br>PID 0.50m = 11.3ppm |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 1.00<br>1.00<br>1.20                 | 6 D<br>7 ES<br>8 D                | PID 1.00m = 7.4ppm                         |
|                                                                                                                                                                                                                          |        | (3.90)                        |                       |                   |                      |                       |                         |                 |                         | 1.50 - 1.95                          | 10 B                              | SPT(C) 1.50m, N=21 (4,5/10,5,2,4)          |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 2.00<br>2.00                         | 11 ES<br>12 D                     | PID 2.00m = 5.6ppm                         |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 2.50 - 2.95                          | 14 B                              | SPT(C) 2.50m, N=14 (2,3/4,4,2,4)           |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 3.00<br>3.00                         | 15 ES<br>16 D                     | PID 3.00m = 8.0ppm                         |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 3.50 - 3.95                          | 18 B                              | SPT(C) 3.50m, N=50 (5,9/50 for 245mm)      |
| <b>Brown sandy clayey subangular to subrounded fine to coarse mudstone, sandstone and rare coal GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded mudstone and sandstone.</b> |        | 4.00                          | 22.13                 |                   |                      |                       |                         |                 |                         | 4.00<br>4.00                         | 19 ES<br>20 D                     | PID 4.00m = 7.2ppm                         |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 4.50 - 4.95                          | 22 B                              | SPT(C) 4.50m, N=16 (3,4/4,4,4,4)           |
|                                                                                                                                                                                                                          |        | (2.00)                        |                       |                   |                      |                       |                         |                 |                         | 5.00<br>5.00                         | 23 ES<br>24 D                     | PID 5.00m = 3.2ppm                         |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 5.50 - 5.95                          | 26 B                              | SPT(C) 5.50m, N=14 (3,4/3,4,4,3)           |
| <b>Brownish grey slightly sandy slightly clayey subangular to subrounded fine to coarse sandstone GRAVEL with low cobble content. Cobbles are subangular to subrounded sandstone.</b>                                    |        | 6.00                          | 20.13                 |                   |                      |                       | 250<br>6.00             |                 |                         | 6.00<br>6.00                         | 27 D<br>28 ES                     |                                            |
|                                                                                                                                                                                                                          |        | (1.00)                        |                       |                   |                      |                       |                         |                 |                         | 6.50 - 6.95                          | 30 B                              | SPT(C) 6.50m, N=24 (3,4/5,6,6,7)           |
| <b>Firm laminated greyish brown CLAY.</b>                                                                                                                                                                                |        | 7.00                          | 19.13                 |                   |                      |                       |                         |                 |                         | 7.00<br>7.00<br>7.00                 | 31 D<br>32 ES<br>9 D              |                                            |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 7.50 - 7.95                          | 33 UT                             | 15 blows, 100% Recovery                    |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 8.00                                 | 34 D                              |                                            |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 8.50 - 8.95<br>8.50 - 8.95           | 35 D<br>36 B                      | SPT(S) 8.50m, N=15 (2,3/4,3,4,4)           |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 9.00                                 | 37 D                              |                                            |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 9.50 - 9.95                          | 38 UT                             | 18 blows, 100% Recovery                    |
|                                                                                                                                                                                                                          |        |                               |                       |                   |                      |                       |                         |                 |                         | 10.00                                | 39 D                              |                                            |

|                        |                                                                                                                             |                   |              |            |            |           |          |        |               |                           |               |           |       |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|------------|------------|-----------|----------|--------|---------------|---------------------------|---------------|-----------|-------|
| Observations / Remarks | Misc.                                                                                                                       | Shift Information |              |            |            | Backfill  |          |        | Installations |                           |               |           |       |
|                        | No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed<br>Hammer Ref. & Energy Ratio (%)<br>AR1134 (56%) | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details        | Resp. Zone    | Depth (m) | Diam. |
|                        |                                                                                                                             | 19/04             | 17:30        | 5.50       | 4.50       | -         | 0.00     | 0.50   | Concrete      | Vibrating Wire Piezometer | 15.30 - 16.30 | 15.80     |       |
|                        |                                                                                                                             | 20/04             | 07:00        | 5.50       | 4.50       | 3.90      | 0.50     | 14.30  | Grout         |                           |               |           |       |
|                        |                                                                                                                             | 20/04             | 17:30        | 19.70      | 19.50      | DRY       | 14.30    | 15.30  | Bentonite     |                           |               |           |       |
|                        |                                                                                                                             |                   |              |            | 15.30      | 16.30     | Gravel   |        |               |                           |               |           |       |
|                        |                                                                                                                             |                   |              |            |            |           |          |        |               |                           |               |           |       |
| Groundwater Strikes    |                                                                                                                             |                   |              |            |            |           |          |        |               |                           |               |           |       |
|                        |                                                                                                                             | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                           |               |           |       |
|                        |                                                                                                                             |                   |              |            |            |           |          |        |               |                           |               |           |       |



|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425560.00</b>   | Northing: <b>558417.42</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>26.13mAOD</b> | Final Depth: <b>19.98m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 19/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 20/04/2018 |

| Strata Description | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                   |
|--------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|-----------------------------------|
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                      |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 10.50 - 10.95     | 40 D  | SPT(S) 10.50m, N=15 (2,3/3,4,4,4) |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 10.50 - 10.95     | 41 B  |                                   |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 11.00             | 42 D  | 11                                |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 12.00             | 43 D  | 20 blows, 100% Recovery           |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 12.00 - 12.45     | 44 UT |                                   |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 12.50             | 45 D  | 12                                |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 13.00             | 46 D  | 13                                |
|                    |        | (12.50)                       |                      |                   |                      |                       |                         |                 |                         | 13.50 - 13.95     | 47 D  | SPT(S) 13.50m, N=15 (2,2/4,2,4,5) |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 13.50 - 13.95     | 48 B  |                                   |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 14.00             | 49 D  | 14                                |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 15.00             | 50 D  | 20 blows, 100% Recovery           |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 15.00 - 15.45     | 51 UT |                                   |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 15.50             | 52 D  | 15                                |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 16.00             | 53 D  | 16                                |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 16.50 - 16.95     | 54 D  | 30 blows, 100% Recovery           |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 16.50 - 16.95     | 55 B  |                                   |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 17.00             | 56 D  | 17                                |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 18.00             | 57 D  | 30 blows, 100% Recovery           |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 18.00 - 18.45     | 58 UT |                                   |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 18.50             | 59 D  | 18                                |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 19.00             | 60 D  | 19                                |
|                    |        |                               |                      |                   |                      |                       |                         |                 |                         | 19.50 - 19.98     | 61 D  | 20                                |
|                    |        | 19.50                         | 6.63                 |                   |                      | 150                   | 150                     |                 |                         |                   |       |                                   |
|                    |        | (0.48)                        |                      |                   |                      | 150                   | 19.70                   |                 |                         |                   |       |                                   |
|                    |        | 19.98                         | 6.15                 |                   |                      |                       |                         |                 |                         |                   |       |                                   |

From 17.00m becomes silty.

From 19.00m becomes slightly gravelly with rare cobbles. Gravel is subangular to subrounded fine to coarse sandstone. Cobbles are subangular to subrounded sandstone.

Destructured to residual dark grey MUDSTONE recovered as gravelly silty clay. Gravel is subangular to subrounded fine to coarse.

Continued on Next Page

|                        |       |                     |              |            |            |           |          |        |               |                           |               |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|---------------|---------------------------|---------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        | Installations |                           |               |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details        | Resp. Zone    | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           |          |        |               | Vibrating Wire Piezometer | 15.30 - 16.30 | 15.80     |       |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |               |                           |               |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                           |               |           |       |
|                        |       |                     |              |            |            |           |          |        |               |                           |               |           |       |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)





|                                      |                             |                            |                             |                                    |                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------|------------------------------------|------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant         |                                    |                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425571.20</b>   | Northing: <b>558363.20</b> | From (m)                    | Method                             | Plant Used                         | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>23.37mAOD</b> | Final Depth: <b>19.70m</b> | 0.00 - 1.20<br>1.20 - 19.70 | Inspection Pit<br>Cable Percussion | Hand Tools<br>Pilcon Wayfarer 1500 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>          | Grid System: <b>OSGB</b>   |                             |                                    |                                    | Start Date: 20/02/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                             |                                    |                                    | End Date: 21/02/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 13.50         | 250       |
| 19.70         | 200       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 13.50           | 250       |
| 19.70           | 200       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 22/02/2018                        | Standpipe Piezometer | 17.30  | 13.70 - 17.50  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 13.70  | Bentonite   |
| 13.70 - 17.50 | Sand        |
| 17.50 - 19.70 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 5  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 11 | Large Bulk       | 0 |
| Disturbed                    | 26 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 4                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |     |                                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|-----|---------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N   | Reported Result                 | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 16            | 50         | 275                    |     | 50 (6,10/50 for 125mm)          | BS07       |
| Cone                              | 2.00      | -          | -         | 6             | 13         | 450                    | 13  | N=13 (3,3/3,3,4,3)              | BS07       |
| Split Spoon                       | 3.00      | -          | -         | 6             | 5          | 450                    | 5   | N=5 (4,2/1,1,1,2)               | BS07       |
| Split Spoon                       | 5.00      | -          | -         | 3             | 11         | 450                    | 11  | N=11 (1,2/2,2,3,4)              | BS07       |
| Split Spoon                       | 8.00      | -          | -         | 3             | 9          | 450                    | 9   | N=9 (1,2/2,2,3,3)               | BS07       |
| Split Spoon                       | 11.50     | -          | -         | 4             | 12         | 450                    | 12  | N=12 (2,2/3,3,3,3)              | BS07       |
| Split Spoon                       | 14.50     | 14.50      | DRY       | 6             | 16         | 450                    | 16  | N=16 (3,3/4,4,4,4)              | BS07       |
| Split Spoon                       | 16.00     | 15.00      | DRY       | 11            | 33         | 450                    | 33  | N=33 (5,6/6,7,9,11)             | BS07       |
| Split Spoon                       | 17.50     | 15.00      | DRY       | 24            | 58         | 450                    | 58  | N=58 (13,11/22,11,11,14)        | BS07       |
| Split Spoon                       | 18.00     | 15.00      | DRY       | 15            | 51         | 450                    | 51  | N=51 (7,8/9,10,14,18)           | BS07       |
| Split Spoon                       | 19.40     | 15.00      | DRY       | 25            | 100        | 450                    | 100 | N=100 (10,15/15,25,33,27)       | BS07       |
| Split Spoon                       | 19.70     | 15.00      | DRY       | 25            | 100        | 190                    |     | 100 (25 for 120mm/100 for 70mm) | BS07       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| BS07            | 64               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 17.50 - 18.00                       | 60              |             |        |
| 18.00 - 19.40                       | 105             |             |        |
| 19.40 - 19.70                       | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

Cable Percussion

Sheet 1 of 2

Exploratory Hole Number

BH17-24

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425571.20, Northing: 558363.20, Elevation: 23.37mAOD, Final Depth: 19.70m, Logged By: ALB, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: Depth (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 20/02/2018
Finish Date: 21/02/2018

Main log table with columns: Strata Description, Legend, Depth (m), Reduced Level (mAOD), Chiselling (mins), Water Added (Litres), Hole Ø (mm), Casing Ø (mm), Water Level (m), Installation/Backfill, Depth (m), Ref, Test Results. Includes detailed strata descriptions and SPT data.

Observations / Remarks, Misc., Shift Information, Backfill, Installations. Includes notes on groundwater, casing, and monitoring points.









|                                      |                              |                            |                     |                                                     |                                         |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|-----------------------------------------------------|-----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                                                     |                                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425605.39</b>    | Northing: <b>558376.23</b> | From (m)            | Method                                              | Plant Used                              | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>27.48m AOD</b> | Final Depth: <b>61.00m</b> | 1.20 - 20.50        | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000<br>Beretta T41 | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>JH+ALB</b>     | Grid System: <b>OSGB</b>   | 20.50 - 30.50       | Rotary Open Holing                                  |                                         | Start Date: 22/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 30.50 - 61.00       |                                                     |                                         | Finish Date: 28/04/2018 |

| Strata Description                                                                                                                                                                  | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |             |              | Coring                               |          |     |     |     |    |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------------|--------------|--------------------------------------|----------|-----|-----|-----|----|--|--|
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref         | Test Results | Method                               | Core Run | TCR | SCR | RQD | If |  |  |
| MADE GROUND: ROADSTONE (6FS) Yellowish brown sandy subangular fine to coarse limestone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular limestone. |        | (0.50)                        |                       |                       |                         |                 |                         |                   |             |              |                                      |          |     |     |     |    |  |  |
| MADE GROUND: TOPSOIL with roots and rootlets.                                                                                                                                       |        | 0.50 (0.20)                   | 26.98                 |                       |                         |                 |                         |                   |             |              |                                      |          |     |     |     |    |  |  |
| MADE GROUND: Light brown slightly sandy gravelly CLAY with frequent roots. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse coal, sandstone and limestone. |        | 0.70 (0.80)                   | 26.78                 |                       |                         | 0.70            |                         |                   | 0.70        | 1 D          |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 0.80        | 2 ES         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 1.00        | 3 B          |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 1.10        | 4 ES         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 1.20        | 5 D          |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 1.50        | 6 D          | SPT(C) 1.50m, N=24 (4,2/4,4,8,8)     |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        | 1.50                          | 25.98                 |                       |                         |                 |                         |                   | 1.50 - 1.95 | 8 B          |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 1.60        | 7 ES         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 2.00        | 31 D         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 2.00        | 9 D          |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 2.20        | 10 ES        |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 2.50 - 2.95 | 11 B         | SPT(C) 2.50m, N=22 (3,3/5,6,6,5)     |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 2.80        | 12 ES        |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 3.00        | 13 D         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 3.50 - 3.95 | 14 B         | SPT(C) 3.50m, N=36 (5,8/10,10,8,8)   |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 4.00        | 15 D         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 4.50 - 4.95 | 16 B         | SPT(C) 4.50m, 50 (8,10/50 for 175mm) |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 4.80        | 17 ES        |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 5.00        | 18 D         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 5.50 - 5.95 | 20 B         | SPT(S) 5.50m, N=14 (2,4/4,2,4,4)     |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 5.80        | 21 ES        | PID 5.80m = 58.0ppm                  |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 6.00        | 22 D         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 6.50 - 6.95 | 24 B         | SPT(S) 6.50m, N=8 (2,2/2,2,2,2)      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 6.80        | 25 ES        | PID 6.80m = 56.0ppm                  |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 7.00        | 26 D         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 7.50 - 7.95 | 28 B         | SPT(S) 7.50m, N=12 (2,2/3,3,4,2)     |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 7.80        | 29 ES        | PID 7.80m = 55.0ppm                  |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 8.00        | 30 D         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 8.50 - 8.95 | 31 UT        | 15 blows, 100% Recovery              |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 9.00        | 32 D         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 9.50 - 9.95 | 33 D         | SPT(S) 9.50m, N=2 (1,0/1,0,1,0)      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 9.50 - 9.95 | 34 B         |                                      |          |     |     |     |    |  |  |
|                                                                                                                                                                                     |        |                               |                       |                       |                         |                 |                         |                   | 10.00       | 35 D         |                                      |          |     |     |     |    |  |  |

|                        |       |                   |       |           |            |           |          |        |               |                      |            |               |           |      |
|------------------------|-------|-------------------|-------|-----------|------------|-----------|----------|--------|---------------|----------------------|------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |       |           |            |           | Backfill |        |               | Installations        |            |               |           |      |
|                        |       | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details   |            | Resp. Zone    | Depth (m) | Diam |
|                        |       | 22/02             | 17:00 | 5.00      | 4.50       | DRY       | 0.00     | 22.00  | Bentonite     | Standpipe Piezometer |            | 22.00 - 27.00 | 27.00     |      |
|                        |       |                   |       |           |            |           | 22.00    | 27.00  | Gravel        |                      |            |               |           |      |
|                        |       |                   |       |           |            |           |          |        | Water Strikes |                      |            |               |           |      |
|                        |       |                   |       |           |            |           |          |        | Strike (m)    | Rises To (m)         | Time (min) | Remarks       |           |      |
|                        |       |                   |       |           |            |           |          |        | 1.20          | 0.70                 | 20         |               |           |      |
|                        |       |                   |       |           |            |           |          |        | 4.00          | 3.60                 | 20         |               |           |      |
|                        |       |                   |       |           |            |           |          |        | 7.50          | 7.20                 | 20         |               |           |      |

Continued on Next Page



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Log Type  
**Combined Borehole**  
Sheet 2 of 7

Exploratory Hole Number  
**BH17-25**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425605.39</b>    | Northing: <b>558376.23</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>27.48m AOD</b> | Final Depth: <b>61.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>JH+ALB</b>     | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 22/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 28/04/2018 |

| Strata Description                                                                                                               | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                  |                                                | Coring |          |     |     |     |    |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|------------------|------------------------------------------------|--------|----------|-----|-----|-----|----|--|--|--|--|--|
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref              | Test Results                                   | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |  |
| Firm greyish brown laminated CLAY.                                                                                               |        |                               |                       |                       |                         |                 |                         | 10.50 - 10.95     | 36 UT-NR<br>37 B | 15 blows, 0% Recovery                          |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 10.50 - 10.95     |                  |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 11.00             | 38 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 12.00             | 39 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 12.00 - 12.45     | 40 D             | SPT(S) 12.00m, N=15 (3,3/3,4,4,4)              |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 12.00 - 12.45     | 41 B             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        | (10.00)                       |                       |                       |                         |                 |                         | 13.00             | 42 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 13.50 - 13.95     | 43 UT            | 20 blows, 100% Recovery                        |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 14.00             | 44 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 15.00             | 45 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 15.00 - 15.45     | 46 D             | SPT(S) 15.00m, N=16 (2,4/4,4,4,4)              |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 15.00 - 15.45     | 47 B             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 16.00             | 48 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 16.50 - 16.95     | 49 UT            | 17 blows, 100% Recovery                        |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 17.00             | 50 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 17.50             | 51 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
| Soft grey slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to coarse mudstone and sandstone.       |        | 17.50                         | 9.98                  |                       |                         |                 |                         | 18.00 - 18.45     | 52 D             | SPT(S) 18.00m, N=24 (3,4/6,6,6,6)              |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        | (0.70)                        |                       |                       |                         |                 |                         | 18.00 - 18.45     | 53 B             |                                                |        |          |     |     |     |    |  |  |  |  |  |
| Grey slightly silty slightly clayey fine to coarse SAND.                                                                         |        | 18.20                         | 9.28                  |                       |                         |                 |                         | 19.00             | 54 D             |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        | (0.50)                        |                       |                       |                         |                 |                         | 19.50             | 55 D             | SPT(S) 19.50m, 100 (10,15/100 for 200mm)       |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 19.50 - 19.95     | 56 D             | SPT(C) 19.70m, 100 (25 for 40mm/100 for 160mm) |        |          |     |     |     |    |  |  |  |  |  |
| Destructured to residual dark grey MUDSTONE recovered as gravelly silty clay. Gravel is subangular to subrounded fine to coarse. |        | 18.70                         | 8.78                  |                       |                         |                 |                         |                   |                  |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        | (1.28)                        |                       |                       |                         |                 |                         |                   |                  |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 19.98             |                  |                                                |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                  |        | 19.98                         | 7.50                  |                       |                         |                 |                         |                   |                  |                                                |        |          |     |     |     |    |  |  |  |  |  |

Continued on Next Page

|                        |       |                   |      |           |            |           |           |        |               |                      |            |               |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|--------|---------------|----------------------|------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |        |               | Installations        |            |               |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m) | Material      | Instrument Details   |            | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 22.00  | Bentonite     | Standpipe Piezometer |            | 22.00 - 27.00 | 27.00     |      |
|                        |       |                   |      |           |            |           | 22.00     | 27.00  | Gravel        |                      |            |               |           |      |
|                        |       |                   |      |           | 27.00      | 61.00     | Bentonite |        |               |                      |            |               |           |      |
|                        |       |                   |      |           |            |           |           |        | Water Strikes |                      |            |               |           |      |
|                        |       |                   |      |           |            |           |           |        | Strike (m)    | Rises To (m)         | Time (min) | Remarks       |           |      |
|                        |       |                   |      |           |            |           |           |        | 1.20          | 0.70                 | 20         |               |           |      |
|                        |       |                   |      |           |            |           |           |        | 4.00          | 3.60                 | 20         |               |           |      |
|                        |       |                   |      |           |            |           |           |        | 7.50          | 7.20                 | 20         |               |           |      |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425605.39</b>    | Northing: <b>558376.23</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>27.48m AOD</b> | Final Depth: <b>61.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>JH+ALB</b>     | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 22/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 28/04/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |      |              | Coring |                |                |                |     |    |    |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|------|--------------|--------|----------------|----------------|----------------|-----|----|----|-----|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref  | Test Results | Method | Core Run       | TCR            | SCR            | RQD | If |    |     |
| Extremely weak to weak grey interbedded MUDSTONE and SANDSTONE.<br><i>From 20.00m to 20.40m No Recovery.</i><br><br><i>From 20.60m 21.00m recovered as slightly sandy subangular fine to coarse gravel. Sand is fine to coarse.</i><br><br><i>From 21.00m 21.85m recovered as slightly sandy gravelly clay. Sand is fine to coarse. Gravel is subangular fine to coarse.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                               |                       |                       |                         |                 |                         | 21.00 - 21.06     | 11 C |              |        |                | 20.00<br>21.00 | 40             | 0   | 0  | NR |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 21.50 - 21.73     | 1 C  |              |        |                | 21.00<br>22.00 | 100            | 9   | 0  | NI | 21  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | (3.70)                        |                       |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | 15  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         |                   |      |              |        |                | 22.00<br>23.50 | 60             | 0   | 0  | NR | 22  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | NR  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | 23.70                         | 3.78                  |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | 20  |
| Medium strong to strong light grey interbedded thinly laminated SANDSTONE and SILTSTONE. Discontinuities are set 1) closely spaced subhorizontal (0-15 degrees) planar smooth.<br><i>From 23.75m to 23.89m recovered as subangular fine to coarse gravel.</i><br><i>From 23.89m to 23.98m 1 no. discontinuity inclined (60-70 degrees) stepped rough.</i><br><i>From 23.98m to 24.26m recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.</i><br><i>From 24.70m to 25.63m very fractured recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.</i><br><i>From 24.90m to 25.45m 1 no. discontinuity subvertical (70-85 degrees) wavy.</i><br><i>From 25.05m to 25.25m 1 no. discontinuity subvertical inclined (60-70 degrees) planar smooth.</i><br><i>From 25.25m to 25.50m 1 no. discontinuity subvertical (70-80 degrees) planar rough.</i><br><i>From 25.50m to 25.70m 1 no. discontinuity inclined (50-60 degrees) planar smooth.</i><br><i>From 25.80m to 25.90m 1 no. discontinuity subvertical (85-90 degrees) planar rough.</i><br><i>From 26.00m to 26.45m very fractured with 1 no. discontinuity subvertical (70-80 degrees) planar rough with orangish brown staining.</i> |        |                               |                       |                       |                         |                 | 24.27 - 24.50           | 2 C               |      |              |        | 23.50<br>24.50 | 80             | 29             | 24  | NI | 24 |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 24.50 - 24.67     | 10 C |              |        |                |                |                |     |    |    | 5   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | (3.50)                        |                       |                       |                         |                 |                         |                   |      |              |        |                | 24.50<br>26.00 | 100            | 20  | 11 | NI | 25  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 25.90 - 26.00     | 3 C  |              |        |                |                |                |     |    |    | 23  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 26.33 - 26.38     | 9 C  |              |        |                |                |                |     |    |    | >25 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         |                   |      |              |        |                | 26.00<br>27.50 | 100            | 47  | 7  | NI | 26  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 27.20 - 27.30     | 8 C  |              |        |                |                |                |     |    |    | 10  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | 27.20                         | 0.28                  |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | NI  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | 2   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         |                   |      |              |        |                | 27.50<br>29.00 | 100            | 21  | 10 | NI | 28  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | 10  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 28.77 - 29.00     | 4 C  |              |        |                |                |                |     |    |    | NI  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        | (3.30)                        |                       |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | 7   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 29.17 - 29.22     | 7 C  |              |        |                |                |                |     |    |    | NI  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         | 29.54 - 29.80     | 5 C  |              |        |                |                | 29.00<br>30.50 | 100 | 69 | 59 | NI  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | NI  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |                               |                       |                       |                         |                 |                         |                   |      |              |        |                |                |                |     |    |    | 30  |

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|                        |       |                   |              |            |            |           |                        |                         |                                  |                      |               |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|------------------------|-------------------------|----------------------------------|----------------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill               |                         |                                  | Installations        |               |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m)               | To (m)                  | Material                         | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00<br>22.00<br>27.00 | 22.00<br>27.00<br>61.00 | Bentonite<br>Gravel<br>Bentonite | Standpipe Piezometer | 22.00 - 27.00 | 27.00     |      |
|                        |       | Water Strikes     |              |            |            |           |                        |                         |                                  |                      |               |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |                        |                         |                                  |                      |               |           |      |
|                        |       | 1.20              | 0.70         | 20         |            |           |                        |                         |                                  |                      |               |           |      |
|                        |       | 4.00              | 3.60         | 20         |            |           |                        |                         |                                  |                      |               |           |      |
|                        |       | 7.50              | 7.20         | 20         |            |           |                        |                         |                                  |                      |               |           |      |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed







CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Combined Borehole

Sheet 6 of 7

Exploratory Hole Number

BH17-25

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425605.39, Northing: 558376.23, Elevation: 27.48m AOD, Final Depth: 61.00m, Logged By: JH+ALB, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 22/02/2018
Finish Date: 28/04/2018

Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole ø (mm) Depth (m), Casing ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If)
MUDSTONE with interbedded coal. (Driller's Description)
VOID. (Driller's Description)
MUDSTONE. (Driller's Description)
COAL. (Driller's Description)
MUDSTONE. (Driller's Description)

Observations / Remarks, Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Installations (Instrument Details, Resp. Zone, Depth (m), Diam), Water Strikes (Strike (m), Rises To (m), Time (min), Remarks)





CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Combined
Borehole

Sheet 7 of 7

Exploratory Hole Number

BH17-25

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425605.39, Northing: 558376.23, Elevation: 27.48m AOD, Final Depth: 61.00m, Logged By: JH+ALB, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 22/02/2018
Finish Date: 28/04/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Includes a shaded area for 'MUDSTONE. (Driller's Description)' and a note 'EOH at 61.00m - Scheduled Depth'.

Observations / Remarks table with columns: Date, Time, Depth (m), Casing (m), Water (m), Backfill (From (m), To (m), Material), Instrument Details, Resp. Zone, Depth (m), Diam, Water Strikes (Strike (m), Rises To (m), Time (min), Remarks). Includes a red vertical note: 'Groundwater Encountered Casing Used Monitoring Point/s Installed'.



|                                      |                             |                            |                                              |                                                        |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------------|--------------------------------------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                          |                                                        |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425634.98</b>   | Northing: <b>558346.01</b> | From (m)                                     | Method                                                 | Plant Used               | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.01mAOD</b> | Final Depth: <b>20.50m</b> | 0.00 - 1.20<br>1.20 - 17.50<br>17.50 - 20.50 | Inspection Pit<br>Cable Percussion<br>Cable Percussion | Hand Tools<br>Dando 2000 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>          | Grid System: <b>OSGB</b>   |                                              |                                                        |                          | Start Date: 05/03/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                              |                                                        |                          | End Date: 24/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 20.30         | 250       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 9.00            | 250       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 20.30  | Bentonite   |
| 20.30 - 20.50 | Arisings    |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 8  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 12 | Large Bulk       | 0 |
| Disturbed                    | 26 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 5                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                  |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|----------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                  | Hammer Ref |
| Cone                              | 1.20      | 1.20       | -         | 3             | 9          | 450                    | 9  | N=9 (2,1/2,2,3,2)                | BS07       |
| Split Spoon                       | 2.00      | 2.00       | -         | 8             | 21         | 450                    | 21 | N=21 (3,5/7,5,4,5)               | BS07       |
| Split Spoon                       | 3.00      | 3.00       | -         | 6             | 21         | 450                    | 21 | N=21 (2,4/5,6,5,5)               | BS07       |
| Cone                              | 4.00      | 4.00       | -         | 6             | 21         | 450                    | 21 | N=21 (2,4/4,5,5,7)               | BS07       |
| Cone                              | 5.00      | 5.00       | -         | 7             | 15         | 450                    | 15 | N=15 (3,4/3,3,4,5)               | BS07       |
| Split Spoon                       | 6.50      | 6.00       | -         | 3             | 12         | 450                    | 12 | N=12 (2,1/2,3,3,4)               | BS07       |
| Split Spoon                       | 9.50      | 9.00       | -         | 3             | 11         | 450                    | 11 | N=11 (1,2/3,2,3,3)               | BS07       |
| Split Spoon                       | 12.50     | 9.00       | -         | 3             | 13         | 450                    | 13 | N=13 (2,1/3,3,3,4)               | BS07       |
| Split Spoon                       | 15.50     | 9.00       | -         | 6             | 24         | 450                    | 24 | N=24 (3,3/5,4,6,9)               | BS07       |
| Split Spoon                       | 18.50     | 9.00       | -         | 8             | 34         | 450                    | 34 | N=34 (3,5/6,8,10,10)             | BS07       |
| Split Spoon                       | 20.00     | 9.00       | -         | 25            | 100        | 350                    |    | 100 (25 for 125mm/100 for 225mm) | BS07       |
| Split Spoon                       | 20.30     | 9.00       | -         | 25            | 100        | 200                    |    | 100 (25 for 50mm/100 for 150mm)  | BS07       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| BS07            | 64               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 20.00 - 20.30                       | 90              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425634.98</b>   | Northing: <b>558346.01</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.01mAOD</b> | Final Depth: <b>20.50m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>       | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 05/03/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 24/04/2018 |

| Strata Description                                                               | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                                                  |              |
|----------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|--------------------------------------------------|--------------|
|                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref                                              | Test Results |
| Firm grey brown thinly laminated CLAY with occasional fine to medium sand bands. |        | 9.30                          |                      |                   |                      |                       |                         |                 |                         | 10.50             | 29 D                                             |              |
|                                                                                  |        | 11.00 - 11.45                 |                      |                   |                      |                       |                         |                 |                         | 30 UT             | 35 blows, 100% Recovery                          | 11           |
|                                                                                  |        | 11.50                         |                      |                   |                      |                       |                         |                 |                         | 31 D              |                                                  |              |
|                                                                                  |        | 12.50                         |                      |                   |                      |                       |                         |                 |                         | 32 D              | SPT(S) 12.50m, N=13 (2,1/3,3,3,4)                | 12           |
|                                                                                  |        | 13.00 - 13.50                 |                      |                   |                      |                       |                         |                 |                         | 33 B              |                                                  | 13           |
| Soft brownish grey sandy silty CLAY. Sand is fine to coarse.                     |        | 15.50                         | 12.51                |                   |                      |                       |                         |                 |                         | 13.50             | 34 D                                             |              |
|                                                                                  |        | 16.00 - 16.50                 |                      |                   |                      |                       |                         |                 |                         | 35 UT             | 35 blows, 100% Recovery                          | 14           |
|                                                                                  |        | 14.00 - 14.45                 |                      |                   |                      |                       |                         |                 |                         | 4 UT              |                                                  |              |
|                                                                                  |        | 14.50                         |                      |                   |                      |                       |                         |                 |                         | 36 D              |                                                  | 15           |
|                                                                                  |        | 15.50                         |                      |                   |                      |                       |                         |                 |                         | 37 D              | SPT(S) 15.50m, N=24 (3,3/5,4,6,9)                | 16           |
| Medium dense light grey silty fine to medium SAND.                               |        | 17.00                         | 11.01                |                   |                      |                       |                         |                 |                         | 16.00 - 16.50     | 38 B                                             |              |
|                                                                                  |        | 17.50                         |                      |                   |                      |                       |                         |                 |                         | 39 D              |                                                  |              |
|                                                                                  |        | 17.00 - 17.45                 |                      |                   |                      |                       |                         |                 |                         | 40 UT             | 42 blows, 100% Recovery                          | 17           |
|                                                                                  |        | 17.50                         |                      |                   |                      |                       |                         |                 |                         | 41 D              |                                                  | 18           |
|                                                                                  |        | 18.00                         |                      |                   |                      |                       |                         |                 |                         | 42 D              |                                                  | 18           |
| Continued on Next Page                                                           |        | 18.50 - 18.95                 |                      |                   |                      |                       |                         |                 |                         | 43 D              | SPT(S) 18.50m, N=34 (3,5/6,8,10,10)              | 19           |
|                                                                                  |        | 18.50 - 18.95                 |                      |                   |                      |                       |                         |                 |                         | 44 B              |                                                  |              |
|                                                                                  |        | 19.00                         |                      |                   |                      |                       |                         |                 |                         | 45 D              |                                                  | 19           |
|                                                                                  |        |                               |                      |                   |                      |                       |                         |                 | 20.00                   | 46 D              | SPT(S) 20.00m, 100 (25 for 125min/100 for 225mm) | 20           |
|                                                                                  |        |                               |                      |                   |                      |                       |                         |                 | 47 D                    |                   |                                                  |              |

|                        |       |                     |              |            |            |           |          |        |          |                    |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        |          | Installations      |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |          |                    |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |            |           |       |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
BSP7 (64%)



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type

Cable Percussion

Sheet 3 of 3

Exploratory Hole Number

BH17-26

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details: Easting: 425634.98, Northing: 558346.01, Elevation: 28.01m AOD, Final Depth: 20.50m, Logged By: ALB, Grid System: OSG, Orientation: N/A, Inclination: 90°, Methodology & Plant: Depth (m), Method, Plant Used, Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 05/03/2018, Finish Date: 24/04/2018

Main log table with columns: Strata Description, Legend, Depth (m), Reduced Level (m AOD), Chiselling (mins), Water Added (Litres), Hole Ø (mm), Casing Ø (mm), Water Level (m), Installation / Backfill, Samples & Testing. Includes data for Medium dense light grey silty fine to medium SAND and EOH at 20.50m - Refusal.

Observations / Remarks, Misc., Shift Information, Backfill, Installations, Groundwater Strikes table with sub-headers for Date, Time, Depth, Casing, Water, From, To, Material, Instrument Details, Resp. Zone, Depth, Diam, Strike, Rises To, Time, Remarks.



|                                      |                              |                            |                                      |                                                         |                                      |                        |
|--------------------------------------|------------------------------|----------------------------|--------------------------------------|---------------------------------------------------------|--------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                  |                                                         |                                      | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425705.42</b>    | Northing: <b>558289.39</b> | From (m): 0.00 - 1.20<br>1.20 - 7.05 | Method: Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used: Hand Tools<br>Fratec PLG | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>29.58m AOD</b> | Final Depth: <b>7.05m</b>  |                                      |                                                         |                                      | Approved: BH           |
| Client: <b>SLJV</b>                  | Logger: <b>RA</b>            | Grid System: <b>OSGB</b>   |                                      |                                                         |                                      | Start Date: 13/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                      |                                                         |                                      | End Date: 16/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 7.05          | 128       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 5.20            | 128       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 7.05 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 0 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 0 | Large Bulk       | 0 |
| Disturbed                    | 3 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 4             | 13         | 450                    | 13 | N=13 (2,2,3,4,4)       | AR1175     |
| Split Spoon                       | 2.20      | -          | -         | 22            | 28         | 450                    | 28 | N=28 (4,18/9,8,7,4)    | AR1175     |
| Split Spoon                       | 3.20      | -          | -         | 11            | 36         | 450                    | 36 | N=36 (3,8/11,9,7,9)    | AR1175     |
| Split Spoon                       | 4.20      | -          | -         | 4             | 16         | 450                    | 16 | N=16 (2,2,4,4,4,4)     | AR1175     |
| Split Spoon                       | 5.20      | -          | -         | 10            | 24         | 450                    | 24 | N=24 (4,6/8,5,5,6)     | AR1175     |
| Cone                              | 6.90      | -          | -         | 21            | 100        | 150                    |    | 100 (7,14/100 for 0mm) | AR1175     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.20                         | 128       | 80         |         |
| 2.20 - 3.20                         | 128       | 65         |         |
| 3.20 - 4.20                         | 113       | 100        |         |
| 4.20 - 5.20                         | 113       | 60         |         |
| 5.20 - 6.90                         | 113       | 47         |         |





|                                      |                             |                            |                                            |                                                        |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------|--------------------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                        |                                                        |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425708.66</b>   | Northing: <b>558290.63</b> | From (m)                                   | Method                                                 | Plant Used                             | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>30.85mAOD</b> | Final Depth: <b>23.20m</b> | 0.00 - 1.20<br>1.20 - 6.50<br>6.50 - 23.20 | Inspection Pit<br>Rotary Open Helling<br>Rotary Coring | Hand Tools<br>Frasse PLG<br>Frasse PLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RA+GS</b>        | Grid System: <b>OSGB</b>   |                                            |                                                        |                                        | Start Date: 17/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                            |                                                        |                                        | End Date: 24/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 23.20         | 140       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 14.80           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 23.20 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 3 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 8 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 7                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                         |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|-------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result         | Hammer Ref |
| Split Spoon                       | 7.50      | -          | -         | 4             | 19         | 450                    | 19 | N=19 (2,2/4,4,5,6)      | AR1175     |
| Split Spoon                       | 8.80      | -          | -         | 16            | 28         | 450                    | 28 | N=28 (10,6/6,7,7,8)     | AR1175     |
| Split Spoon                       | 11.50     | -          | -         | 13            | 39         | 450                    | 39 | N=39 (4,9/13,10,7,9)    | AR1175     |
| Split Spoon                       | 12.80     | -          | -         | 16            | 48         | 450                    | 48 | N=48 (6,10/10,10,11,17) | AR1175     |
| Split Spoon                       | 13.50     | -          | -         | 25            | 91         | 450                    | 91 | N=91 (22,3/23,24,14,30) | AR1175     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 5 |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 13.50 - 14.50             | Water      | Grey         | 100      |
| 14.50 - 14.80             | Water      | Grey         | 100      |
| 14.80 - 16.20             | Water      | Grey         | 100      |
| 16.20 - 16.50             | Water      | Grey         | 100      |
| 16.50 - 17.80             | Water      | Grey         | 100      |
| 17.80 - 18.10             | Water      | Grey         | 100      |
| 18.10 - 19.20             | Water      | Grey         | 100      |
| 19.20 - 20.20             | Water      | Grey         | 100      |
| 20.20 - 21.70             | Water      | Grey         | 100      |
| 21.70 - 23.20             | Water      | Grey         | 80       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 6.50 - 7.50                         | 113       | 100        |         |
| 7.50 - 8.80                         | 113       | 92         |         |
| 8.80 - 10.10                        | 113       | 100        |         |
| 10.10 - 10.30                       | 113       | 100        |         |
| 10.30 - 11.50                       | 113       | 58         |         |
| 11.50 - 12.80                       | 113       | 85         |         |
| 12.00 - 13.50                       | 98        | 47         |         |











|                                      |                              |                            |                             |                                      |                          |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------------|--------------------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant         |                                      |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425705.41</b>    | Northing: <b>558289.46</b> | From (m)                    | Method                               | Plant Used               | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>30.54m AOD</b> | Final Depth: <b>40.00m</b> | 0.00 - 1.20<br>1.20 - 40.00 | Inspection Pit<br>Rotary Open Holing | Hand Tools<br>Fraste PLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                             |                                      |                          | Start Date: 24/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                             |                                      |                          | End Date: 26/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 40.00         | 140       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 30.70           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 26/04/2018                        | Standpipe Piezometer | 11.00  | 10.00 - 12.00  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 0.50   | Concrete    |
| 0.50 - 10.00  | Bentonite   |
| 10.00 - 12.00 | Sand        |
| 12.00 - 40.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 0 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 0 | Large Bulk       | 0 |
| Disturbed                    | 0 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

**No Samples Taken**

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 1.20 - 10.50              | Water      | Grey         | 100      |
| 10.50 - 14.50             | Water      | Grey         | 100      |
| 14.50 - 30.70             | Water      | Grey         | 100      |
| 30.70 - 40.00             | Water      | Grey         | 100      |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





# CENTRAL ALLIANCE

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Web: www.central-alliance.co.uk

Log Type

**Rotary  
Borehole**

Sheet 2 of 4

Exploratory Hole Number

**BH17-27B**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425705.41</b>   | Northing: <b>558289.46</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>30.54mAOD</b> | Final Depth: <b>40.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 24/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 26/04/2018 |

| Strata Description                     | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (mAOD) | Hole $\phi$ (mm)<br>Depth (m) | Casing $\phi$ (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |  |
|----------------------------------------|--------|----------------------------------|----------------------|-------------------------------|---------------------------------|-----------------|-------------------------|-------------------|-----|--------------|--|
|                                        |        |                                  |                      |                               |                                 |                 |                         | Depth (m)         | Ref | Test Results |  |
| MADE GROUND (Driller's Description).   |        |                                  |                      |                               |                                 |                 |                         |                   |     |              |  |
| BOULDER CLAY (Driller's Description).  |        | 10.50                            | 20.04                |                               |                                 |                 |                         |                   |     |              |  |
|                                        |        | (4.00)                           |                      |                               |                                 |                 |                         |                   |     |              |  |
| COAL MEASURES (Driller's Description). |        | 14.50                            | 16.04                |                               |                                 |                 |                         |                   |     |              |  |
| Continued on Next Page                 |        |                                  |                      |                               |                                 |                 |                         |                   |     |              |  |

|                        |       |                   |      |           |            |           |           |                |           |                      |          |               |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|----------------|-----------|----------------------|----------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |                |           | Installations        |          |               |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)         | Material  | Instrument Details   |          | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 0.50           | Concrete  | Standpipe Piezometer |          | 10.00 - 12.00 | 11.00     |      |
|                        |       |                   |      |           |            |           | 0.50      | 10.00          | Bentonite |                      |          |               |           |      |
|                        |       |                   |      |           | 10.00      | 12.00     | Sand      |                |           |                      |          |               |           |      |
|                        |       |                   |      |           | 12.00      | 40.00     | Bentonite |                |           |                      |          |               |           |      |
|                        |       |                   |      |           |            |           |           | Drilling Fluid |           |                      |          |               |           |      |
|                        |       |                   |      |           |            |           |           | Depth (m)      | Type      | Colour               | Return % |               |           |      |
|                        |       |                   |      |           |            |           |           | 30.70 - 40.00  | Water     | Grey                 | 100      |               |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)



# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
Wakefield WF2 0XJ  
Tel +44(0)1924 229889  
Web: www.central-alliance.co.uk

Log Type

**Rotary  
Borehole**

Sheet 3 of 4

Exploratory Hole Number

**BH17-27B**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425705.41</b>    | Northing: <b>558289.46</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>30.54m AOD</b> | Final Depth: <b>40.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 24/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 26/04/2018 |

| Strata Description                               | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(m AOD) | Hole $\phi$<br>(mm)<br>Depth (m) | Casing $\phi$<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |  |
|--------------------------------------------------|--------|----------------------------------|--------------------------|----------------------------------|------------------------------------|-----------------|-------------------------|-------------------|-----|--------------|--|
|                                                  |        |                                  |                          |                                  |                                    |                 |                         | Depth (m)         | Ref | Test Results |  |
| COAL MEASURES (Driller's Description).           |        | (14.30)                          |                          |                                  |                                    |                 |                         |                   |     |              |  |
| VOID (Driller's Description).                    |        | 28.80<br>(0.55)                  | 1.74                     |                                  |                                    |                 |                         |                   |     |              |  |
| Very soft COAL MEASURES (Driller's Description). |        | 29.35                            | 1.19                     |                                  |                                    |                 |                         |                   |     |              |  |
| Continued on Next Page                           |        |                                  |                          |                                  |                                    |                 |                         |                   |     |              |  |

|                        |       |                   |      |           |            |           |           |                |           |                      |               |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|----------------|-----------|----------------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |                |           | Installations        |               |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)         | Material  | Instrument Details   | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 0.50           | Concrete  | Standpipe Piezometer | 10.00 - 12.00 | 11.00     |      |
|                        |       |                   |      |           |            |           | 0.50      | 10.00          | Bentonite |                      |               |           |      |
|                        |       |                   |      |           | 10.00      | 12.00     | Sand      |                |           |                      |               |           |      |
|                        |       |                   |      |           | 12.00      | 40.00     | Bentonite |                |           |                      |               |           |      |
|                        |       |                   |      |           |            |           |           | Drilling Fluid |           |                      |               |           |      |
|                        |       |                   |      |           |            |           |           | Depth (m)      | Type      | Colour               | Return %      |           |      |
|                        |       |                   |      |           |            |           |           |                |           |                      |               |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type

Rotary Borehole

Sheet 4 of 4

Exploratory Hole Number

BH17-27B

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425705.41, Northing: 558289.46, Elevation: 30.54m AOD, Final Depth: 40.00m, Logged By: GS, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 24/04/2018
Finish Date: 26/04/2018

Strata Description: Very soft COAL MEASURES (Driller's Description), SILTSTONE (Driller's Description)
Legend: (1.35), (9.30)
Depth (m) (Stratum Thickness): 30.70, 40.00
Reduced Level (m AOD): -0.16, -9.46
Hole Ø (mm) Depth (m): 140, 40.00
Casing Ø (mm) Depth (m): 140, 30.70
Water Level (m)
Installation / Backfill
Samples & Testing: Depth (m), Ref, Test Results

Observations / Remarks: No Groundwater Encountered, Casing Used, Monitoring Point/s Installed, Hammer Ref. & Energy Ratio (%)
Misc.
Shift Information: Date, Time, Depth (m), Casing (m), Water (m)
Backfill: From (m), To (m), Material
Installations: Instrument Details, Resp. Zone, Depth (m), Diam
Drilling Fluid: Depth (m), Type, Colour, Return %





|                                      |                              |                            |                       |                                            |                                      |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------|--------------------------------------------|--------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant   |                                            |                                      | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425644.19</b>    | Northing: <b>558411.95</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit<br>Cable Percussion | Plant Used: Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>30.00m AOD</b> | Final Depth: <b>13.95m</b> | 1.20 - 13.95          |                                            |                                      | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                       |                                            |                                      | Start Date: 01/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                       |                                            |                                      | End Date: 01/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 13.95         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.00            | 200       |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
| 3.50                | -          | 3.50       | 20         | 2.80        |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Monitoring Point/s Installed

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 13.95 | Bentonite   |

| Sample Summary             |  |                  |   |
|----------------------------|--|------------------|---|
| Environmental Samples      |  |                  |   |
| Soil                       |  | Water            |   |
| 10                         |  |                  | 0 |
| Geotechnical Samples       |  |                  |   |
| Bulk                       |  | Large Bulk       |   |
| 8                          |  |                  | 0 |
| Disturbed                  |  | Disturbed (NR)   |   |
| 19                         |  |                  | 1 |
| Piston                     |  | Piston (NR)      |   |
| 0                          |  |                  | 0 |
| Undisturbed                |  | Undisturbed (NR) |   |
| 0                          |  |                  | 0 |
| Undisturbed Thin Wall      |  |                  |   |
|                            |  |                  | 4 |
| Undisturbed Thin Wall (NR) |  |                  |   |
|                            |  |                  | 0 |
| Core Sample                |  |                  |   |
|                            |  |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        | Hammer Ref |
| Cone                              | 1.20      | 1.20       | DRY       | 12            | 34         | 450                    | 34 | N=34 (4,8/8,9,8,9)     | AR1134     |
| Cone                              | 2.50      | 2.50       | DRY       | 13            | 40         | 450                    | 40 | N=40 (5,8/10,10,10,10) | AR1134     |
| Cone                              | 3.50      | 3.50       | 2.80      | 4             | 10         | 450                    | 10 | N=10 (2,2/2,3,3)       | AR1134     |
| Cone                              | 4.50      | 4.50       | DRY       | 3             | 12         | 450                    | 12 | N=12 (1,2/3,4,3,2)     | AR1134     |
| Split Spoon                       | 6.50      | 6.00       | DRY       | 30            | 29         | 450                    | 29 | N=29 (1,7,13/6,6,8,9)  | AR1134     |
| Split Spoon                       | 8.50      | 6.00       | DRY       | 4             | 8          | 450                    | 8  | N=8 (2,2/2,2,2,2)      | AR1134     |
| Split Spoon                       | 10.50     | 6.00       | DRY       | 4             | 12         | 450                    | 12 | N=12 (2,2/3,3,3,3)     | AR1134     |
| Split Spoon                       | 13.50     | 6.00       | DRY       | 12            | 35         | 450                    | 35 | N=35 (3,9/8,9,8,10)    | AR1134     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                              |                            |                                          |                                              |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|------------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant                      |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425644.19</b>    | Northing: <b>558411.95</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 13.95 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>30.00m AOD</b> | Final Depth: <b>13.95m</b> |                                          |                                              |                                        | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                                          |                                              |                                        | Start Date: 01/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                          |                                              |                                        | Finish Date: 01/05/2018 |

| Strata Description                                                                                                                                                                                                                                                          | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                    |                                   |                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------|-------------------|----------------------|--------------------------|----------------------------|-----------------|-------------------------|--------------------------------------|-----------------------------------|--------------------------------------|
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | Depth (m)                            | Ref                               | Test Results                         |
| <b>MADE GROUND: TOPSOIL.</b><br>MADE GROUND: Dark brown gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and rare coal and brick. Cobbles are subangular to subrounded sandstone. |        | (0.10)<br>0.10                   | 29.90                 |                   |                      |                          |                            |                 |                         | 0.20<br>0.30<br>0.50<br>0.60<br>0.70 | 1 D<br>2 ES<br>3 D<br>4 B<br>5 ES |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 1.00<br>1.00<br>1.20 - 1.65          | 6 D<br>7 ES<br>9 B                | SPT(C) 1.20m, N=34 (4,8/8,9,8,9)     |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 2.00<br>2.00                         | 10 D<br>11 ES                     |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 2.50 - 2.95                          | 13 B                              | SPT(C) 2.50m, N=40 (5,8/10,10,10,10) |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            | 2.80            |                         | 3.00<br>3.00                         | 14 D<br>15 ES                     |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 3.50 - 3.95                          | 17 B                              | SPT(C) 3.50m, N=10 (2,2/2,2,3,3)     |
|                                                                                                                                                                                                                                                                             |        | (7.70)                           |                       |                   |                      |                          |                            |                 |                         | 4.00<br>4.00                         | 18 D<br>19 ES                     |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 4.50 - 4.95                          | 21 B                              | SPT(C) 4.50m, N=12 (1,2/3,4,3,2)     |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 5.00<br>5.00                         | 22 D<br>23 ES                     |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 5.50 - 5.95                          | 24 UT                             | 30 blows, 100% Recovery              |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            | 200<br>6.00     |                         | 6.00<br>6.00                         | 25 D<br>26 ES                     |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 6.50 - 6.95<br>6.50 - 6.95           | 27 D<br>28 B                      | SPT(S) 6.50m, N=29 (17,13/6,6,8,9)   |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 7.00<br>7.00                         | 29 D<br>30 ES                     |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 7.50 - 7.95                          | 31 UT                             | 39 blows, 100% Recovery              |
| <b>Firm laminated brown CLAY.</b>                                                                                                                                                                                                                                           |        | 7.80                             | 22.20                 |                   |                      |                          |                            |                 |                         | 8.00<br>8.00                         | 32 D<br>33 ES                     |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 8.50 - 8.95<br>8.50 - 8.95           | 34 D<br>35 B                      | SPT(S) 8.50m, N=8 (2,2/2,2,2,2)      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 9.00                                 | 36 D                              |                                      |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 9.50 - 9.95                          | 37 UT                             | 15 blows, 100% Recovery              |
|                                                                                                                                                                                                                                                                             |        |                                  |                       |                   |                      |                          |                            |                 |                         | 10.00                                | 38 D                              |                                      |

|                        |       |                     |              |            |            |           |          |        |               |                    |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|---------------|--------------------|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        | Installations |                    |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           | 0.00     | 13.95  | Bentonite     |                    |            |           |       |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |               |                    |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                    |            |           |       |
|                        |       | 3.50                | 2.80         | 20         |            |           |          |        |               |                    |            |           |       |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)

Continued on Next Page



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425644.19</b>    | Northing: <b>558411.95</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>30.00m AOD</b> | Final Depth: <b>13.95m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 01/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 01/05/2018 |

| Strata Description         | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing              |               |                                    |
|----------------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|--------------------------------|---------------|------------------------------------|
|                            |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)                      | Ref           | Test Results                       |
|                            |        | (6.15)                        |                       |                   |                      |                       |                         |                 |                         | 10.50 - 10.95<br>10.50 - 10.95 | 39 D<br>40 B  | SPT(S) 10.50m, N=12 (2,2/3,3,3,3)  |
|                            |        |                               |                       |                   |                      |                       |                         |                 |                         | 11.00                          | 41 D          |                                    |
| From 12.00m becomes silty. |        |                               |                       |                   |                      |                       |                         |                 |                         | 12.00<br>12.00 - 12.45         | 42 D<br>43 UT | 20 blows, 100% Recovery            |
|                            |        |                               |                       |                   |                      |                       |                         |                 |                         | 12.50                          | 44 D          |                                    |
|                            |        |                               |                       |                   |                      |                       |                         |                 |                         | 13.00                          | 45 D          |                                    |
|                            |        |                               |                       |                   |                      |                       |                         |                 |                         | 13.50 - 13.95                  | 46 D-NR       | SPT(S) 13.50m, N=35 (3,9/8,9,8,10) |
| EOH at 13.95m - Refusal    |        | 13.95                         | 16.05                 |                   |                      | 150<br>13.95          |                         |                 |                         |                                |               |                                    |

|                        |       |                     |              |            |            |           |          |        |          |                    |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        |          | Installations      |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |          |                    |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |            |           |       |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                              |                            |                                           |                            |                          |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------------------------|----------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                       |                            |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425645.21</b>    | Northing: <b>558413.07</b> | From (m)<br>0.00 - 18.20<br>18.00 - 23.70 | Method<br>Cable Percussion | Plant Used<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>29.99m AOD</b> | Final Depth: <b>23.70m</b> |                                           |                            |                          | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                           |                            |                          | Start Date: 01/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                           |                            |                          | End Date: 02/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.00            | 200       |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
| 16.90               | -          | 6.00       | 20         | 16.50       |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Monitoring Point/s Installed

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 23.70 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 7 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   |                  | 1 |
| Undisturbed Thin Wall (NR) |   |                  | 0 |
| Core Sample                |   |                  | 0 |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                  |  |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|----------------------------------|--|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                  |  | Hammer Ref |
| Split Spoon                       | 15.00     | 6.00       | -         | 12            | 26         | 450                    | 26 | N=26 (5,7/7,6,7,6)               |  | AR1134     |
| Split Spoon                       | 17.50     | 6.00       | -         | 25            | 50         | 356                    |    | N=50 (25 for 130mm/50 for 226mm) |  | AR1134     |
| Cone                              | 17.70     | 6.00       | -         | 25            | 50         | 253                    |    | 50 (25 for 88mm/50 for 165mm)    |  | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 17.50 - 17.70                       | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
Wakefield WF2 0XJ  
Tel +44(0)1924 229889  
Web: www.central-alliance.co.uk

Log Type  
**Combined  
Borehole**

Sheet 1 of 3

Exploratory Hole Number

**BH17-28A**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                          |                            |                          |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|----------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |                            |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425645.21</b>    | Northing: <b>558413.07</b> | From (m)<br>0.00 - 18.20 | Method<br>Cable Percussion | Plant Used<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>29.99m AOD</b> | Final Depth: <b>23.70m</b> | 18.00 - 23.70            |                            |                          | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                          |                            |                          | Start Date: 01/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |                            |                          | Finish Date: 02/05/2018 |

| Strata Description                                                                                                                                                                                                                                                   | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |          |     |     |     |    |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|--|--|--|--|
|                                                                                                                                                                                                                                                                      |        |                                  |                       |                          |                            |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |  |
| MADE GROUND: TOPSOIL.<br>MADE GROUND: Dark brown gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and rare coal and brick. Cobbles are subangular to subrounded sandstone. |        | (0.10)<br>0.10                   | 29.89                 |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
|                                                                                                                                                                                                                                                                      |        | (7.70)                           |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| Firm brown laminated CLAY.                                                                                                                                                                                                                                           |        | 7.80                             | 22.19                 |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| Continued on Next Page                                                                                                                                                                                                                                               |        |                                  |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |

|                        |       |                   |              |            |            |           |          |        |               |                    |  |            |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        | Installations |                    |  |            |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00     | 23.70  | Bentonite     |                    |  |            |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |               |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                    |  |            |           |      |
|                        |       | 16.90             | 16.50        | 20         |            |           |          |        |               |                    |  |            |           |      |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed





|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425645.21</b>    | Northing: <b>558413.07</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>29.99m AOD</b> | Final Depth: <b>23.70m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 01/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 02/05/2018 |

| Depth (m)     | Strata Description                                                                                                                                                                                                                                                                                    | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |                |     |     |     |    |    |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------------|-----|-----|-----|----|----|
|               |                                                                                                                                                                                                                                                                                                       |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run       | TCR | SCR | RQD | If |    |
| 20.50 - 20.74 | Very weak light grey SILTSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight clean.<br><i>From 20.50m to 20.74m recovered as angular fine to coarse gravel.</i>                                                                                | XXXXXX | (1.00)                        |                       |                       |                         |                 |                         |                   |     |              |        | 19.50<br>21.00 | 100 | 67  | 47  | NI | 10 |
| 21.00 - 21.40 | Extremely to very weak dark grey SILTSTONE. Discontinuities are extremely to very closely spaced subhorizontal (0-10 degrees) planar smooth tight clean.<br><i>From 21.17m to 21.40m, 21.90m to 22.00m and 22.30m to 22.75m 1 no. discontinuity subvertical 60 degrees planar smooth tight clean.</i> | XXXXXX | (0.40)                        | 8.99                  |                       |                         |                 |                         |                   |     |              |        |                |     |     |     | NI | 21 |
| 21.40 - 21.50 | Very weak dark grey SILTSTONE. Discontinuities are very closely to closely spaced subhorizontal planar smooth tight clean.                                                                                                                                                                            | XXXXXX | (0.10)                        | 8.59                  |                       |                         |                 |                         |                   |     |              |        | 21.00<br>22.20 | 100 | 96  | 33  | NI | 24 |
| 22.20 - 22.75 | Very weak dark grey SILTSTONE. Discontinuities are very closely to closely spaced subhorizontal planar smooth tight clean.<br><i>From 22.75m to 23.10m, subvertical 90 degrees planar smooth tight clean with black staining.</i>                                                                     | XXXXXX | (2.30)                        |                       |                       |                         |                 |                         |                   |     |              |        |                |     |     |     | NI | 22 |
| 22.75 - 23.10 | Very weak dark grey SILTSTONE. Discontinuities are very closely to closely spaced subhorizontal planar smooth tight clean.<br><i>From 22.75m to 23.10m, subvertical 90 degrees planar smooth tight clean with black staining.</i>                                                                     | XXXXXX | (2.30)                        |                       |                       |                         |                 |                         |                   |     |              |        |                |     |     |     | NI | 22 |
| 23.10 - 23.50 | Very weak dark grey SILTSTONE. Discontinuities are very closely to closely spaced subhorizontal planar smooth tight clean.<br><i>From 23.50m to 23.70m, subvertical (60-80 degrees) planar smooth tight clean with black staining.</i>                                                                | XXXXXX | (2.30)                        |                       |                       |                         |                 |                         |                   |     |              |        |                |     |     |     | NI | 23 |
| 23.50 - 23.70 | Very weak dark grey SILTSTONE. Discontinuities are very closely to closely spaced subhorizontal planar smooth tight clean.<br><i>From 23.50m to 23.70m, subvertical (60-80 degrees) planar smooth tight clean with black staining.</i>                                                                | XXXXXX | (2.30)                        |                       |                       |                         |                 |                         |                   |     |              |        |                |     |     |     | NI | 23 |
| 23.70         | EOH at 23.70m - Scheduled Depth                                                                                                                                                                                                                                                                       | XXXXXX | (2.30)                        | 6.29                  |                       |                         |                 |                         |                   |     |              |        |                |     |     |     |    | 23 |

|                        |       |                   |              |            |            |           |          |        |           |                    |  |            |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations      |  |            |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00     | 23.70  | Bentonite |                    |  |            |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |           |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                    |  |            |           |      |
|                        |       | 16.90             | 16.50        | 20         |            |           |          |        |           |                    |  |            |           |      |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed



|                                      |                              |                            |                     |                               |               |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|---------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |               | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426003.07</b>    | Northing: <b>558022.53</b> | From (m)            | Method                        | Plant Used    | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>53.84m AOD</b> | Final Depth: <b>15.20m</b> | 0.00 - 1.20         | Inspection Pit                | Hand Tools    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ASH</b>           | Grid System: <b>OSGB</b>   | 1.20 - 6.20         | Dynamic Sampling (Windowless) | Massenza MIP3 | Start Date: 22/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 6.20 - 15.20        | Rotary Coring                 | Massenza MIP3 | End Date: 24/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 15.20         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 15.20           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                                       |        |                |           |
|-----------------------------------|---------------------------------------|--------|----------------|-----------|
| Date                              | Instrument Details                    | To (m) | Resp. Zone (m) | Diam (mm) |
| 24/05/2018                        | Standpipe with Water Level Datalogger | 0.00   | 4.00 - 15.20   |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.50  | Concrete    |
| 0.50 - 4.00  | Bentonite   |
| 4.00 - 15.20 | Gravel      |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       |    | Water            |   |
|                            | 1  |                  | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       |    | Large Bulk       |   |
|                            | 9  |                  | 0 |
| Disturbed                  |    | Disturbed (NR)   |   |
|                            | 16 |                  | 0 |
| Piston                     |    | Piston (NR)      |   |
|                            | 0  |                  | 0 |
| Undisturbed                |    | Undisturbed (NR) |   |
|                            | 0  |                  | 0 |
| Undisturbed Thin Wall      |    |                  |   |
|                            |    |                  | 0 |
| Undisturbed Thin Wall (NR) |    |                  |   |
|                            |    |                  | 0 |
| Core Sample                |    |                  |   |
|                            |    |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                          |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result          | Hammer Ref |
| Split Spoon                       | 2.00      | 2.00       | -         | 8             | 20         | 450                    | 20 | N=20 (3,5/5,5,5,5)       | AR61       |
| Split Spoon                       | 3.00      | 2.00       | -         | 6             | 18         | 450                    | 18 | N=18 (3,3/5,4,4,5)       | AR61       |
| Split Spoon                       | 4.00      | 2.00       | -         | 7             | 28         | 450                    | 28 | N=28 (3,4/5,6,7,10)      | AR61       |
| Split Spoon                       | 5.00      | 2.00       | -         | 12            | 50         | 388                    |    | N=50 (5,7/50 for 238mm)  | AR61       |
| Split Spoon                       | 6.00      | 2.00       | -         | 25            | 50         | 310                    |    | N=50 (8,17/50 for 160mm) | AR61       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR61            | 58               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 6.20 - 15.20              | Air/Mist   | Grey         | 99       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 102       | 100        |         |
| 2.00 - 3.00                         | 102       | 100        |         |
| 3.00 - 4.00                         | 102       | 80         |         |
| 4.00 - 5.00                         | 102       | 100        |         |
| 5.00 - 6.00                         | 102       | 100        |         |
| 6.00 - 6.20                         | 98        | 100        |         |





|                                      |                             |                            |                                                        |                                                                            |                                                            |                         |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                                    |                                                                            |                                                            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426003.07</b>   | Northing: <b>558022.53</b> | From (m)<br>0.00 - 1.20<br>1.20 - 6.20<br>6.20 - 15.20 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless)<br>Rotary Coring | Plant Used<br>Hand Tools<br>Massenza MIP3<br>Massenza MIP3 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>53.84mAOD</b> | Final Depth: <b>15.20m</b> |                                                        |                                                                            |                                                            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ASH</b>       | Grid System: <b>OSGB</b>   |                                                        |                                                                            |                                                            | Start Date: 22/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                                        |                                                                            |                                                            | Finish Date: 24/05/2018 |

| Strata Description                                                                                                                                                      | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                         |                      |                                           | Coring |          |     |     |     |    |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------------------------------|----------------------|-------------------------------------------|--------|----------|-----|-----|-----|----|--|--|
|                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | Depth (m)                                 | Ref                  | Test Results                              | Method | Core Run | TCR | SCR | RQD | If |  |  |
| MADE GROUND: Soft dark brown slightly gravelly sandy silty clay TOPSOIL. Gravel is angular to subangular fine to coarse sandstone and mudstone. Sand is fine to coarse. |        | (0.10)<br>0.10                | 53.74                |                       |                         |                 |                         | 0.20<br>0.20<br>0.20                      | 1 B<br>2 D<br>3 ES   |                                           |        |          |     |     |     |    |  |  |
| MADE GROUND: Dark brown slightly gravelly silty fine to coarse SAND. Gravel is angular to subangular fine to coarse mudstone and sandstone.                             |        | 0.60                          | 53.24                |                       |                         |                 |                         | 0.60 - 1.00                               | 4 B                  |                                           |        |          |     |     |     |    |  |  |
| MADE GROUND: White angular coarse chalk and limestone GRAVEL.                                                                                                           |        | (0.80)                        |                      |                       |                         |                 |                         | 1.20 - 1.40                               | 5 D                  |                                           |        |          |     |     |     |    |  |  |
| MADE GROUND: Firm dark brown gravelly sandy CLAY. Gravel is angular fine to coarse sandstone and mudstone. Sand is fine to coarse.                                      |        | 1.40                          | 52.44                |                       |                         |                 |                         | 1.40 - 2.00<br>1.40 - 2.00<br>1.40 - 2.00 | 6 B<br>7 D<br>8 B    |                                           |        |          |     |     |     |    |  |  |
| Stiff fissured rarely desiccated slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse mudstone and sandstone.           |        | 2.10                          | 51.74                |                       |                         |                 |                         | 2.00 - 2.45<br>2.00 - 2.90<br>2.00 - 2.90 | 9 D<br>10 D<br>11 B  | SPT(S) 2.00m, N=20<br>(3,5/5,5,5,5)       |        |          |     |     |     |    |  |  |
| Dark grey angular coarse micaceous sandstone GRAVEL.                                                                                                                    |        | 2.90                          | 50.94                |                       |                         |                 |                         | 2.90 - 3.00                               | 12 D                 |                                           |        |          |     |     |     |    |  |  |
| Stiff fissured dark brown slightly gravelly slightly sandy CLAY. Gravel is angular to subangular fine to coarse mudstone and coal. Sand is fine to coarse.              |        | (0.10)<br>0.10                | 50.84                |                       |                         |                 |                         | 3.00 - 3.45<br>3.00 - 3.60                | 14 D<br>13 B         | SPT(S) 3.00m, N=18<br>(3,3/5,4,4,5)       |        |          |     |     |     |    |  |  |
| Black COAL.                                                                                                                                                             |        | 3.60                          | 50.24                |                       |                         |                 |                         | 3.60 - 3.80                               | 15 D                 |                                           |        |          |     |     |     |    |  |  |
| Stiff dark grey gravelly sandy CLAY. Gravel is angular fine to coarse of mudstone. Sand is fine to coarse.                                                              |        | (0.20)<br>0.20                | 50.04                |                       |                         |                 |                         | 3.80 - 4.00                               | 16 D                 |                                           |        |          |     |     |     |    |  |  |
| Extremely weak dark grey MUDSTONE. Discontinuities are extremely closely spaced subhorizontal (0-10 degrees) planar smooth tight clean.                                 |        | 4.70                          | 49.14                |                       |                         |                 |                         | 4.00 - 4.45<br>4.00 - 4.70                | 18 D<br>17 B         | SPT(S) 4.00m, N=28<br>(3,4/5,6,7,10)      |        |          |     |     |     |    |  |  |
|                                                                                                                                                                         |        | (0.90)                        |                      |                       |                         |                 |                         | 4.70 - 4.90                               | 19 B                 |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 4.90 - 5.00<br>5.00 - 5.10<br>5.00 - 5.70 | 20 D<br>22 D<br>21 B | SPT(S) 5.00m, N=50<br>(5,7/50 for 238mm)  |        |          |     |     |     |    |  |  |
|                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 5.70 - 5.80<br>5.80 - 6.00                | 23 D<br>24 D         |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                         |        |                               |                      |                       |                         |                 |                         | 6.00 - 6.05<br>6.05 - 6.20                | 25 D<br>26 D         | SPT(S) 6.00m, N=50<br>(8,17/50 for 160mm) |        |          |     |     |     |    |  |  |
| From 6.20m to 6.40m, no recovery.                                                                                                                                       |        |                               |                      |                       |                         |                 |                         |                                           |                      |                                           |        |          |     |     |     |    |  |  |
| From 6.95m to 7.05m discontinuities are extremely closely spaced subvertical (90 degrees) planar smooth tight clean.                                                    |        |                               |                      |                       |                         |                 |                         |                                           |                      |                                           |        |          |     |     |     |    |  |  |
| From 7.70m to 7.90m, no recovery.                                                                                                                                       |        |                               |                      |                       |                         |                 |                         |                                           |                      |                                           |        |          |     |     |     |    |  |  |
| From 8.35m to 8.50m 1 no. discontinuity subvertical planar smooth.                                                                                                      |        |                               |                      |                       |                         |                 |                         |                                           |                      |                                           |        |          |     |     |     |    |  |  |
| From 8.70m to 8.95m 1 no. discontinuity subvertical (90 degrees) planar smooth tight.                                                                                   |        |                               |                      |                       |                         |                 |                         |                                           |                      |                                           |        |          |     |     |     |    |  |  |
| From 9.05m to 9.15m 1 no. discontinuity subvertical (60 degrees) planar smooth.                                                                                         |        |                               |                      |                       |                         |                 |                         |                                           |                      |                                           |        |          |     |     |     |    |  |  |
| From 9.80m to 9.90m 1 no. discontinuity subvertical (45 degrees) planar                                                                                                 |        |                               |                      |                       |                         |                 |                         |                                           |                      |                                           |        |          |     |     |     |    |  |  |
|                                                                                                                                                                         |        | (8.05)                        |                      |                       |                         |                 |                         |                                           |                      |                                           |        |          |     |     |     |    |  |  |

Continued on Next Page

|                        |       |                   |              |            |            |           |          |        |           |                            |  |              |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|----------------------------|--|--------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations              |  |              |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details         |  | Resp. Zone   | Depth (m) | Diam |
|                        |       | 23/05             | 05:00        | 6.20       | 2.00       | Dry       | 0.00     | 0.50   | Concrete  | Standpipe with Water Level |  | 4.00 - 15.20 | 0.00      |      |
|                        |       | 23/05             | 19:00        | 6.20       | 2.00       | Dry       | 0.50     | 4.00   | Bentonite | Datalogger                 |  |              |           |      |
|                        |       |                   |              |            |            |           | 4.00     | 15.20  | Gravel    |                            |  |              |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |           |                            |  |              |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                            |  |              |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426003.07</b>    | Northing: <b>558022.53</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>53.84m AOD</b> | Final Depth: <b>15.20m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ASH</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 22/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 24/05/2018 |

| Strata Description                                                                                                                               | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |          |     |     |     |    |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|--|--|--|--|
|                                                                                                                                                  |        |                                  |                       |                          |                            |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |  |
| From 9.80m to 9.90m 1 no. discontinuity subvertical (45 degrees) planar with orangish brown staining.                                            |        |                                  |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| From 10.60m to 10.70m 1 no. discontinuity subvertical (80 degrees) planar smooth tight.<br>From 10.70m to 11.25m, no recovery.                   |        |                                  |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| From 11.25m to 11.40m 1 no. discontinuity subvertical (90 degrees) undulating smooth tight.                                                      |        |                                  |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| From 11.80m to 12.00m 1 no. discontinuity subvertical (90 degrees) planar smooth with iron staining.<br>From 12.20m to 12.30m, no recovery.      |        |                                  |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| From 12.60m to 12.75m 1 no. discontinuity subvertical (60 degrees) stepped smooth tight clean.                                                   |        | 12.75                            | 41.09                 |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| Very weak dark grey fine to medium grained SANDSTONE. Discontinuities are closely spaced subhorizontal (0-10 degrees) planar smooth tight clean. |        | (0.95)                           |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| Very weak dark grey MUDSTONE. Discontinuities are closely spaced subhorizontal (0-10 degrees) planar smooth.                                     |        | 13.70                            | 40.14                 |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| From 14.30m to 14.50m 1 no. discontinuity subvertical (90 degrees) planar.                                                                       |        | 14.50                            | 39.34                 |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| Black COAL.                                                                                                                                      |        | (0.70)                           |                       |                          |                            |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |
| EOH at 15.20m - Scheduled depth                                                                                                                  |        | 15.20                            | 38.64                 | 92<br>15.20              | 140<br>15.20               |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |  |

|                        |       |                   |              |            |            |           |          |        |           |                            |  |              |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|----------------------------|--|--------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations              |  |              |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details         |  | Resp. Zone   | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00     | 0.50   | Concrete  | Standpipe with Water Level |  | 4.00 - 15.20 | 0.00      |      |
|                        |       |                   |              |            |            |           | 0.50     | 4.00   | Bentonite | Datalogger                 |  |              |           |      |
|                        |       |                   |              |            | 4.00       | 15.20     | Gravel   |        |           |                            |  |              |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |           |                            |  |              |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                            |  |              |           |      |
|                        |       |                   |              |            |            |           |          |        |           |                            |  |              |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



|                                      |                             |                            |                                              |                                                     |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------------|-----------------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                          |                                                     |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426446.02</b>   | Northing: <b>557587.56</b> | From (m)                                     | Method                                              | Plant Used                             | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>77.95mAOD</b> | Final Depth: <b>15.50m</b> | 0.00 - 1.20<br>1.20 - 10.95<br>10.50 - 15.50 | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000<br>Frasco SLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS+ASH</b>       | Grid System: <b>OSGB</b>   |                                              |                                                     |                                        | Start Date: 27/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                              |                                                     |                                        | End Date: 27/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 10.95         | 150       |
| 15.50         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 4.50            | 250       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 15.50 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 8  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 9  | Large Bulk       | 0 |
| Disturbed                  | 19 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 1                |   |
| Core Sample                |    | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|---------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                 | Hammer Ref |
| Cone                              | 1.20      | 1.20       | DRY       | 4             | 9          | 450                    | 9  | N=9 (2,2/3,2,2,2)               | AR1134     |
| Cone                              | 2.50      | 2.50       | DRY       | 6             | 19         | 450                    | 19 | N=19 (2,4/5,5,5,4)              | AR1134     |
| Cone                              | 3.50      | 2.50       | DRY       | 6             | 26         | 450                    | 26 | N=26 (2,4/6,6,7,7)              | AR1134     |
| Cone                              | 4.50      | 4.50       | DRY       | 7             | 15         | 450                    | 15 | N=15 (3,4/4,3,4,4)              | AR1134     |
| Split Spoon                       | 5.50      | 4.50       | DRY       | 15            | 42         | 450                    | 42 | N=42 (5,10/10,11,11,10)         | AR1134     |
| Split Spoon                       | 6.50      | 4.50       | DRY       | 25            | 50         | 375                    | 50 | N=50 (25 for 75mm/15,15,10,10)  | AR1134     |
| Split Spoon                       | 8.50      | 4.50       | DRY       | 15            | 50         | 200                    |    | 50 (5,10/50 for 50mm)           | AR1134     |
| Split Spoon                       | 9.50      | 4.50       | DRY       | 15            | 40         | 450                    | 40 | N=40 (5,10/10,10,10,10)         | AR1134     |
| Split Spoon                       | 10.50     | 4.50       | DRY       | 11            | 38         | 450                    | 38 | N=38 (5,6/7,9,11,11)            | AR1134     |
| Split Spoon                       | 10.80     | 6.00       | DRY       | 25            | 100        | 145                    |    | 100 (25 for 40mm/100 for 105mm) | AR1134     |

| In-Situ Tests              |    |
|----------------------------|----|
| PID                        | 0  |
| Hand Vane*                 | 0  |
| Standard Penetration Tests | 10 |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 6.00 - 6.20                         | 30              |             |        |
| 8.80 - 9.00                         | 30              |             |        |
| 10.50 - 10.80                       | 90              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 10.50 - 15.50             | Water      | Brown        | 50       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                              |                            |                       |                                                         |                                                |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------|---------------------------------------------------------|------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant   |                                                         |                                                | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426446.02</b>    | Northing: <b>557587.56</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit, Cable Percussion, Rotary Coring | Plant Used: Hand Tools, Dando 2000, Fraste SLG | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>77.95m AOD</b> | Final Depth: <b>15.50m</b> | 1.20 - 10.95          |                                                         |                                                | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS+ASH</b>     | Grid System: <b>OSGB</b>   | 10.50 - 15.50         |                                                         |                                                | Start Date: 27/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                       |                                                         |                                                | Finish Date: 27/04/2018 |

| Strata Description                                                                                                                                                                                    | Legend    | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing          |                    |                                              | Coring |          |     |     |     |    |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|----------------------------|--------------------|----------------------------------------------|--------|----------|-----|-----|-----|----|--|--|
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | Depth (m)                  | Ref                | Test Results                                 | Method | Core Run | TCR | SCR | RQD | If |  |  |
| MADE GROUND: Soft to firm dark brown gravelly CLAY. Gravel is subangular fine to coarse sandstone.                                                                                                    | [Pattern] | (1.00)                        |                       |                       |                         |                 |                         | 0.20<br>0.30               | 1 D<br>2 ES        |                                              |        |          |     |     |     |    |  |  |
| Possible MADE GROUND: Firm to stiff yellowish brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and rare brick and coal.                 | [Pattern] | 1.00                          | 76.95                 |                       |                         |                 |                         | 0.50<br>0.60<br>0.70       | 3 D<br>4 B<br>5 ES |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 1.00<br>1.00               | 6 D<br>7 ES        |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 1.20<br>1.20 - 1.65        | 8 D<br>10 B        | SPT(C) 1.20m, N=9 (2,2/3,2,2,2)              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 2.00<br>2.00               | 11 D<br>12 ES      |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           | (3.00)                        |                       |                       |                         |                 |                         | 2.50 - 2.95                | 14 B               | SPT(C) 2.50m, N=19 (2,4/5,5,4)               |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 3.00<br>3.00               | 15 D<br>16 ES      |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 3.50 - 3.95                | 18 B               | SPT(C) 3.50m, N=26 (2,4/6,6,7,7)             |        |          |     |     |     |    |  |  |
| Firm to stiff brown gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and rare coal. Cobbles are subangular sandstone. | [Pattern] | 4.00                          | 73.95                 |                       |                         |                 |                         | 4.00<br>4.00               | 19 D<br>20 ES      |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       | 250<br>4.50             |                 |                         | 4.50 - 4.95                | 23 D               | SPT(C) 4.50m, N=15 (3,4/4,3,4,4)             |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 5.00                       | 24 ES              |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 5.50 - 5.95<br>5.50 - 5.95 | 25 D<br>26 B       | SPT(S) 5.50m, N=42 (5,10/10,11,11,10)        |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 6.00<br>6.00               | 27 D<br>28 ES      |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 6.50 - 6.95<br>6.50 - 6.95 | 29 D<br>30 B       | SPT(S) 6.50m, N=50 (25 for 75mm/15,15,10,10) |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           | (6.50)                        |                       |                       |                         |                 |                         | 7.00                       | 31 D               |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 7.50 - 7.95<br>7.50 - 7.95 | 32 UT-NR<br>33 B   | 100 blows, 0% Recovery                       |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 8.00                       | 34 D               |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 8.50 - 8.95<br>8.50 - 8.95 | 35 D<br>36 B       | SPT(S) 8.50m, 50 (5,10/50 for 50mm)          |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 9.00                       | 37 D               |                                              |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                       |           |                               |                       |                       |                         |                 |                         | 9.50 - 9.95<br>9.50 - 9.95 | 38 D<br>39 B       | SPT(S) 9.50m, N=40 (5,10/10,10,10,10)        |        |          |     |     |     |    |  |  |
| Continued on Next Page                                                                                                                                                                                |           |                               |                       |                       |                         |                 |                         | 10.00                      | 40 D               |                                              |        |          |     |     |     |    |  |  |

|                        |       |                   |              |            |            |           |          |        |           |                    |  |            |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations      |  |            |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00     | 15.50  | Bentonite |                    |  |            |           |      |
|                        |       | Water Strikes     |              |            |            |           |          |        |           |                    |  |            |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                    |  |            |           |      |
|                        |       |                   |              |            |            |           |          |        |           |                    |  |            |           |      |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed





|                                      |                              |                            |                     |                               |               |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|---------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |               | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426449.85</b>    | Northing: <b>557582.58</b> | From (m)            | Method                        | Plant Used    | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>85.08m AOD</b> | Final Depth: <b>20.00m</b> | 0.00 - 1.20         | Inspection Pit                | Hand Tools    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   | 1.20 - 3.50         | Dynamic Sampling (Windowless) | Comacchio 205 | Start Date: 29/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 3.50 - 6.00         | Rotary Coring                 | Comacchio 205 | End Date: 01/06/2018   |
|                                      |                              |                            | 6.00 - 7.00         | Rotary Open Holing            | Comacchio 205 |                        |
|                                      |                              |                            | 7.00 - 15.00        | Rotary Coring                 | Comacchio 205 |                        |
|                                      |                              |                            | 15.00 - 20.00       | Rotary Open Holing            | Comacchio 205 |                        |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 20.00         | 121       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 7.00            | 200       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                                       |        |                |           |
|-----------------------------------|---------------------------------------|--------|----------------|-----------|
| Date                              | Instrument Details                    | To (m) | Resp. Zone (m) | Diam (mm) |
| 01/06/2018                        | Standpipe with Water Level Datalogger | 0.00   | 14.00 - 20.00  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 14.00  | Bentonite   |
| 14.00 - 20.00 | Gravel      |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 5 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 3 | Large Bulk       | 0 |
| Disturbed                    | 9 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 3                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 6             | 13         | 450                    | 13 | N=13 (3,3/4,3,3,3)     | AR1175     |
| Split Spoon                       | 2.20      | -          | -         | 7             | 13         | 450                    | 13 | N=13 (3,4/3,3,3,4)     | AR1175     |
| Split Spoon                       | 3.20      | -          | -         | 25            | 50         | 285                    |    | 50 (8,17/50 for 135mm) | AR1175     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.20                         | 121       | 100        |         |
| 2.20 - 3.20                         | 121       | 100        |         |
| 3.20 - 3.50                         | 121       | 100        |         |



|                                      |                              |                            |                     |                               |               |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|---------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |               | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426449.85</b>    | Northing: <b>557582.58</b> | From (m)            | Method                        | Plant Used    | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>85.08m AOD</b> | Final Depth: <b>20.00m</b> | 0.00 - 1.20         | Inspection Pit                | Hand Tools    | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   | 1.20 - 3.50         | Dynamic Sampling (Windowless) | Comacchio 205 | Start Date: 29/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 3.50 - 6.00         | Rotary Coring                 | Comacchio 205 | Finish Date: 01/06/2018 |
|                                      |                              |                            | 6.00 - 7.00         | Rotary Open Holing            | Comacchio 205 |                         |
|                                      |                              |                            | 7.00 - 15.00        | Rotary Coring                 | Comacchio 205 |                         |
|                                      |                              |                            | 15.00 - 20.00       | Rotary Open Holing            | Comacchio 205 |                         |

| Strata Description                                                                                                                                                                                                                           | Legend                | Depth (m) (Stratum Thickness)        | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                                  | Coring |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|------|----------------------------------|--------|----------|-----|-----|-----|----|--|--|--|----------------------------------|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|------|------|-------|----|---|---|--|--|--|--|--|--|--|--|--|--|--|
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | Depth (m)         | Ref  | Test Results                     | Method | Core Run | TCR | SCR | RQD | If |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| MADE GROUND: Firm greyish brown gravelly sandy CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone, concrete, brick, mudstone and rare coal. Sand is fine to coarse. Cobbles are subangular sandstone. | [Cross-hatch pattern] | (3.50)                               |                       |                       |                         |                 |                         | 0.10 - 1.20       | 7 B  | SPT(S) 1.20m, N=13 (3,3/4,3,3,3) | IP     |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 0.20              | 1 D  |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 0.30              | 2 ES |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 0.50              | 3 D  |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 0.70              | 4 ES |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 1.00              | 5 D  |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 1.00              | 6 ES |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 1.20 - 1.65       | 8 D  |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 1.20 - 2.20       | 10 B |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         | 1.80              | 9 D  |                                  |        |          |     |     |     |    |  |  |  | SPT(S) 2.20m, N=13 (3,4/3,3,3,4) | WLS   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 2.00                                                                                                                                                                                                                                         | 12 ES                 |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 2.20 - 2.65                                                                                                                                                                                                                                  | 11 D                  |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 2.20 - 3.20                                                                                                                                                                                                                                  | 14 B                  |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 2.80                                                                                                                                                                                                                                         | 13 D                  |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 3.00                                                                                                                                                                                                                                         | 15 ES                 |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 3.20 - 3.65                                                                                                                                                                                                                                  | 16 D                  | SPT(S) 3.20m, 50 (8,17/50 for 135mm) | RC                    |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 3.40                                                                                                                                                                                                                                         | 17 D                  |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 3.50                                                                                                                                                                                                                                         |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 3.50 |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| 4.00                                                                                                                                                                                                                                         |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 4.50 | 100  | 0     | 0  |   |   |  |  |  |  |  |  |  |  |  |  |  |
| MADE GROUND: Soft greyish brown gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone, brick and rare coal. Sand is fine to coarse.                                                                               | [Cross-hatch pattern] |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  | (0.40)                           |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      | 3.90 | 81.18 |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| MADE GROUND: Orangish yellow angular to subangular fine to coarse sandstone GRAVEL.                                                                                                                                                          | [Cross-hatch pattern] |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  | (0.10)                           |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      | 4.00 | 81.08 |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| MADE GROUND: Firm orangish brown sandy very gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, brick and rare coal. Cobbles are subangular sandstone.     | [Cross-hatch pattern] |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  | (2.00)                           |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      | 4.50 | 6.00  | 93 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |
| MADE GROUND (Driller's Description).                                                                                                                                                                                                         | [Cross-hatch pattern] | (1.00)                               |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  | 6.00                             | 79.08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| MADE GROUND: Firm orangish brown sandy very gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, brick and rare coal. Sand is fine to coarse. Cobbles are subangular sandstone.     | [Cross-hatch pattern] | (1.30)                               |                       |                       |                         |                 |                         | 200<br>7.00       |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  | 7.00                             | 78.08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| Assumed Zone of Core Loss.                                                                                                                                                                                                                   | [Cross-hatch pattern] | (0.70)                               |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  | 8.30                             | 76.78 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| MADE GROUND: Orangish brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies.                                                                                           | [Cross-hatch pattern] | (0.55)                               |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  | 9.00                             | 76.08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| Firm grey thinly laminated slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone.<br><i>From 9.70m to 10.20m, no recovery.</i>                                                                                  | [Cross-hatch pattern] | (0.55)                               |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                              |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  | 9.55                             | 75.53 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |
| Continued on Next Page                                                                                                                                                                                                                       |                       |                                      |                       |                       |                         |                 |                         |                   |      |                                  |        |          |     |     |     |    |  |  |  |                                  |       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |      |       |    |   |   |  |  |  |  |  |  |  |  |  |  |  |

|                        |       |                   |       |            |            |           |          |        |           |                            |  |               |           |      |
|------------------------|-------|-------------------|-------|------------|------------|-----------|----------|--------|-----------|----------------------------|--|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |       |            |            |           | Backfill |        |           | Installations              |  |               |           |      |
|                        |       | Date              | Time  | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details         |  | Resp. Zone    | Depth (m) | Diam |
|                        |       | 29/05             | 08:00 | 7.00       | -          | -         | 0.00     | 14.00  | Bentonite | Standpipe with Water Level |  | 14.00 - 20.00 | 0.00      |      |
|                        |       | 31/05             | 18:00 | 7.00       | 7.00       | -         | 14.00    | 20.00  | Gravel    | Datalogger                 |  |               |           |      |
|                        |       | 01/06             | 08:00 | 11.00      | 7.00       | 6.7       |          |        |           |                            |  |               |           |      |
|                        |       | 01/06             | 18:00 | 11.00      | 7.00       | -         |          |        |           |                            |  |               |           |      |
| Water Strikes          |       |                   |       |            |            |           |          |        |           |                            |  |               |           |      |
| Strike (m)             |       | Rises To (m)      |       | Time (min) |            | Remarks   |          |        |           |                            |  |               |           |      |



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426449.85</b>    | Northing: <b>557582.58</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>85.08m AOD</b> | Final Depth: <b>20.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 29/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 01/06/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                             | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing              |            |              | Coring |                |     |     |     |    |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|--------------------------------|------------|--------------|--------|----------------|-----|-----|-----|----|--|
|                                                                                                                                                                                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | Depth (m)                      | Ref        | Test Results | Method | Core Run       | TCR | SCR | RQD | If |  |
| Firm grey thinly laminated slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone.                                                                                                                                                                                                                                 |        | (1.85)                        |                       |                       |                         |                 |                         |                                |            |              |        | 9.70<br>11.00  | 62  | 0   | 0   |    |  |
| Medium strong to strong orangish grey interbedded SANDSTONE and destructured to residual dark grey MUDSTONE.<br><i>From 11.40m to 12.05m, extremely to very weak.<br/>From 11.50m to 11.70m recovered as gravelly sandy clay. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and rare coal. Sand is fine to coarse.</i> |        | 11.40                         | 73.68                 |                       |                         |                 |                         | 11.80 - 11.90<br>12.05 - 12.20 | 3 C<br>1 C |              |        | 11.00<br>12.50 | 93  | 7   | 7   |    |  |
| <i>From 12.50m to 12.70m Assumed Zone of Core Loss.</i>                                                                                                                                                                                                                                                                                        |        |                               |                       |                       |                         |                 |                         |                                |            |              |        |                |     |     |     |    |  |
| <i>From 12.70m to 13.10m and 13.25m to 13.35m recovered as gravelly sandy clay. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and coal. Sand is fine to coarse.</i>                                                                                                                                                    |        | (3.60)                        |                       |                       |                         |                 |                         |                                |            |              |        | 12.50<br>13.50 | 80  | 15  | 15  |    |  |
| <i>From 13.40m to 13.70m recovered as subangular to subrounded fine to coarse sandstone gravel.</i>                                                                                                                                                                                                                                            |        |                               |                       |                       |                         |                 |                         |                                |            |              |        |                |     |     |     |    |  |
| <i>From 14.70m to 15.00m recovered as gravelly sandy clay. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and coal. Sand is fine to coarse.</i>                                                                                                                                                                         |        | 15.00                         | 70.08                 |                       |                         |                 |                         | 14.75 - 14.80                  | 2 C        |              |        | 13.50<br>15.00 | 67  | 47  | 13  |    |  |
| Medium strength MUDSTONE. (Driller's Description)                                                                                                                                                                                                                                                                                              |        | (5.00)                        |                       |                       |                         |                 |                         |                                |            |              |        |                |     |     |     |    |  |
| EOH at 20.00m - Scheduled depth                                                                                                                                                                                                                                                                                                                |        | 20.00                         | 65.08                 | 121<br>20.00          |                         |                 |                         |                                |            |              |        |                |     |     |     |    |  |

|                        |       |                   |              |            |            |           |               |                |                     |                                          |               |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|---------------|----------------|---------------------|------------------------------------------|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill      |                |                     | Installations                            |               |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m)      | To (m)         | Material            | Instrument Details                       | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00<br>14.00 | 14.00<br>20.00 | Bentonite<br>Gravel | Standpipe with Water Level<br>Datalogger | 14.00 - 20.00 | 0.00      |      |
|                        |       | Water Strikes     |              |            |            |           |               |                |                     |                                          |               |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |               |                |                     |                                          |               |           |      |
|                        |       |                   |              |            |            |           |               |                |                     |                                          |               |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed





|                                      |                              |                            |                                                             |                                                                           |                                                        |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                         |                                                                           |                                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426563.91</b>    | Northing: <b>557596.66</b> | From (m)                                                    | Method                                                                    | Plant Used                                             | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.43m AOD</b> | Final Depth: <b>21.00m</b> | 0.00 - 1.20<br>1.20 - 8.00<br>8.00 - 18.00<br>18.00 - 21.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring<br>Rotary Open Holing | Hand Tools<br>Dando 2000<br>Beretta T41<br>Beretta T41 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ASH</b>           | Grid System: <b>OSGB</b>   |                                                             |                                                                           |                                                        | Start Date: 03/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                                             |                                                                           |                                                        | End Date: 16/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 21.00         | 121       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 8.50            | 150       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 16/05/2018                        | Standpipe          | 4.00   | 3.50 - 4.50    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 3.50  | Bentonite   |
| 3.50 - 4.50  | Gravel      |
| 4.50 - 21.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 2 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 7 | Large Bulk       | 0 |
| Disturbed                    | 9 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 2 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                              |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result              | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 8             | 25         | 450                    | 25 | N=25 (3,5/6,6,6,7)           | DC01       |
| Split Spoon                       | 3.20      | 3.00       | -         | 8             | 21         | 450                    | 21 | N=21 (4,4/5,5,5,6)           | DC01       |
| Split Spoon                       | 5.20      | 5.00       | -         | 25            | 50         | 80                     |    | 50 (25 for 30mm/50 for 50mm) | DC01       |
| Split Spoon                       | 6.50      | 6.20       | -         | 25            | 50         | 40                     |    | 50 (25 for 0mm/50 for 40mm)  | DC01       |
| Split Spoon                       | 8.00      | 7.50       | -         | 20            | 50         | 330                    |    | 50 (8,12/50 for 180mm)       | DC01       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| DC01            | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 5 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 4.70 - 5.00                         | 15              |             |        |
| 5.30 - 5.70                         | 15              |             |        |
| 5.70 - 6.10                         | 45              |             |        |
| 7.60 - 8.00                         | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 8.00 - 12.00              | Water      | Yellow       | 100      |
| 12.00 - 16.50             | Water      | Grey         | 100      |
| 16.50 - 18.00             | Water      | Grey         | 80       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                             |                            |                       |                                                              |                                                 |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------|--------------------------------------------------------------|-------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant   |                                                              |                                                 | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426563.91</b>   | Northing: <b>557596.66</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit, Cable Percussion, Rotary Open Holing | Plant Used: Hand Tools, Dando 2000, Beretta T41 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.43mAOD</b> | Final Depth: <b>21.00m</b> | 1.20 - 8.00           |                                                              |                                                 | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ASH</b>       | Grid System: <b>OSGB</b>   | 8.00 - 18.00          |                                                              |                                                 | Start Date: 03/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    | 18.00 - 21.00         |                                                              |                                                 | Finish Date: 16/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                         | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                            | Coring |          |     |     |     |    |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|--------------------------------------------|--------|----------|-----|-----|-----|----|--|--|
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                               | Method | Core Run | TCR | SCR | RQD | If |  |  |
| MADE GROUND: Soft dark brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse brick and sandstone. Sand is fine to coarse. Stiff orangish dark brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse mudstone and siltstone. |        | 0.40                          | 81.03                |                       |                         |                 |                         | 0.10              | 1 ES  | SPT(S) 1.20m, N=25 (3,5/6,6,6,7)           | IP     |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        | 0.30                          |                      |                       |                         |                 |                         | 2 B               |       |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        | 0.50                          |                      |                       |                         |                 |                         | 3 ES              |       |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        | 0.70                          |                      |                       |                         |                 |                         | 4 B               |       |                                            |        |          |     |     |     |    |  |  |
| Stiff yellowish brown mottled grey gravelly sandy CLAY with low cobble and boulder content. Gravel is angular to subangular fine to coarse sandstone. Cobbles and boulders are angular to rounded sandstone. Sand is fine to coarse.                                                                                       |        | (2.20)                        | 78.83                |                       |                         |                 |                         | 1.20 - 1.65       | 5 D   | SPT(S) 3.20m, N=21 (4,4/5,5,5,6)           | CB     |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 1.20 - 1.70       | 6 B   |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 2.00              | 7 D   |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 2.20 - 2.65       | 8 UT  |                                            |        |          |     |     |     |    |  |  |
| Stiff orangish brown slightly gravelly CLAY with medium cobble and low boulder content. Gravel is angular to subangular fine to coarse sandstone. Cobbles and boulders are angular to rounded sandstone.                                                                                                                   |        | (1.00)                        | 78.13                |                       |                         |                 |                         | 2.65 - 2.70       | 9 D   | SPT(S) 5.20m, 50 (25 for 30mm/50 for 50mm) |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 3.00              | 10 D  |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 3.20 - 3.65       | 11 D  |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 3.20 - 3.70       | 12 B  |                                            |        |          |     |     |     |    |  |  |
| Orangish brown slightly gravelly slightly sandy slightly clayey subangular to subrounded COBBLES AND BOULDERS. Gravel is angular to subrounded fine to coarse sandstone. Sand is fine to coarse.                                                                                                                           |        | (4.60)                        | 77.13                |                       |                         |                 |                         | 4.00              | 13 D  | SPT(S) 6.50m, 50 (25 for 0mm/50 for 40mm)  |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 4.20 - 4.60       | 15 B  |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 4.20 - 4.65       | 14 UT |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 5.20              | 16 D  |                                            |        |          |     |     |     |    |  |  |
| Very stiff dark brown gravelly CLAY. Gravel is angular fine to coarse sandstone. Orangish brown slightly sandy angular fine to coarse sandstone GRAVEL. Sand is fine to coarse. Very stiff dark brown slightly sandy gravelly CLAY. Gravel is angular fine to coarse mudstone and sandstone. Sand is fine to coarse.       |        | (0.20)                        | 72.53                |                       |                         |                 |                         | 5.20 - 6.00       | 15 B  | SPT(S) 8.00m, 50 (8,12/50 for 180mm)       |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 5.20 - 6.00       | 17 B  |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 6.50              | 18 D  |                                            |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                                                                                                                            |        |                               |                      |                       |                         |                 |                         | 8.00              | 19 D  |                                            |        |          |     |     |     |    |  |  |
| Continued on Next Page                                                                                                                                                                                                                                                                                                     |        |                               |                      |                       |                         |                 |                         |                   |       |                                            |        |          |     |     |     |    |  |  |

|                        |       |                   |              |            |            |           |          |        |           |                    |  |             |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------|--------|-----------|--------------------|--|-------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill |        |           | Installations      |  |             |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone  | Depth (m) | Diam |
|                        |       | 03/05             | 08:00        | 8.00       | 7.50       | -         | 0.00     | 3.50   | Bentonite | Standpipe          |  | 3.50 - 4.50 | 4.00      |      |
|                        |       | 15/05             | 18:00        | 8.00       | 7.00       | -         | 3.50     | 4.50   | Gravel    |                    |  |             |           |      |
|                        |       | 16/05             | 08:00        | 16.50      | 8.50       | -         | 4.50     | 21.00  | Bentonite |                    |  |             |           |      |
|                        |       | 16/05             | 18:00        | 16.50      | 8.50       | -         |          |        |           |                    |  |             |           |      |
| Water Strikes          |       |                   |              |            |            |           |          |        |           |                    |  |             |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |          |        |           |                    |  |             |           |      |
|                        |       |                   |              |            |            |           |          |        |           |                    |  |             |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed





CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Combined Borehole
Sheet 3 of 3

Exploratory Hole Number
BH17-37
FINAL



Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 426563.91, Northing: 557596.66, Elevation: 81.43m AOD, Final Depth: 21.00m, Logged By: ASH, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 03/05/2018
Finish Date: 16/05/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole ø (mm) Depth (m), Casing ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Includes a shaded area for 'SILTSTONE (Driller's Description)' and 'EOH at 21.00m - Scheduled Depth'.

Observations / Remarks, Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Installations (Instrument Details, Resp. Zone, Depth (m), Diam), Water Strikes (Strike (m), Rises To (m), Time (min), Remarks)



|                                      |                              |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426603.15</b>    | Northing: <b>557528.18</b> | From (m)<br>0.00 - 1.20<br>1.20 - 5.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>84.26m AOD</b> | Final Depth: <b>5.45m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 23/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 23/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 5.45          | 86        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 5.45 | Arisings    |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 7  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 4  | Large Bulk       | 0 |
| Disturbed                  | 12 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                          |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result          | Hammer Ref |
| Split Spoon                       | 1.20      | 2.00       | Dry       | 5             | 12         | 450                    | 12 | N=12 (3,2,2,2,2,6)       | AR1175     |
| Split Spoon                       | 2.00      | 2.00       | Dry       | 9             | 16         | 450                    | 16 | N=16 (5,4,4,4,4,4)       | AR1175     |
| Split Spoon                       | 3.00      | 2.00       | Dry       | 7             | 51         | 450                    | 51 | N=51 (3,4,10,13,14,14)   | AR1175     |
| Split Spoon                       | 4.00      | 2.00       | Dry       | 13            | 50         | 450                    | 50 | N=50 (6,7,10,14,13,13)   | AR1175     |
| Split Spoon                       | 5.00      | 2.00       | Dry       | 25            | 58         | 450                    | 58 | N=58 (12,13,14,15,15,14) | AR1175     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 101       | 50         |         |
| 2.00 - 3.00                         | 101       | 70         |         |
| 3.00 - 4.00                         | 86        | 20         |         |
| 4.00 - 5.00                         | 86        | 100        |         |



|                                      |                             |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426603.15</b>   | Northing: <b>557528.18</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 5.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>84.26mAOD</b> | Final Depth: <b>5.45m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 23/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 23/05/2018 |

| Strata Description                                                                                                                                                              | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-------------------|-------|
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | Depth (m)         | Ref   |
| MADE GROUND: Brownish grey gravelly very clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone coal brick and concrete.                          |        | (2.00)                           |                         |                               |                 |                         | 0.00 - 1.20       | 7 B   |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 0.20              | 1 D   |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 0.30              | 2 ES  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 0.50              | 3 D   |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 0.70              | 4 ES  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.00              | ES    |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.00              | 5 D   |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.00              | 6 ES  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.20 - 1.65       | 8 D   |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.20 - 2.00       | 10 B  |
| 1.50                                                                                                                                                                            | 9 D    |                                  |                         |                               |                 |                         |                   |       |
| MADE GROUND: Soft to firm dark brown gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone brick coal mudstone and concrete. Sand is fine to coarse. |        | 2.00                             | 82.26                   | 116                           | 2.00            |                         | 2.00              | 12 ES |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 2.00 - 2.45       | 11 D  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 2.00 - 3.00       | 14 B  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 2.50              | 13 D  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 3.00              | 16 ES |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 3.00 - 3.45       | 15 D  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 3.50              | 17 D  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 4.00              | 19 ES |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 4.00 - 4.45       | 18 D  |
|                                                                                                                                                                                 |        |                                  |                         |                               |                 |                         | 4.00 - 5.00       | 21 B  |
| 4.50                                                                                                                                                                            | 20 D   |                                  |                         |                               |                 |                         |                   |       |
| 5.00 - 5.45                                                                                                                                                                     | 22 D   |                                  |                         |                               |                 |                         |                   |       |
| EOH at 5.45m - Scheduled depth                                                                                                                                                  |        | 5.45                             | 78.81                   |                               |                 |                         |                   |       |

|                        |       |                               |          |                       |        |           |              |                     |                    |            |              |            |         |
|------------------------|-------|-------------------------------|----------|-----------------------|--------|-----------|--------------|---------------------|--------------------|------------|--------------|------------|---------|
| Observations / Remarks | Misc. | Backfill                      |          | Dynamic Sampling Runs |        |           |              | Installations       |                    |            |              |            |         |
|                        |       | Depth (m)                     | Material | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks             | Instrument Details |            | Resp. Zone   | Depth (m)  | Diam    |
|                        |       | 0.00 - 5.45                   | Arisings | 1.20                  | 2.00   | 101       | 50           |                     |                    |            |              |            |         |
|                        |       |                               |          | 2.00                  | 3.00   | 101       | 70           |                     |                    |            |              |            |         |
|                        |       |                               |          | 3.00                  | 4.00   | 86        | 20           |                     |                    |            |              |            |         |
|                        |       |                               | 4.00     | 5.00                  | 86     | 100       |              |                     |                    |            |              |            |         |
|                        |       | Hammer Ref & Energy Ratio (%) |          |                       |        |           |              | Groundwater Strikes |                    |            |              |            |         |
|                        |       | <b>AR1175 (56%)</b>           |          |                       |        |           |              | Strike (m)          | Casing (m)         | Sealed (m) | Rises To (m) | Time (min) | Remarks |
|                        |       |                               |          |                       |        |           |              |                     |                    |            |              |            |         |

No Groundwater Encountered  
Casing Used  
No Monitoring Point/s Installed



|                                      |                             |                            |                     |                |            |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------|----------------|------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                |            | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426597.92</b>   | Northing: <b>557510.63</b> | From (m)            | Method         | Plant Used | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>77.94mAOD</b> | Final Depth: <b>10.60m</b> | 0.00 - 1.20         | Inspection Pit | Hand Tools | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ASH</b>          | Grid System: <b>OSGB</b>   | 1.20 - 5.30         | Rotary Coring  | Fraste SLG | Start Date: 18/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    | 5.30 - 10.60        |                |            | End Date: 22/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 10.60         | 116       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 5.30            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 10.60 | Arisings    |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 3  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 3  | Large Bulk       | 0 |
| Disturbed                    | 12 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 4                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                    | Hammer Ref |
| Split Spoon                       | 2.00      | 1.70       | Dry       | 20            | 34         | 450                    | 34 | N=34 (8,12/10,7,9,8)               | AR1175     |
| Split Spoon                       | 2.50      | 1.70       | Dry       | 11            | 34         | 450                    | 34 | N=34 (5,6/4,6,9,15)                | AR1175     |
| Split Spoon                       | 3.50      | 1.70       | Dry       | 17            | 38         | 450                    | 38 | N=38 (8,9/9,9,11)                  | AR1175     |
| Split Spoon                       | 4.50      | 1.70       | Dry       | 16            | 47         | 450                    | 47 | N=47 (4,12/13,17,9,8)              | AR1175     |
| Split Spoon                       | 5.30      | 4.50       | Dry       | 25            | 100        | 260                    |    | N=100 (25 for 75mm/100 for 185mm)  | AR1175     |
| Cone                              | 6.30      | 5.30       | Dry       | 25            | 100        | 180                    |    | N=100 (25 for 75mm/100 for 105mm)  | AR1175     |
| Cone                              | 9.30      | 5.30       | Dry       | 25            | 100        | 295                    |    | N=100 (25 for 105mm/100 for 190mm) | AR1175     |

(NR) Indicates sample undertaken but with 0% Recovery

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 7 |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 1.20 - 10.60              | Water      |              | 0        |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                             |                            |                                                        |                                           |                                        |                         |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------------------|-------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                                    |                                           |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426597.92</b>   | Northing: <b>557510.63</b> | From (m)<br>0.00 - 1.20<br>1.20 - 5.30<br>5.30 - 10.60 | Method<br>Inspection Pit<br>Rotary Coring | Plant Used<br>Hand Tools<br>Fraste SLG | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>77.94mAOD</b> | Final Depth: <b>10.60m</b> |                                                        |                                           |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ASH</b>       | Grid System: <b>OSGB</b>   |                                                        |                                           |                                        | Start Date: 18/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                                        |                                           |                                        | Finish Date: 22/05/2018 |

| Strata Description                                                                                                                                                                | Legend    | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Method | Coring   |     |     |     |    |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|--|--|--|
|                                                                                                                                                                                   |           |                               |                      |                       |                         |                 |                         | Depth (m)         | Ref | Test Results |        | Core Run | TCR | SCR | RQD | If |  |  |  |  |
| MADE GROUND: Brown gravelly very clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone coal brick and concrete.                                    | [Pattern] | (1.20)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| MADE GROUND: Weathered angular fine to coarse mudstone GRAVEL.                                                                                                                    | [Pattern] | 1.20 (0.10)                   | 76.74                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| MADE GROUND: Very stiff fissured dark brown gravelly sandy CLAY. Gravel is angular to subangular fine to coarse of mudstone and sandstone.                                        | [Pattern] | 1.30                          | 76.64                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Stiff fissured dark brown gravelly sandy CLAY. Gravel is angular fine to coarse of sandstone. Sand is fine to coarse.                                                             | [Pattern] | (1.20)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Stiff fissured dark brown gravelly sandy CLAY. Gravel is angular fine to coarse of sandstone. Sand is fine to coarse.                                                             | [Pattern] | 2.50                          | 75.44                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Weathered SANDSTONE recovered as orangish brown slightly gravelly very silty fine to medium sand. Gravel is subangular fine to coarse.                                            | [Pattern] | (1.00)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Weathered SANDSTONE recovered as orangish brown slightly gravelly very silty fine to medium sand. Gravel is subangular fine to coarse.                                            | [Pattern] | 3.50                          | 74.44                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Weak to medium strong orangish brown fine to coarse grained SANDSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight clean. | [Pattern] | (1.00)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Weak to medium strong orangish brown fine to coarse grained SANDSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight clean. | [Pattern] | 4.50                          | 73.44                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 5.30m to 6.00m, no recovery.                                                                                                                                                 | [Pattern] |                               |                      |                       |                         |                 | 116<br>5.30             |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 6.30m to 6.90m, no recovery.                                                                                                                                                 | [Pattern] |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 6.30m to 6.90m, no recovery.                                                                                                                                                 | [Pattern] | (4.10)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 7.40m to 7.80m, 1No. subvertical impersistent open iron stained discontinuity.                                                                                               | [Pattern] |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 7.40m to 7.80m, 1No. subvertical impersistent open iron stained discontinuity.                                                                                               | [Pattern] |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 7.40m to 7.80m, 1No. subvertical impersistent open iron stained discontinuity.                                                                                               | [Pattern] |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Extremely weak weathered MUDSTONE recovered as very stiff dark grey gravelly sandy CLAY. Gravel is angular fine to coarse. Sand is fine to coarse.                                | [Pattern] | 8.60                          | 69.34                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Extremely weak weathered MUDSTONE recovered as very stiff dark grey gravelly sandy CLAY. Gravel is angular fine to coarse. Sand is fine to coarse.                                | [Pattern] | (2.00)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 8.70m to 9.60m, no recovery.                                                                                                                                                 | [Pattern] |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 8.70m to 9.60m, no recovery.                                                                                                                                                 | [Pattern] |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 8.70m to 9.60m, no recovery.                                                                                                                                                 | [Pattern] |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |

|                        |       |                   |            |           |            |           |          |        |          |                    |  |            |           |      |
|------------------------|-------|-------------------|------------|-----------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |            |           |            |           | Backfill |        |          | Installations      |  |            |           |      |
|                        |       | Date              | Time       | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       | 19/05             | 04:00      | 4.95      | 4.50       | Dry       | 0.00     | 10.60  | Arisings |                    |  |            |           |      |
|                        |       | 21/05             | 20:00      | 4.95      | 4.50       | Dry       |          |        |          |                    |  |            |           |      |
| Water Strikes          |       |                   |            |           |            |           |          |        |          |                    |  |            |           |      |
| Strike (m)             |       | Rises To (m)      | Time (min) | Remarks   |            |           |          |        |          |                    |  |            |           |      |
|                        |       |                   |            |           |            |           |          |        |          |                    |  |            |           |      |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed

Continued on Next Page







|                                      |                             |                            |                                              |                                                                  |                                              |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------------|------------------------------------------------------------------|----------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                          |                                                                  |                                              | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426654.22</b>   | Northing: <b>557509.21</b> | From (m)                                     | Method                                                           | Plant Used                                   | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.49mAOD</b> | Final Depth: <b>17.00m</b> | 0.00 - 1.20<br>1.20 - 11.00<br>11.00 - 17.00 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Rotary Coring | Hand Tools<br>Massenza MIP3<br>Massenza MIP3 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger:                     | Grid System: <b>OSGB</b>   |                                              |                                                                  |                                              | Start Date: 09/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                              |                                                                  |                                              | End Date: 11/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 12.50         | 140       |
| 17.00         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 11.00           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 11/05/2018                        | Standpipe          | 12.00  | 6.00 - 12.00   |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 5.50   | Arisings    |
| 5.50 - 6.00   | Bentonite   |
| 6.00 - 12.00  | Gravel      |
| 12.00 - 17.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 3 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 2 | Large Bulk       | 0 |
| Disturbed                    | 6 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                           |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|---------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result           | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 11            | 17         | 450                    | 17 | N=17 (5,6/7,4,3,3)        | AR61       |
| Split Spoon                       | 2.00      | -          | -         | 6             | 26         | 450                    | 26 | N=26 (3,3/6,7,7,6)        | AR61       |
| Split Spoon                       | 3.00      | -          | -         | 10            | 21         | 450                    | 21 | N=21 (5,5/5,5,5,6)        | AR61       |
| Split Spoon                       | 5.00      | -          | -         | 14            | 18         | 450                    | 18 | N=18 (8,6/4,5,4,5)        | AR61       |
| Split Spoon                       | 9.00      | -          | -         | 19            | 60         | 310                    |    | 60 (9,10/60 for 160mm)    | AR61       |
| Split Spoon                       | 11.00     | -          | -         | 25            | 70         | 385                    |    | N=70 (12,13/70 for 235mm) | AR61       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR61            | 58               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 6 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 3.40 - 5.00               | Water      | Brown        | 99       |
| 6.00 - 7.00               | Water      | Brown        | 99       |
| 7.00 - 9.00               | Water      | Brown        | 99       |
| 9.00 - 11.00              | Water      | Brown        | 99       |
| 11.00 - 12.50             | Water      | Brown        | 99       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426654.22</b>    | Northing: <b>557509.21</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.49m AOD</b> | Final Depth: <b>17.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By:                   | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 09/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 11/05/2018 |

| Strata Description                                                                                                                                                             | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |                                          | Coring |          |     |     |     |    |  |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|------------------------------------------|--------|----------|-----|-----|-----|----|--|-----|
|                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref | Test Results                             | Method | Core Run | TCR | SCR | RQD | If |  |     |
| MADE GROUND: Dark brown gravelly clayey angular to subrounded brick, concrete and sandstone COBBLES. Gravel is subangular to subrounded fine to coarse of various lithologies. |        |                               |                       |                       |                         |                 |                         |                   |     |                                          |        |          |     |     |     |    |  |     |
| 11 Weak yellowish brown fine to medium grained SANDSTONE. Discontinuities are medium spaced subhorizontal (0-10 degrees) planar smooth tight.                                  |        | 11.00                         | 70.49                 |                       | 140                     |                 |                         |                   |     | SPT(S) 11.00m, N=70 (12,13/70 for 235mm) |        |          |     |     |     |    |  |     |
| 12                                                                                                                                                                             |        | (1.50)                        |                       |                       | 11.00                   |                 |                         |                   |     |                                          | 11.00  | 20       | 20  | 20  |     |    |  | NR  |
| 13 Very weak yellowish brown fine to medium grained SANDSTONE. Discontinuities are extremely to very closely spaced subhorizontal planar rough open clean.                     |        | 12.50                         | 68.99                 | 140                   | 12.50                   |                 |                         |                   |     |                                          |        |          |     |     |     |    |  |     |
| 14 From 13.40m to 13.70m, discontinuities are vertical planar smooth tight clean.                                                                                              |        | (3.10)                        |                       |                       |                         |                 |                         |                   |     |                                          | 12.50  | 73       | 17  | 7   |     |    |  | NR  |
| 15 From 15.00m to 15.17m, discontinuities are subvertical (80-90 degrees) planar smooth tight clean.                                                                           |        |                               |                       |                       |                         |                 |                         |                   |     |                                          | 14.00  | 45       | 13  | 7   |     |    |  | NR  |
| 16 From 15.30m to 15.37m, subvertical (80 degrees) planar smooth tight clean.                                                                                                  |        |                               |                       |                       |                         |                 |                         |                   |     |                                          | 15.50  | 97       | 87  | 23  |     |    |  | NR  |
| 17 Weak greyish brown fine to medium grained SANDSTONE. Discontinuities are closely to medium spaced subhorizontal (0-10 degrees) planar smooth tight.                         |        | 15.60                         | 65.89                 |                       |                         |                 |                         |                   |     |                                          |        |          |     |     |     |    |  |     |
| 18 Extremely weak dark grey very thinly laminated MUDSTONE and very stiff very thinly laminated dark grey gravelly CLAY. Gravel is angular of mudstone.                        |        | (0.32)                        |                       |                       |                         |                 |                         |                   |     |                                          |        |          |     |     |     |    |  |     |
| 19 From 16.30m to 16.50m, subhorizontal orientated thin 10mm coal band.                                                                                                        |        | 15.92                         | 65.57                 |                       |                         |                 |                         |                   |     |                                          | 15.50  |          |     |     |     |    |  | 9   |
| 20 EOH at 17.00m - Refusal                                                                                                                                                     |        | 17.00                         | 64.49                 | 92                    | 17.00                   |                 |                         |                   |     |                                          |        |          |     |     |     |    |  | >25 |

|                        |       |                   |      |           |            |           |           |               |              |                    |               |              |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|---------------|--------------|--------------------|---------------|--------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |               |              |                    | Installations |              |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)        | Material     | Instrument Details |               | Resp. Zone   | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 5.50          | Arisings     | Standpipe          |               | 6.00 - 12.00 | 12.00     |      |
|                        |       |                   |      |           |            |           | 5.50      | 6.00          | Bentonite    |                    |               |              |           |      |
|                        |       |                   |      |           | 6.00       | 12.00     | Gravel    |               |              |                    |               |              |           |      |
|                        |       |                   |      |           | 12.00      | 17.00     | Bentonite |               |              |                    |               |              |           |      |
|                        |       |                   |      |           |            |           |           | Water Strikes |              |                    |               |              |           |      |
|                        |       |                   |      |           |            |           |           | Strike (m)    | Rises To (m) | Time (min)         | Remarks       |              |           |      |
|                        |       |                   |      |           |            |           |           |               |              |                    |               |              |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



|                                      |                              |                            |                     |                               |               |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|---------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |               | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426722.80</b>    | Northing: <b>557518.91</b> | From (m)            | Method                        | Plant Used    | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>85.98m AOD</b> | Final Depth: <b>20.60m</b> | 0.00 - 1.20         | Inspection Pit                | Hand Tools    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS+ASH</b>        | Grid System: <b>OSGB</b>   | 1.20 - 7.40         | DYNAMIC SAMPLING (WINDOWLESS) | Massenza MIP3 | Start Date: 14/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 7.40 - 15.00        | Rotary Open Holing            | Massenza MIP3 | End Date: 21/05/2018   |
|                                      |                              |                            | 15.00 - 20.60       | Rotary Coring                 |               |                        |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 20.60         | 121       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 15.00           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 21/05/2018                        | Standpipe          | 0.00   | 14.50 - 20.60  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 0.50   | Concrete    |
| 0.50 - 14.50  | Bentonite   |
| 14.50 - 20.60 | Gravel      |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       |    | Water            |   |
|                            | 8  |                  | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       |    | Large Bulk       |   |
|                            | 7  |                  | 0 |
| Disturbed                  |    | Disturbed (NR)   |   |
|                            | 15 |                  | 0 |
| Piston                     |    | Piston (NR)      |   |
|                            | 0  |                  | 0 |
| Undisturbed                |    | Undisturbed (NR) |   |
|                            | 0  |                  | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                          |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result          | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 4             | 19         | 450                    | 19 | N=19 (2,2/3,4,6,6)       | AR61       |
| Split Spoon                       | 2.00      | -          | -         | 10            | 35         | 450                    | 35 | N=35 (4,6/6,8,13,8)      | AR61       |
| Split Spoon                       | 3.00      | -          | -         | 10            | 32         | 450                    | 32 | N=32 (5,5/6,9,9,8)       | AR61       |
| Split Spoon                       | 4.00      | -          | -         | 14            | 27         | 450                    | 27 | N=27 (6,8/6,7,7,7)       | AR61       |
| Split Spoon                       | 5.00      | -          | -         | 14            | 32         | 450                    | 32 | N=32 (7,7/8,7,8,9)       | AR61       |
| Split Spoon                       | 6.00      | -          | -         | 13            | 48         | 450                    | 48 | N=48 (6,7/8,14,12,14)    | AR61       |
| Split Spoon                       | 7.00      | -          | -         | 12            | 47         | 450                    | 47 | N=47 (6,6/9,12,12,14)    | AR61       |
| Split Spoon                       | 9.00      | 9.00       | -         | 15            | 21         | 450                    | 21 | N=21 (9,6/4,5,5,7)       | AR61       |
| Split Spoon                       | 11.00     | 11.00      | -         | 15            | 28         | 450                    | 28 | N=28 (7,8/6,8,8,6)       | AR61       |
| Split Spoon                       | 13.00     | 13.00      | -         | 18            | 50         | 410                    |    | N=50 (8,10/50 for 260mm) | AR61       |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR61            | 58               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 11.00 - 20.60             | Air/Mist   | Brown        | 100      |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 117       | 100        |         |
| 2.00 - 3.00                         | 117       | 100        |         |
| 3.00 - 4.00                         | 117       | 100        |         |
| 4.00 - 5.00                         | 117       | 100        |         |
| 5.00 - 6.00                         | 102       | 100        |         |
| 6.00 - 7.00                         | 102       | 100        |         |
| 7.00 - 7.40                         | 102       | 100        |         |











|                                      |                              |                            |                                           |                                                                    |                                                                |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                       |                                                                    |                                                                | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426717.15</b>    | Northing: <b>557484.60</b> | From (m)                                  | Method                                                             | Plant Used                                                     | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>86.03m AOD</b> | Final Depth: <b>7.70m</b>  | 0.00 - 1.20<br>1.20 - 7.40<br>7.40 - 7.70 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Hand Tools<br>Modular Window Sampler<br>Modular Window Sampler | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>            | Grid System: <b>OSGB</b>   |                                           |                                                                    |                                                                | Start Date: 23/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                           |                                                                    |                                                                | End Date: 26/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 7.00          | 66        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 26/04/2018                        |                    | 5.00   | 2.00 - 5.20    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 2.00 | Bentonite   |
| 2.00 - 5.20 | Gravel      |
| 5.20 - 7.40 | Bentonite   |
| 7.40 - 7.70 | Arisings    |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 4  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 4  | Large Bulk       | 0 |
| Disturbed                    | 18 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                       |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|-----------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result       | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 3             | 8          | 450                    | 8  | N=8 (1,2/2,1,2,3)     | AR1134     |
| Split Spoon                       | 2.00      | -          | -         | 6             | 14         | 450                    | 14 | N=14 (3,3/4,3,4,3)    | AR1134     |
| Split Spoon                       | 3.00      | -          | -         | 5             | 12         | 450                    | 12 | N=12 (2,3/4,3,2,3)    | AR1134     |
| Split Spoon                       | 4.00      | -          | -         | 11            | 16         | 450                    | 16 | N=16 (6,5/4,6,3,3)    | AR1134     |
| Split Spoon                       | 5.00      | -          | -         | 10            | 18         | 450                    | 18 | N=18 (4,6/4,4,5,5)    | AR1134     |
| Split Spoon                       | 6.00      | -          | -         | 12            | 24         | 450                    | 24 | N=24 (7,5/5,6,5,8)    | AR1134     |
| Split Spoon                       | 7.00      | -          | -         | 12            | 50         | 365                    |    | 50 (6,6/50 for 215mm) | AR1134     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 3 |
| Standard Penetration Tests | 7 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 7.20 - 7.50                         | 45              |             |        |
| 8.50 - 8.80                         | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 101       | 100        |         |
| 2.00 - 3.00                         | 86        | 60         |         |
| 3.00 - 4.00                         | 76        | 100        |         |
| 4.00 - 5.00                         | 76        | 95         |         |
| 5.00 - 6.00                         | 66        | 96         |         |
| 6.00 - 7.00                         | 66        | 90         |         |



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Log Type  
**Dynamic Sampling & Probe**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-44**  
FINAL



|                                      |                             |                            |                                                        |                                                                              |                                                                              |                         |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                                    |                                                                              |                                                                              | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426717.15</b>   | Northing: <b>557484.60</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 7.40<br>7.40 - 7.70 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Plant Used<br>Hand Tools<br>Modular Window Sampler<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>86.03mAOD</b> | Final Depth: <b>7.70m</b>  |                                                        |                                                                              |                                                                              | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   |                                                        |                                                                              |                                                                              | Start Date: 23/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                                        |                                                                              |                                                                              | Finish Date: 26/04/2018 |

| Blows / 100mm | Strata Description                                                                                                                     | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |             |                                  |                                                   |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------------|-----------------|-------------------------|-------------------|-------------|----------------------------------|---------------------------------------------------|
|               |                                                                                                                                        |        |                               |                      |                         |                 |                         | Depth (m)         | Ref         |                                  |                                                   |
|               | MADE GROUND: Soft medium strength brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse brick sandstone and concrete. |        | 0.00 - 0.60                   |                      |                         |                 |                         | 0.00 - 0.60       | 1 B         |                                  |                                                   |
|               |                                                                                                                                        |        | 0.40                          |                      |                         |                 |                         |                   | 0.40        | 2 ES                             |                                                   |
|               |                                                                                                                                        |        | 0.70                          |                      |                         |                 |                         |                   | 0.70        | 5 ES                             |                                                   |
|               |                                                                                                                                        |        | 0.70 - 1.20                   |                      |                         |                 |                         |                   | 0.70 - 1.20 | 3 B                              |                                                   |
|               |                                                                                                                                        |        | 0.80                          |                      |                         |                 |                         |                   | 0.80        | 4 ES                             |                                                   |
|               |                                                                                                                                        |        | 1.00                          |                      |                         |                 |                         |                   | 1.00        | 6 D                              |                                                   |
|               |                                                                                                                                        |        | 1.20 - 1.65                   |                      |                         |                 |                         |                   | 1.20 - 1.65 | 5 D                              | SPT(S) 1.20m, N=8 (1,2/2,1,2,3)                   |
|               |                                                                                                                                        |        | 1.40                          |                      |                         |                 |                         |                   | 1.40        | 6 D                              |                                                   |
|               |                                                                                                                                        |        | 1.50                          |                      |                         |                 |                         |                   | 1.50        | 10 ES                            | HV 1.50m, (p)=45 kPa (r)=12 kPa Medium hand vane. |
|               |                                                                                                                                        |        | 1.70                          |                      |                         |                 |                         |                   | 1.70        | 7 D                              | HV 1.80m, (p)=40 kPa (r)=12 kPa Medium hand vane. |
|               | MADE GROUND: Brown medium dense very clayey angular to subrounded fine to coarse sandstone siltstone and coal GRAVEL.                  |        | 2.00                          | 84.03                | 116                     |                 |                         | 2.00 - 2.45       | 8 D         | SPT(S) 2.00m, N=14 (3,3/4,3,4,3) |                                                   |
|               |                                                                                                                                        |        | 2.40                          |                      |                         |                 |                         |                   | 2.40        | 9 D                              |                                                   |
|               |                                                                                                                                        |        | 2.50 - 2.95                   |                      |                         |                 |                         |                   | 2.50 - 2.95 | 14 B                             | HV 2.50m, (p)=42 kPa (r)=16 kPa Medium hand vane. |
|               |                                                                                                                                        |        | 3.00                          |                      |                         |                 |                         |                   | 3.00        | 15 D                             |                                                   |
|               |                                                                                                                                        |        | 3.00 - 3.45                   |                      |                         |                 |                         |                   | 3.00 - 3.45 | 11 D                             |                                                   |
|               |                                                                                                                                        |        | 3.00 - 4.00                   |                      |                         |                 |                         |                   | 3.00 - 4.00 | 12 B                             | SPT(S) 3.00m, N=12 (2,3/4,3,2,3)                  |
|               |                                                                                                                                        |        | 4.00 - 4.45                   |                      |                         |                 |                         |                   | 4.00 - 4.45 | 13 D                             | SPT(S) 4.00m, N=16 (6,5/4,6,3,3)                  |
|               |                                                                                                                                        |        | 4.30                          |                      |                         |                 |                         |                   | 4.30        | 14 D                             |                                                   |
|               |                                                                                                                                        |        | 4.70                          |                      |                         |                 |                         |                   | 4.70        | 15 D                             |                                                   |
|               |                                                                                                                                        |        | 5.00 - 5.45                   |                      |                         |                 |                         |                   | 5.00 - 5.45 | 16 D                             | SPT(S) 5.00m, N=18 (4,6/4,4,5,5)                  |
|               | Weak grey SILTSTONE.<br>DYNAMIC PROBING.<br>EOH at 7.70m - Refusal                                                                     |        | 5.30                          |                      |                         |                 |                         | 5.30              | 17 D        |                                  |                                                   |
|               |                                                                                                                                        |        | 5.70                          |                      |                         |                 |                         |                   | 5.70        | 18 D                             |                                                   |
|               |                                                                                                                                        |        | 6.00 - 6.45                   |                      |                         |                 |                         |                   | 6.00 - 6.45 | 19 D                             | SPT(S) 6.00m, N=24 (7,5/5,6,5,8)                  |
|               |                                                                                                                                        |        | 6.30                          |                      |                         |                 |                         |                   | 6.30        | 20 D                             |                                                   |
|               |                                                                                                                                        |        | 6.70                          |                      |                         |                 |                         |                   | 6.70        | 22 D                             |                                                   |
|               |                                                                                                                                        |        | 7.00 - 7.45                   |                      |                         |                 |                         |                   | 7.00 - 7.45 | 23 D                             | SPT(S) 7.00m, SO (6,6/50 for 215mm)               |
|               |                                                                                                                                        |        | 7.30                          |                      |                         |                 |                         |                   | 7.30        |                                  |                                                   |
|               |                                                                                                                                        |        | (0.10)                        |                      |                         |                 |                         |                   | (0.10)      |                                  |                                                   |
|               |                                                                                                                                        |        | 7.40                          |                      |                         |                 |                         |                   | 7.40        |                                  |                                                   |
|               |                                                                                                                                        |        | (0.30)                        |                      |                         |                 |                         |                   | (0.30)      |                                  |                                                   |
|               | 7.70                                                                                                                                   |        |                               |                      |                         |                 | 7.70                    |                   |             |                                  |                                                   |

|                        |       |                                                                                                                                                                                                                                    |                       |            |           |                     |               |                 |              |            |         |
|------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|-----------|---------------------|---------------|-----------------|--------------|------------|---------|
| Observations / Remarks | Misc. | Equipment Information<br>Dynamic Probe Type:<br><b>DPSH-B</b><br>Fall Height: Hammer Weight:<br><b>750mm 64.0kg</b><br>Cone Base Diam. Rod Diam.<br><b>50mm 35mm</b><br>Hammer Reference & Energy Ratio (%)<br><b>AR1134 (56%)</b> | Dynamic Sampling Runs |            |           |                     | Installations |                 |              |            |         |
|                        |       |                                                                                                                                                                                                                                    | From (m)              | Depth Base | Diam (mm) | Recovery (%)        | Remarks       | Instrument Type | Resp. Zone   | Depth (m)  | Diam    |
|                        |       |                                                                                                                                                                                                                                    | 1.20                  | 2.00       | 101       | 100                 |               |                 | 2.00 - 5.20  | 5.00       |         |
|                        |       |                                                                                                                                                                                                                                    | 2.00                  | 3.00       | 86        | 60                  |               |                 |              |            |         |
|                        |       |                                                                                                                                                                                                                                    |                       |            |           | Groundwater Strikes |               |                 |              |            |         |
|                        |       |                                                                                                                                                                                                                                    |                       |            |           | Strike (m)          | Casing (m)    | Sealed (m)      | Rises to (m) | Time (min) | Remarks |
|                        |       |                                                                                                                                                                                                                                    |                       |            |           |                     |               |                 |              |            |         |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



|                                      |                             |                            |                                        |                                              |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|----------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                              |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426702.27</b>   | Northing: <b>557469.17</b> | From (m)<br>0.00 - 1.20<br>1.20 - 8.94 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>79.64mAOD</b> | Final Depth: <b>8.94m</b>  |                                        |                                              |                                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                              |                                        | Start Date: 25/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                              |                                        | End Date: 27/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 8.94          | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 4.50            | 250       |
| 7.50            | 200       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill  |             |
|-----------|-------------|
| Depth (m) | Legend Code |
|           |             |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 6  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 8  | Large Bulk       | 0 |
| Disturbed                    | 17 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    |                  | 1 |
| Undisturbed Thin Wall (NR)   |    |                  | 1 |
| Core Sample                  |    |                  | 0 |

| Standard Penetration Test Summary |           |            |           |               |            |                        |     |                                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|-----|---------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N   | Reported Result                 | Hammer Ref |
| Split Spoon                       | 1.20      | 1.20       | DRY       | 2             | 10         | 450                    | 10  | N=10 (1,1/2,2,3,3)              | AR1134     |
| Split Spoon                       | 2.50      | 2.50       | DRY       | 8             | 33         | 450                    | 33  | N=33 (4,4/4,6,8,15)             | AR1134     |
| Split Spoon                       | 3.50      | 3.50       | DRY       | 9             | 48         | 450                    | 48  | N=48 (4,5/8,13,14,13)           | AR1134     |
| Split Spoon                       | 4.50      | 4.50       | DRY       | 12            | 50         | 375                    | 50  | 50 (5,7/50 for 225mm)           | AR1134     |
| Split Spoon                       | 6.50      | 4.50       | DRY       | 8             | 40         | 450                    | 40  | N=40 (3,5/8,10,10,12)           | AR1134     |
| Split Spoon                       | 8.50      | 7.50       | DRY       | 25            | 100        | 125                    | 100 | 100 (25 for 25mm/100 for 100mm) | AR1134     |
| Cone                              | 8.80      | 7.50       | DRY       | 25            | 100        | 140                    | 100 | 100 (25 for 30mm/100 for 110mm) | AR1134     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 7 |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 7.20 - 7.50                         | 45              |             |        |
| 8.50 - 8.80                         | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



**CENTRAL ALLIANCE**  
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Log Type  
**Cable Percussion**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-44A**  
**FINAL**



|                                      |                              |                            |                                         |                                              |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant                     |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426702.27</b>    | Northing: <b>557469.17</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 8.94 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>79.64m AOD</b> | Final Depth: <b>8.94m</b>  |                                         |                                              |                                        | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                                         |                                              |                                        | Start Date: 25/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                              |                                        | Finish Date: 27/04/2018 |

| Strata Description                                                                                                                                                                                                                                   | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                                  |                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|----------------------------------|-----------------------------------------------|
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref                              | Test Results                                  |
| MADE GROUND: Soft grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse mudstone and rare brick.                                                                                                                      |        | (0.40)                        |                       |                   |                      |                       |                         |                 |                         | 0.10 - 0.40       | 3 B<br>1 D<br>2 ES<br>8 B<br>4 D |                                               |
| MADE GROUND: Yellowish brown sandy clayey subangular fine to coarse sandstone, coal and rare brick GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular sandstone.                                                         |        | (0.60)                        | 79.24                 |                   |                      |                       |                         |                 |                         | 0.40 - 1.00       | 8 B<br>4 D                       |                                               |
| Possible MADE GROUND: Soft to firm slightly silty gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and rare coal.                                                                            |        | 1.00                          | 78.64                 |                   |                      |                       |                         |                 |                         | 1.00 - 1.65       | 6 D<br>7 ES<br>10 B<br>9 D       | SPT(S) 1.20m, N=10 (1,1/2,2,3,3)              |
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | 2.00              | 11 D                             |                                               |
|                                                                                                                                                                                                                                                      |        | (3.50)                        |                       |                   |                      |                       |                         |                 |                         | 2.50 - 2.95       | 13 ES<br>12 D<br>14 B            | SPT(S) 2.50m, N=33 (4,4/4,6,8,15)             |
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | 3.00 - 3.00       | 15 D<br>16 ES                    |                                               |
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | 3.50 - 3.95       | 17 D<br>18 B                     | SPT(S) 3.50m, N=48 (4,5/8,13,14,13)           |
| Interbedded distinctly weathered to destructured MUDSTONE and yellowish brown coarse grained SANDSTONE recovered as slightly gravelly slightly sandy slightly silty clay. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. |        | 4.50                          | 75.14                 |                   |                      |                       | 250<br>4.50             |                 |                         | 4.50 - 4.95       | 21 D<br>22 B<br>25 B             | SPT(S) 4.50m, 50 (5,7/50 for 225mm)           |
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | 5.00              | 23 D                             |                                               |
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | 5.50 - 5.95       | 24 UT-NR                         | 57 blows, 0% Recovery                         |
|                                                                                                                                                                                                                                                      |        | (4.00)                        |                       |                   |                      |                       |                         |                 |                         | 6.00              | 26 D                             |                                               |
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | 6.50 - 6.95       | 27 D<br>28 B                     | SPT(S) 6.50m, N=40 (3,5/8,10,10,12)           |
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | 7.00              | 29 D                             |                                               |
|                                                                                                                                                                                                                                                      |        |                               |                       | 45                |                      |                       | 200<br>7.50             |                 |                         | 7.50 - 7.95       | 30 UT                            | 38 blows, 75% Recovery                        |
|                                                                                                                                                                                                                                                      |        |                               |                       |                   |                      |                       |                         |                 |                         | 8.00              | 31 D                             |                                               |
| Brownish yellow coarse grained SANDSTONE recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.                                                                                                                                |        | 8.50                          | 71.14                 |                   |                      |                       |                         |                 |                         | 8.50 - 8.95       | 32 D                             | SPT(S) 8.50m, 100 (25 for 25mm/100 for 100mm) |
|                                                                                                                                                                                                                                                      |        | (0.44)                        |                       |                   |                      |                       |                         |                 |                         | 8.80              | 33 D                             | SPT(C) 8.80m, 100 (25 for 30mm/100 for 110mm) |
| EOH at 8.94m -                                                                                                                                                                                                                                       |        | 8.94                          | 70.70                 |                   |                      | 150<br>8.94           |                         |                 |                         |                   |                                  |                                               |

|                        |       |                     |              |            |            |           |          |        |          |                    |  |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|--|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        |          | Installations      |  |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |  | Resp. Zone | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           |          |        |          |                    |  |            |           |       |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |          |                    |  |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |  |            |           |       |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                             |                            |                     |                               |               |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------|-------------------------------|---------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                               |               | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426749.51</b>   | Northing: <b>557463.22</b> | From (m)            | Method                        | Plant Used    | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.33mAOD</b> | Final Depth: <b>22.40m</b> | 0.00 - 1.20         | Inspection Pit                | Hand Tools    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   | 1.20 - 8.40         | Dynamic Sampling (Windowless) | Massenza MIP3 | Start Date: 26/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    | 8.40 - 21.90        | Rotary Coring                 | Massenza MIP3 | End Date: 01/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 22.40         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 17.25           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 02/05/2018                        | Standpipe          | 22.00  | 15.50 - 22.40  |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill      |             |
|---------------|-------------|
| Depth (m)     | Legend Code |
| 0.00 - 16.00  | Bentonite   |
| 16.00 - 22.00 | Gravel      |
| 22.00 - 22.40 | Arisings    |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 9  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 11 | Large Bulk       | 0 |
| Disturbed                  | 13 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 2             | 5          | 450                    | 5  | N=5 (1,1/1,1,2,1)  | AR61       |
| Split Spoon                       | 2.00      | -          | -         | 3             | 8          | 450                    | 8  | N=8 (1,2/1,1,3,3)  | AR61       |
| Split Spoon                       | 3.00      | -          | -         | 13            | 22         | 450                    | 22 | N=22 (4,9/5,7,5,5) | AR61       |
| Split Spoon                       | 4.00      | -          | -         | 8             | 21         | 450                    | 21 | N=21 (4,4/4,7,5,5) | AR61       |
| Split Spoon                       | 5.00      | -          | -         | 7             | 22         | 450                    | 22 | N=22 (3,4/5,5,6,6) | AR61       |
| Split Spoon                       | 6.00      | -          | -         | 8             | 22         | 450                    | 22 | N=22 (4,4/5,5,7)   | AR61       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR61            | 58               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 8.40 - 11.40              | Air/Mist   | Grey/Brown   | 99       |
| 11.40 - 12.15             | Air/Mist   | Grey/Brown   | 90       |
| 12.15 - 12.90             | Air/Mist   | Grey/Brown   | 50       |
| 12.90 - 22.40             | Air/Mist   | Grey/Brown   | 90       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 116       | 75         |         |
| 2.00 - 3.00                         | 116       | 100        |         |
| 3.00 - 4.00                         | 116       | 100        |         |
| 4.00 - 5.00                         | 86        | 100        |         |
| 5.00 - 6.00                         | 102       | 100        |         |



|                                      |                             |                            |                                            |                                                                  |                                              |                         |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------|------------------------------------------------------------------|----------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                        |                                                                  |                                              | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426749.51</b>   | Northing: <b>557463.22</b> | From (m)                                   | Method                                                           | Plant Used                                   | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.33mAOD</b> | Final Depth: <b>22.40m</b> | 0.00 - 1.20<br>1.20 - 8.40<br>8.40 - 21.90 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Rotary Coring | Hand Tools<br>Massenza MIP3<br>Massenza MIP3 | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>RJ</b>        | Grid System: <b>OSGB</b>   |                                            |                                                                  |                                              | Start Date: 26/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                            |                                                                  |                                              | Finish Date: 01/05/2018 |

| Strata Description                                                                                                                                                                                                                                     | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing          |              |                                     | Coring |          |     |     |     |    |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|----------------------------|--------------|-------------------------------------|--------|----------|-----|-----|-----|----|--|--|--|--|
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | Depth (m)                  | Ref          | Test Results                        | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |
| MADE GROUND: Black slightly gravelly slightly clayey fine to coarse SAND with low cobble content. Gravel is subangular fine to coarse concrete and brick. Cobbles are subangular concrete.                                                             |        | (2.00)                        |                      |                       |                         |                 |                         | 0.00 - 0.60                | 1 B          |                                     | IP     |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 0.40                       | 2 ES         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 0.70 - 1.20                | 3 B          |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 1.00                       | 4 ES         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 1.20 - 1.65<br>1.20 - 1.80 | 5 D<br>6 B   | SPT(S) 1.20m, N=5<br>(1,1/1,1,2,1)  |        |          |     |     |     |    |  |  |  |  |
| MADE GROUND: Grey slightly sandy clayey subangular to subrounded fine to coarse siltstone, brick and sandstone GRAVEL. Sand is fine to coarse.                                                                                                         |        | 2.00                          | 81.33                |                       |                         |                 |                         | 2.00                       | 14 ES        | SPT(S) 2.00m, N=8<br>(1,2/1,1,3,3)  | WLS    |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 2.00 - 2.45                | 7 D          |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 2.00 - 3.00                | 8 B          |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 3.00                       | 15 ES        | SPT(S) 3.00m, N=22<br>(4,9/5,7,5,5) |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 3.00 - 3.45<br>3.00 - 4.00 | 9 D<br>10 B  |                                     |        |          |     |     |     |    |  |  |  |  |
| MADE GROUND: Dark grey slightly sandy gravelly slightly organic CLAY. Sand is fine to coarse. Gravel subangular to subrounded fine to coarse coal, sandstone and siltstone.                                                                            |        | (3.80)                        |                      |                       |                         |                 |                         | 4.00                       | 16 ES        | SPT(S) 4.00m, N=21<br>(4,4/4,7,5,5) |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 4.00 - 4.45                | 11 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 4.00 - 5.00                | 12 B         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 5.00                       | 17 ES        | SPT(S) 5.00m, N=22<br>(3,4/5,5,6,6) |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 5.00 - 5.45<br>5.00 - 5.80 | 13 D<br>19 B |                                     |        |          |     |     |     |    |  |  |  |  |
| MADE GROUND: Orangish brown slightly gravelly slightly sandy slightly organic CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse sandstone, siltstone and coal.                                                              |        | 5.80                          | 77.53                |                       |                         |                 |                         | 5.80                       | 20 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 6.00                       | 18 ES        | SPT(S) 6.00m, N=22<br>(4,4/5,5,5,7) |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 6.00 - 6.45                | 21 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 6.00 - 6.50                | 22 B         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 6.60                       | 23 D         |                                     |        |          |     |     |     |    |  |  |  |  |
| MADE GROUND: Firm greyish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse sandstone and siltstone.                                                                                 |        | 6.50                          | 76.83                |                       |                         |                 |                         | 6.60                       | 24 B         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 6.60 - 7.00                | 24 B         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 7.00                       | 25 ES        |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 7.00 - 7.45                | 26 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 7.00 - 7.70                | 27 B         |                                     |        |          |     |     |     |    |  |  |  |  |
| MADE GROUND: Dark grey gravelly clayey fine to coarse SAND. Gravel is angular to subrounded fine to coarse mudstone and sandstone.                                                                                                                     |        | 7.70                          | 75.63                |                       |                         |                 |                         | 7.70                       | 28 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 8.00                       | 29 ES        |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 8.00                       | 30 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 8.00                       | 31 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 8.00 - 8.40                | 32 B         |                                     |        |          |     |     |     |    |  |  |  |  |
| MADE GROUND: Soft to firm greyish brown gravelly sandy CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone coal mudstone and rare brick. Sand is fine to coarse. Cobbles are subangular to subrounded sandstone. |        | (0.40)                        | 74.93                |                       |                         |                 |                         | 8.40 - 8.55                | 33 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 8.40                       | 33 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 8.40                       | 33 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 8.40                       | 33 D         |                                     |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                                                                                                        |        |                               |                      |                       |                         |                 |                         | 8.40                       | 33 D         |                                     |        |          |     |     |     |    |  |  |  |  |

|                        |       |                   |      |            |            |           |          |        |           |                    |  |               |           |      |
|------------------------|-------|-------------------|------|------------|------------|-----------|----------|--------|-----------|--------------------|--|---------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |            |            |           | Backfill |        |           | Installations      |  |               |           |      |
|                        |       | Date              | Time | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details |  | Resp. Zone    | Depth (m) | Diam |
|                        |       |                   |      |            |            |           | 0.00     | 16.00  | Bentonite | Standpipe          |  | 15.50 - 22.40 | 22.00     |      |
|                        |       |                   |      |            |            |           | 16.00    | 22.00  | Gravel    |                    |  |               |           |      |
|                        |       |                   |      |            |            |           | 22.00    | 22.40  | Arisings  |                    |  |               |           |      |
| Water Strikes          |       |                   |      |            |            |           |          |        |           |                    |  |               |           |      |
| Strike (m)             |       | Rises To (m)      |      | Time (min) |            | Remarks   |          |        |           |                    |  |               |           |      |
|                        |       |                   |      |            |            |           |          |        |           |                    |  |               |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed

Continued on Next Page



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type
Combined Borehole

Sheet 2 of 3

Exploratory Hole Number

BH17-45

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 426749.51, Northing: 557463.22, Elevation: 83.33m AOD, Final Depth: 22.40m, Logged By: RJ, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 26/04/2018
Finish Date: 01/05/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Includes descriptions like 'From 9.90m to 10.65m, no recovery' and 'Light yellowish brown subangular to subrounded sandstone COBBLES'.

Continued on Next Page

Observations / Remarks, Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Installations (Instrument Details, Resp. Zone, Depth (m), Diam), Water Strikes (Strike (m), Rises To (m), Time (min), Remarks)



CENTRAL ALLIANCE

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Log Type
Combined Borehole

Sheet 3 of 3

Exploratory Hole Number

BH17-45

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details, Methodology & Plant, Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 26/04/2018, Finish Date: 01/05/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m), Reduced Level (m), Hole Ø (mm), Casing Ø (mm), Water Level (m), Installation / Backfill, Samples & Testing, Coring. Includes descriptions like 'subangular to subrounded fine to coarse mudstone and coal' and 'Destructured grey MUDSTONE with oxidation layers recovered as subangular fine to coarse gravel'.

Observations / Remarks, Misc., Shift Information, Backfill, Installations. Includes notes on groundwater encountered and casing used, and details for backfill materials and instrument details.





|                                      |                              |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426824.38</b>    | Northing: <b>557469.05</b> | From (m)<br>0.00 - 1.20<br>1.20 - 5.36 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.30m AOD</b> | Final Depth: <b>5.36m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 07/06/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 07/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 5.36          | 50        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 115       |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
| 5.30                | -          | 2.00       | 20         | 0.00        |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 5.36 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 6  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 3  | Large Bulk       | 0 |
| Disturbed                    | 17 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                       |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|-----------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result       | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 3             | 7          | 450                    | 7  | N=7 (1,2/2,1,3,1)     | MOD 02     |
| Split Spoon                       | 2.00      | 2.00       | -         | 4             | 11         | 450                    | 11 | N=11 (2,2/2,3,3,3)    | MOD 02     |
| Split Spoon                       | 3.00      | 2.00       | -         | 6             | 14         | 450                    | 14 | N=14 (3,3/4,4,3,3)    | MOD 02     |
| Split Spoon                       | 4.00      | 2.00       | -         | 6             | 17         | 450                    | 17 | N=17 (4,2/3,5,6,3)    | MOD 02     |
| Split Spoon                       | 5.00      | 2.00       | -         | 7             | 57         | 375                    |    | 57 (4,3/57 for 225mm) | MOD 02     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 5 |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 87        | 90         |         |
| 2.00 - 3.00                         | 87        | 85         |         |
| 3.00 - 4.00                         | 75        | 100        |         |
| 4.00 - 5.00                         | 75        | 100        |         |
| 5.00 - 5.36                         | 50        | 90         |         |



# CENTRAL ALLIANCE

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Log Type  
**Dynamic Sampling**

Sheet 1 of 1

Exploratory Hole Number

## BH17-47

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                             |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426824.38</b>   | Northing: <b>557469.05</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 5.36 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.30mAOD</b> | Final Depth: <b>5.36m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 07/06/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 07/06/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                 | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-------------------|-------|
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | Depth (m)         | Ref   |
| MADE GROUND: Dark brown gravelly very clayey fine to coarse SAND with medium cobble and rootlet content. Gravel is angular to subangular fine to coarse sandstone, mudstone and brick. Cobbles are angular to subangular fine to medium sandstone, mudstone and brick.                                                                                             |        | (2.20)                           |                         |                               |                 |                         | 0.10 - 1.20       | 7 B   |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 0.20              | 1 D   |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 0.30              | 2 ES  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 0.50              | 3 D   |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 0.70              | 4 ES  |
| MADE GROUND: Firm to stiff greyish brown slightly gravelly sandy CLAY. Gravel is subangular fine to medium sandstone, mudstone and rare coal. Sand is fine to coarse.<br><br><i>From 2.70m to 2.80m, 3.20m to 3.30m and 3.40m to 3.50m brownish black sandy angular to subangular fine to medium sandstone, mudstone and brick gravel. Sand is fine to coarse.</i> |        | 2.20                             | 81.10                   | 115<br>2.00                   |                 |                         | 1.00              | 5 D   |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 1.00              | 6 ES  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 1.20 - 1.65       | 8 D   |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 1.20 - 1.80       | 10 B  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 1.80              | 9 D   |
| MADE GROUND: Brownish yellow slightly silty sandy angular fine to coarse sandstone, limestone, macadam and brick GRAVEL. Sand is fine to coarse.                                                                                                                                                                                                                   |        | (1.50)                           |                         |                               |                 |                         | 2.00              | 12 ES |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 2.00 - 2.45       | 11 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 2.20 - 3.00       | 15 B  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 2.50              | 13 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 2.70              | 14 D  |
| MADE GROUND: Brownish yellow slightly silty sandy angular fine to coarse sandstone, limestone, macadam and brick GRAVEL. Sand is fine to coarse.                                                                                                                                                                                                                   |        | 3.70                             | 79.60                   |                               |                 |                         | 3.00              | 17 ES |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 3.00 - 3.45       | 16 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 3.20              | 18 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 3.40              | 19 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 3.50              | 20 D  |
| EOH at 5.36m - Refusal                                                                                                                                                                                                                                                                                                                                             |        | (1.66)                           |                         |                               |                 |                         | 3.80              | 21 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 4.00              | 23 ES |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 4.00 - 4.45       | 22 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 4.50              | 24 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 5.00              | 26 D  |
|                                                                                                                                                                                                                                                                                                                                                                    |        |                                  |                         |                               |                 |                         | 5.00 - 5.35       | 25 D  |

| Observations / Remarks                                                    | Misc. | Backfill     |           | Dynamic Sampling Runs |            |            |              | Installations |                    |  |            |           |      |
|---------------------------------------------------------------------------|-------|--------------|-----------|-----------------------|------------|------------|--------------|---------------|--------------------|--|------------|-----------|------|
|                                                                           |       | Depth (m)    | Material  | From (m)              | To (m)     | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
| Groundwater Encountered<br>Casing Used<br>No Monitoring Point/s Installed |       | 0.00 - 5.36  | Bentonite | 1.20                  | 2.00       | 87         | 90           |               |                    |  |            |           |      |
|                                                                           |       |              |           | 2.00                  | 3.00       | 87         | 85           |               |                    |  |            |           |      |
|                                                                           |       |              |           | 3.00                  | 4.00       | 75         | 100          |               |                    |  |            |           |      |
|                                                                           |       |              |           | 4.00                  | 5.00       | 75         | 100          |               |                    |  |            |           |      |
|                                                                           |       |              |           | 5.00                  | 5.36       | 50         | 90           |               |                    |  |            |           |      |
| Hammer Ref & Energy Ratio (%)                                             |       | MOD 02 (65%) |           |                       |            |            |              |               |                    |  |            |           |      |
|                                                                           |       |              |           | Groundwater Strikes   |            |            |              |               |                    |  |            |           |      |
|                                                                           |       |              |           | Strike (m)            | Casing (m) | Sealed (m) | Rises To (m) | Time (min)    | Remarks            |  |            |           |      |
|                                                                           |       |              |           | 5.30                  | -          | 2.00       | 0.00         | 20            |                    |  |            |           |      |



|                                      |                             |                            |                                        |                                                           |                                         |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                         | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426871.80</b>   | Northing: <b>557496.73</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.53 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>77.72mAOD</b> | Final Depth: <b>1.53m</b>  |                                        |                                                           |                                         | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                         | Start Date: 07/06/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                         | End Date: 07/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 1.53          | 66        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.53 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 3 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 5 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|---------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result                 | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 25            | 50         | 325                    |   | N=50 (25 for 70mm/50 for 255mm) | 110.92     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| 110.92          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.50                         | 66        | 67         |         |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-47A**  
FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                                         |                                                           |                                         |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                           |                                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426871.80</b>    | Northing: <b>557496.73</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 1.53 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>77.72m AOD</b> | Final Depth: <b>1.53m</b>  |                                         |                                                           |                                         | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                                         |                                                           |                                         | Start Date: 07/06/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                           |                                         | Finish Date: 07/06/2018 |

| Strata Description                                                                                                                                                                                               | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing           |                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-----------------------------|-----------------------------------------------|
|                                                                                                                                                                                                                  |        |                                  |                         |                               |                 |                            | Depth (m)                   | Ref                                           |
| MADE GROUND: Dark to light brown gravelly clayey fine to coarse SAND with frequent rootlets and medium sandstone cobble content. Gravel is subangular to subrounded fine to coarse sandstone mudstone and brick. |        | (0.80)                           |                         |                               |                 |                            | 0.10 - 0.80<br>0.20<br>0.30 | 5 D<br>1 D<br>2 ES                            |
| MADE GROUND: Orangish yellow sandy slightly clayey angular to subangular fine to coarse sandstone GRAVEL and COBBLES. Sand is fine to coarse.                                                                    |        | 0.80                             | 76.92                   |                               |                 |                            | 0.50<br>0.70<br>0.80 - 1.20 | 3 D<br>4 ES<br>8 B                            |
| EOH at 1.53m - Refusal                                                                                                                                                                                           |        | (0.73)                           |                         |                               |                 |                            | 1.00<br>1.00<br>1.20 - 1.50 | 6 D<br>7 ES<br>9 D                            |
|                                                                                                                                                                                                                  |        | 1.53                             | 76.19                   |                               |                 |                            |                             | SPT(S) 1.20m, N=50 (25 for 70mm/50 for 255mm) |

|                        |                                                                                 |                               |           |                       |        |           |              |               |                    |                     |              |            |         |
|------------------------|---------------------------------------------------------------------------------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------|--------------------|---------------------|--------------|------------|---------|
| Observations / Remarks | Misc.                                                                           | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations |                    |                     |              |            |         |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Point/s Installed | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |                     | Resp. Zone   | Depth (m)  | Diam    |
|                        |                                                                                 | 0.00 - 1.53                   | Bentonite | 1.20                  | 1.50   | 66        | 67           |               |                    |                     |              |            |         |
|                        |                                                                                 | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              |               |                    | Groundwater Strikes |              |            |         |
| 110.92 (65%)           |                                                                                 |                               |           |                       |        |           |              | Strike (m)    | Casing (m)         | Sealed (m)          | Rises To (m) | Time (min) | Remarks |



|                                      |                             |                            |                                        |                                                           |                                         |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           | Scale: 1:50                             |                        |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426811.74</b>   | Northing: <b>557474.18</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.37 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.11mAOD</b> | Final Depth: <b>1.37m</b>  |                                        |                                                           |                                         | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                         | Start Date: 07/06/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                         | End Date: 07/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 1.37          | 66        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.37 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 3 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 4 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                               |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result               | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 27            | 50         | 170                    |   | 50 (27 for 140mm/50 for 30mm) | 110.92     |

|                 |                  |
|-----------------|------------------|
| SPT Hammer Ref. | Energy Ratio (%) |
| 110.92          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 1 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-47AA**  
FINAL



|                                      |                             |                            |                                         |                                                           |                                         |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426811.74</b>   | Northing: <b>557474.18</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 1.37 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.11mAOD</b> | Final Depth: <b>1.37m</b>  |                                         |                                                           |                                         | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                         | Start Date: 07/06/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                         | Finish Date: 07/06/2018 |

| Strata Description                                                                                                                                                                                                                       | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing                                                          |                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|----------------------------------------------------------------------------|---------------------------------------------------------|
|                                                                                                                                                                                                                                          |        |                                  |                         |                               |                 |                            | Depth (m)                                                                  | Ref                                                     |
| MADE GROUND: Dark to light brown gravelly clayey fine to coarse SAND with frequent rootlets and medium cobble content. Gravel is subangular to subrounded fine to coarse sandstone mudstone and brick. Cobbles are subangular sandstone. |        | (1.10)                           |                         |                               |                 |                            | 0.10 - 1.20<br>0.20<br>0.30<br>0.50<br>0.70<br>1.00<br>1.00<br>1.20 - 1.30 | 7 B<br>1 D<br>2 ES<br>3 D<br>4 ES<br>5 D<br>6 ES<br>8 D |
| MADE GROUND: Orangish yellow sandy angular to subangular fine to coarse sandstone GRAVEL and COBBLES. Sand is fine to coarse.<br>EOH at 1.37m - Refusal                                                                                  |        | 1.10<br>(0.27)<br>1.37           | 82.01<br><br>81.74      |                               |                 |                            |                                                                            | SPT(S) 1.20m, 50 (27 for 140mm/50 for 30mm)             |

|                        |                                                                                |                               |           |                       |        |           |              |               |                    |                     |              |            |         |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------|--------------------|---------------------|--------------|------------|---------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations |                    |                     |              |            |         |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |                     | Resp. Zone   | Depth (m)  | Diam    |
|                        |                                                                                | 0.00 - 1.37                   | Bentonite |                       |        |           |              |               |                    |                     |              |            |         |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              |               |                    | Groundwater Strikes |              |            |         |
|                        |                                                                                |                               |           |                       |        |           |              | Strike (m)    | Casing (m)         | Sealed (m)          | Rises To (m) | Time (min) | Remarks |
|                        |                                                                                |                               |           |                       |        |           |              |               |                    |                     |              |            |         |

110.92 (65%)





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Log Type  
**Dynamic Sampling**

Sheet 1 of 1

Exploratory Hole Number

**BH17-47AB**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                             |                            |                          |                          |                          |                         |
|--------------------------------------|-----------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant      |                          |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426813.45</b>   | Northing: <b>557477.77</b> | Depth (m)<br>0.00 - 0.80 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.12mAOD</b> | Final Depth: <b>0.80m</b>  |                          |                          |                          | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                          |                          |                          | Start Date: 07/06/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                          |                          |                          | Finish Date: 07/06/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |      |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|------|------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref  |      |
| MADE GROUND: Dark to light brown gravelly clayey fine to coarse SAND with frequent rootlets and medium cobble content. Gravel is subangular to subrounded fine to coarse sandstone mudstone and brick. Cobbles are subangular sandstone.<br>MADE GROUND: Reddish brown sandy clayey angular to subangular fine to coarse brick and sandstone GRAVEL. Sand is fine to coarse.<br>MADE GROUND: Brown sandy slightly clayey angular to subangular fine to coarse sandstone and concrete GRAVEL and COBBLES. Sand is fine to coarse.<br>EOH at 0.80m - Refusal |        | 0.30                             | 82.82                   |                               |                 |                            | 0.10 - 0.80       | 6 B  |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        | 0.30                             | 82.82                   |                               |                 |                            |                   | 0.20 | 1 D  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        | 0.15                             | 82.67                   |                               |                 |                            |                   | 0.30 | 2 ES |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        | 0.45                             |                         |                               |                 |                            |                   | 0.40 | 3 D  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        | 0.35                             |                         |                               |                 |                            |                   | 0.50 | 4 D  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        | 0.80                             | 82.32                   |                               |                 |                            | 0.70              | 5 ES |      |

|                                                                                                                       |       |                          |                       |                       |        |           |              |               |                     |            |            |              |            |
|-----------------------------------------------------------------------------------------------------------------------|-------|--------------------------|-----------------------|-----------------------|--------|-----------|--------------|---------------|---------------------|------------|------------|--------------|------------|
| Observations / Remarks<br><br><i>No Groundwater Encountered<br/>Hole Not Cased<br/>No Monitoring Points Installed</i> | Misc. | Backfill                 |                       | Dynamic Sampling Runs |        |           |              | Installations |                     |            |            |              |            |
|                                                                                                                       |       | Depth (m)<br>0.00 - 0.80 | Material<br>Bentonite | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details  |            | Resp. Zone | Depth (m)    | Diam       |
|                                                                                                                       |       |                          |                       |                       |        |           |              |               | Groundwater Strikes |            |            |              |            |
|                                                                                                                       |       |                          |                       |                       |        |           |              |               | Strike (m)          | Casing (m) | Sealed (m) | Rises To (m) | Time (min) |





|                                      |                              |                            |                         |                          |                          |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426812.45</b>    | Northing: <b>557476.13</b> | From (m)<br>0.00 - 0.50 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.10m AOD</b> | Final Depth: <b>0.50m</b>  | Logger: <b>GS</b>       | Grid System: <b>OSGB</b> |                          | Approved: BH           |
| Client: <b>SLV</b>                   | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                         |                          |                          | Start Date: 07/06/2018 |
|                                      |                              |                            |                         |                          |                          | End Date: 07/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.50 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 1 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 2 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**

Sheet 1 of 1

Exploratory Hole Number

**BH17-47AC**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                          |                          |                          |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |                          |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426812.45</b>    | Northing: <b>557476.13</b> | Depth (m)<br>0.00 - 0.50 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.10m AOD</b> | Final Depth: <b>0.50m</b>  |                          |                          |                          | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                          |                          |                          | Start Date: 07/06/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |                          |                          | Finish Date: 07/06/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                         | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |      |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|------|--------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                            |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref  | Test Results |
| MADE GROUND: Dark to light brown gravelly clayey fine to coarse SAND with frequent rootlets and medium cobble content. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and brick. Cobbles are subangular sandstone.<br>MADE GROUND: Black sandy subangular to subrounded fine to coarse sandstone, macadam, brick and concrete GRAVEL and COBBLES. Sand is fine to coarse.<br>EOH at 0.50m - Refusal |        | (0.35)                           |                         |                               |                 |                            | 0.20              | 1 D  |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                            |        | 0.35                             | 82.75                   |                               |                 |                            | 0.30              | 2 ES |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                            |        | (0.15)                           | 82.60                   |                               |                 |                            | 0.35 - 0.50       | 4 B  |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                            |        | 0.50                             |                         |                               |                 |                            | 0.40              | 3 D  |              |

|                               |                                                                                |                          |                       |            |              |                       |              |         |                    |               |            |           |      |
|-------------------------------|--------------------------------------------------------------------------------|--------------------------|-----------------------|------------|--------------|-----------------------|--------------|---------|--------------------|---------------|------------|-----------|------|
| Observations / Remarks        | Misc.                                                                          | Backfill                 |                       |            |              | Dynamic Sampling Runs |              |         |                    | Installations |            |           |      |
|                               | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)<br>0.00 - 0.50 | Material<br>Bentonite | From (m)   | To (m)       | Diam (mm)             | Recovery (%) | Remarks | Instrument Details |               | Resp. Zone | Depth (m) | Diam |
|                               |                                                                                | Groundwater Strikes      |                       |            |              |                       |              |         |                    |               |            |           |      |
|                               |                                                                                | Strike (m)               | Casing (m)            | Sealed (m) | Rises To (m) | Time (min)            | Remarks      |         |                    |               |            |           |      |
| Hammer Ref & Energy Ratio (%) |                                                                                |                          |                       |            |              |                       |              |         |                    |               |            |           |      |



|                                      |                             |                            |                                           |                                                                    |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                       |                                                                    |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426815.27</b>   | Northing: <b>557474.56</b> | From (m)                                  | Method                                                             | Plant Used                                         | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.19mAOD</b> | Final Depth: <b>3.00m</b>  | 0.00 - 1.20<br>1.20 - 2.80<br>2.80 - 3.00 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Hand Tools<br>Modular Window Sampler<br>Frasse PLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                           |                                                                    |                                                    | Start Date: 07/06/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                           |                                                                    |                                                    | End Date: 07/06/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 2.80          | 75        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 115       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 3.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 4 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 1 | Large Bulk       | 0 |
| Disturbed                    | 8 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                          |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                          | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 4             | 14         | 450                    | 14 | N=14 (2,2/3,4,3,4)<br>N=26 (2,2/2,9,8,7) | MOD 02     |
| Split Spoon                       | 2.00      | 2.00       | -         | 4             | 26         | 450                    | 26 |                                          | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 87        | 100        |         |
| 2.00 - 2.80                         | 73        | 90         |         |





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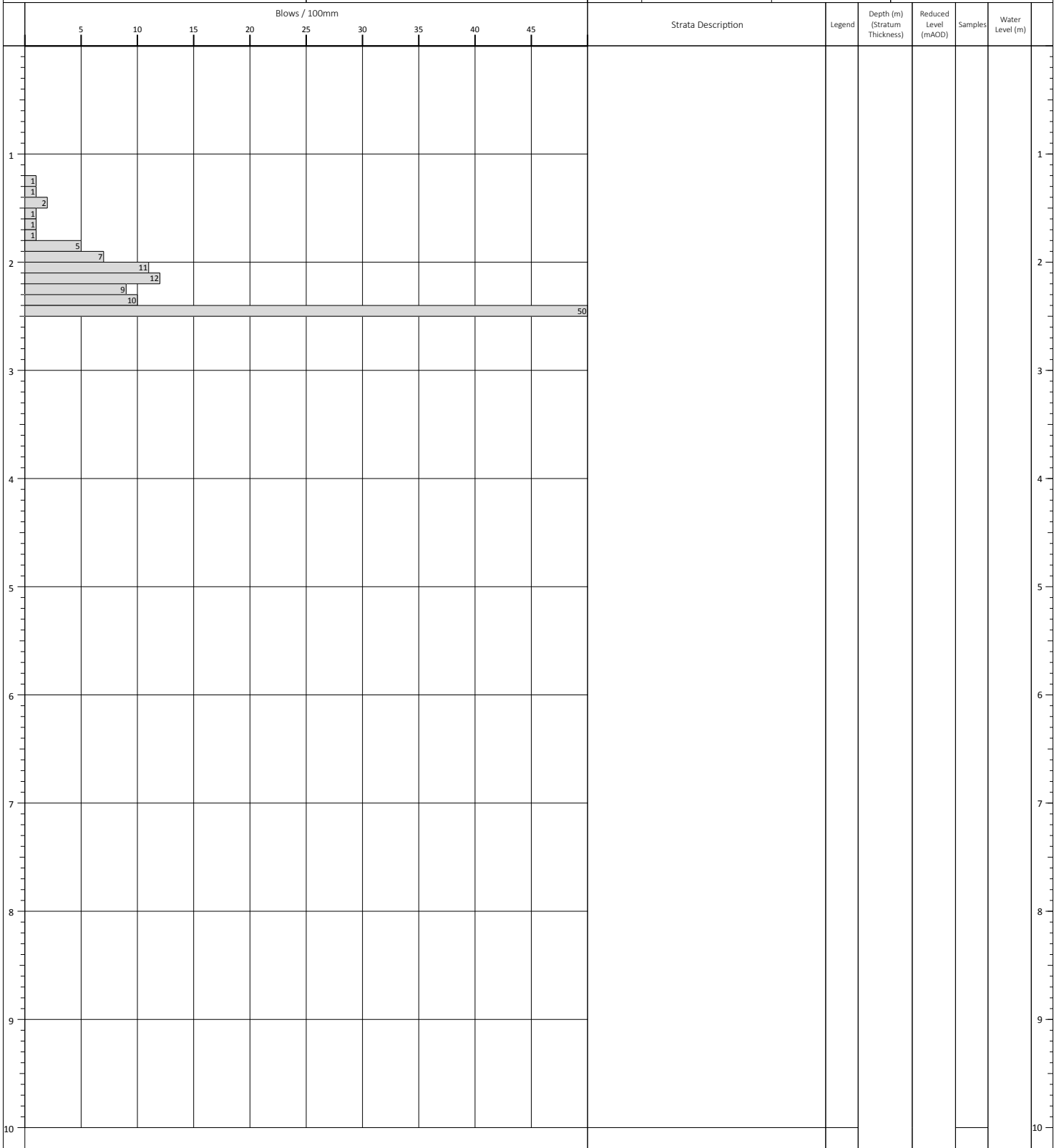
Log Type  
**Dynamic Probe**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-471A**  
FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                             |                            |                                         |                                             |                                         |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|---------------------------------------------|-----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                             |                                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426813.65</b>   | Northing: <b>557473.41</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 2.50 | Method<br>Inspection Pit<br>Dynamic Probing | Plant Used<br>Hand Tools<br>Premier 110 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>83.17mAOD</b> | Final Depth: <b>2.50m</b>  |                                         |                                             |                                         | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                         |                                             |                                         | Start Date: 07/06/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>N/A</b>    |                                         |                                             |                                         | Finish Date: 07/06/2018 |



|                        |                                                                                                                                                     |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Equipment Information                                                                                                                               |
|                        | Dynamic Probe Type:<br><b>DPSH-B</b><br>Fall Height: <b>750mm</b> Hammer Weight: <b>64.0kg</b><br>Cone Base Diam: <b>50mm</b> Rod Diam: <b>35mm</b> |



|                                      |                              |                            |                         |                          |                          |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426961.56</b>    | Northing: <b>557421.38</b> | From (m)<br>0.00 - 0.70 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>84.90m AOD</b> | Final Depth: <b>0.70m</b>  |                         |                          |                          | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                         |                          |                          | Start Date: 22/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                         |                          |                          | End Date: 22/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.70 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 1 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 4 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

|                 |                  |
|-----------------|------------------|
| SPT Hammer Ref. | Energy Ratio (%) |
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-48**  
FINAL



|                                      |                              |                            |                          |                          |                          |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |                          |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426961.56</b>    | Northing: <b>557421.38</b> | Depth (m)<br>0.00 - 0.70 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>84.90m AOD</b> | Final Depth: <b>0.70m</b>  |                          |                          |                          | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                          |                          |                          | Start Date: 22/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                          |                          |                          | Finish Date: 22/05/2018 |

| Strata Description                                                                                                                                             | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation/<br>Backfill | Samples & Testing |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|---------------------------|-------------------|------|
|                                                                                                                                                                |        |                                  |                         |                               |                 |                           | Depth (m)         | Ref  |
| MADE GROUND: Dark brown gravelly clayey fine SAND with frequent rootlets.<br>Gravel is subangular to subrounded fine to coarse sandstone, brick and rare coal. |        | (0.70)                           |                         |                               |                 |                           | 0.00 - 0.70       | 5 D  |
|                                                                                                                                                                |        |                                  |                         |                               |                 |                           | 0.20              | 1 D  |
|                                                                                                                                                                |        |                                  |                         |                               |                 |                           | 0.30              | 2 ES |
|                                                                                                                                                                |        |                                  |                         |                               |                 |                           | 0.35              | 3 D  |
| EOH at 0.70m - Refusal                                                                                                                                         |        | 0.70                             | 84.20                   |                               |                 |                           | 0.70              | 4 D  |

|                        |                                                                                |                               |          |                       |        |           |              |               |                    |                     |              |            |         |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|----------|-----------------------|--------|-----------|--------------|---------------|--------------------|---------------------|--------------|------------|---------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |          | Dynamic Sampling Runs |        |           |              | Installations |                    |                     |              |            |         |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)                     | Material | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |                     | Resp. Zone   | Depth (m)  | Diam    |
|                        |                                                                                | 0.00 - 0.70                   | Arisings |                       |        |           |              |               |                    |                     |              |            |         |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) |          |                       |        |           |              |               |                    | Groundwater Strikes |              |            |         |
|                        |                                                                                |                               |          |                       |        |           |              | Strike (m)    | Casing (m)         | Sealed (m)          | Rises To (m) | Time (min) | Remarks |



|                                      |                             |                            |                                              |                                                       |                                                       |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                          |                                                       |                                                       | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426960.60</b>   | Northing: <b>557421.63</b> | From (m)                                     | Method                                                | Plant Used                                            | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>84.46mAOD</b> | Final Depth: <b>16.50m</b> | 0.00 - 1.20<br>1.20 - 13.50<br>13.50 - 16.50 | Inspection Pit<br>Rotary Coring<br>Rotary Open Holing | Wheeled Backhoe Excavator<br>Fraste SLG<br>Fraste SLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ASH+GS</b>       | Grid System: <b>OSGB</b>   |                                              |                                                       |                                                       | Start Date: 22/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                              |                                                       |                                                       | End Date: 25/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 16.50         | 116       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 3.70            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 16.50 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 3 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 4 | Large Bulk       | 0 |
| Disturbed                  | 9 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 7                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                    | Hammer Ref |
| Cone                              | 1.20      | 1.20       | Dry       | 19            | 24         | 450                    | 24 | N=24 (10,9/8,6,6,4)                | AR1175     |
| Cone                              | 1.90      | 1.20       | Dry       | 17            | 20         | 450                    | 20 | N=20 (11,6/4,5,5,6)                | AR1175     |
| Cone                              | 3.00      | 1.20       | Dry       | 14            | 22         | 450                    | 22 | N=22 (8,6/6,4,6,6)                 | AR1175     |
| Cone                              | 3.70      | 1.20       | Dry       | 25            | 100        | 95                     |    | N=100 (25 for 75mm/100 for 20mm)   | AR1175     |
| Cone                              | 4.60      | 3.70       | Dry       | 25            | 100        | 275                    |    | N=100 (25 for 115mm/100 for 160mm) | AR1175     |
| Cone                              | 5.60      | 3.70       | Dry       | 25            | 100        | 340                    |    | 100 (11,14/100 for 190mm)          | AR1175     |
| Split Spoon                       | 6.60      | 3.70       | Dry       | 25            | 84         | 450                    | 84 | N=84 (10,15/21,24,30,9)            | AR1175     |
| Split Spoon                       | 7.60      | 3.70       | Dry       | 18            | 100        | 360                    |    | 100 (8,10/100 for 210mm)           | AR1175     |
| Cone                              | 11.20     | 3.70       | Dry       | 25            | 100        | 120                    |    | 100 (25 for 60mm/100 for 60mm)     | AR1175     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 9.10 - 13.50              | Water      | Brown        | 80       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





|                                      |                             |                            |                       |                                                           |                                                               |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------|-----------------------------------------------------------|---------------------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant   |                                                           |                                                               | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426960.60</b>   | Northing: <b>557421.63</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit, Rotary Coring, Rotary Open Holing | Plant Used: Wheeled Backhoe Excavator, Fraste SLG, Fraste SLG | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>84.46mAOD</b> | Final Depth: <b>16.50m</b> | 1.20 - 13.50          |                                                           |                                                               | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ASH+GS</b>    | Grid System: <b>OSGB</b>   | 13.50 - 16.50         |                                                           |                                                               | Start Date: 22/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                       |                                                           |                                                               | Finish Date: 25/05/2018 |

| Strata Description                                                                                                                                                                   | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                                  | Coring |          |     |     |     |    |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|--------------------------------------------------|--------|----------|-----|-----|-----|----|--|--|--|
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | Depth (m)         | Ref   | Test Results                                     | Method | Core Run | TCR | SCR | RQD | If |  |  |  |
| MADE GROUND: Dark brown gravelly clayey fine SAND with frequent rootlets. Gravel is subangular to subrounded fine to coarse sandstone, brick and rare coal.                          |        | (1.20)                        |                      |                       |                         |                 |                         | 0.00 - 0.70       | 4 B   |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 0.70              | 3 D   |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 1.20              | 1a B  | SPT(C) 1.20m, N=24 (10,9/8,6,6,4)                |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               | 83.26                |                       |                         |                 |                         | 1.20              | 2a D  |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 1.20              | 3a ES |                                                  |        |          |     |     |     |    |  |  |  |
| MADE GROUND: Stiff dark brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick, coal, mudstone and sandstone. |        | (2.50)                        |                      |                       |                         |                 |                         | 1.90              | 4a B  | SPT(C) 1.90m, N=20 (11,6/4,5,5,6)                |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 1.90              | 5a D  |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 1.90              | 6a ES |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 3.00              | 8 D   | SPT(C) 3.00m, N=22 (8,6/6,4,8,6)                 |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 3.00              | 9 ES  |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 3.00 - 3.70       | 7 B   |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 3.70              | 10 D  | SPT(C) 3.70m, N=100 (25 for 75mm/100 for 20mm)   |        |          |     |     |     |    |  |  |  |
| MADE GROUND: Black MACADAM.                                                                                                                                                          |        | (0.60)                        | 80.76                |                       |                         |                 |                         | 3.70              | 11 D  |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 3.90              | 12 D  |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 4.00              |       |                                                  |        |          |     |     |     |    |  |  |  |
| Weathered weak stained brown fine to medium SANDSTONE.                                                                                                                               |        | (1.10)                        | 80.16                |                       |                         |                 |                         | 4.00              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 4.60              |       | SPT(C) 4.60m, N=100 (25 for 115mm/100 for 160mm) |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 4.60              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 5.41 - 5.60       | 1 C   |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 5.60              |       | SPT(C) 5.60m, 100 (11,14/100 for 190mm)          |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 5.60              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 6.60              |       | SPT(S) 6.60m, N=84 (10,15/21,24,30,9)            |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 6.60              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 7.60 - 7.65       | 5 C   | SPT(S) 7.60m, 100 (8,10/100 for 210mm)           |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 7.60              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 7.60              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 8.55 - 8.90       | 2 C   |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 8.55              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 8.55 - 8.90       |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 9.10              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 9.10              |       |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 10.00 - 10.10     | 4 C   |                                                  |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                      |        |                               |                      |                       |                         |                 |                         | 10.00             |       |                                                  |        |          |     |     |     |    |  |  |  |

|                                                                            |       |                   |       |           |            |           |          |        |          |                    |              |            |           |      |
|----------------------------------------------------------------------------|-------|-------------------|-------|-----------|------------|-----------|----------|--------|----------|--------------------|--------------|------------|-----------|------|
| Observations / Remarks                                                     | Misc. | Shift Information |       |           |            |           | Backfill |        |          | Installations      |              |            |           |      |
|                                                                            |       | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details |              | Resp. Zone | Depth (m) | Diam |
| No Groundwater Encountered<br>Casing Used<br>No Monitoring Point Installed |       | 06/04             | 04:00 | 1.00      | -          | Dry       | 0.00     | 16.50  | Arisings |                    |              |            |           |      |
|                                                                            |       | 12/04             | 18:00 | 1.00      | -          | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            |       | 25/04             | 06:00 | 25.00     | 9.00       | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            |       | 26/04             | 18:00 | 25.00     | 9.00       | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            |       | 27/04             | 06:00 | 47.50     | 25.00      | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            |       | 27/04             | 18:00 | 47.50     | 25.00      | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            |       | 28/04             | 06:00 | 80.00     | 9.00       | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            |       | 09/05             | 18:00 | 6.50      | 4.00       | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            |       | 10/05             | 08:00 | 6.50      | 4.00       | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            |       | 13/05             | 06:00 | 39.80     | 8.50       | Dry       |          |        |          |                    |              |            |           |      |
|                                                                            | 17/05 | 06:00             | 49.80 | 36.50     | Dry        |           |          |        |          |                    |              |            |           |      |
|                                                                            |       |                   |       |           |            |           |          |        |          | Water Strikes      |              |            |           |      |
|                                                                            |       |                   |       |           |            |           |          |        |          | Strike (m)         | Rises To (m) | Time (min) | Remarks   |      |



CENTRAL ALLIANCE

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Log Type
Combined Borehole

Sheet 2 of 2

Exploratory Hole Number

BH17-48A

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 426960.60, Northing: 557421.63, Elevation: 84.46m AOD, Final Depth: 16.50m, Logged By: ASH+GS, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 22/05/2018
Finish Date: 25/05/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Includes descriptions of mudstone and sandstone layers and EOH at 16.50m.

Observations / Remarks, Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Installations (Instrument Details, Resp. Zone, Depth (m), Diam), Water Strikes (Strike (m), Rises To (m), Time (min), Remarks)



|                                      |                             |                            |                         |                          |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426955.65</b>   | Northing: <b>557411.25</b> | From (m)<br>0.00 - 0.70 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>84.89mAOD</b> | Final Depth: <b>0.70m</b>  | Logger: <b>GS</b>       | Grid System: <b>OSGB</b> |                          | Approved: BH           |
| Client: <b>SLV</b>                   | Orientation: <b>N/A</b>     | Inclination: <b>N/A</b>    |                         |                          |                          | Start Date: 22/05/2018 |
|                                      |                             |                            |                         |                          |                          | End Date: 22/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.70 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 3 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type
Dynamic Sampling
Sheet 1 of 1

Exploratory Hole Number
BH17-48B
FINAL



CENTRAL ALLIANCE
GEO

Table with project details: Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, Final Depth, Logged By, Grid System, Orientation, Inclination), Methodology & Plant (Depth, Method, Plant Used), Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 22/05/2018, Finish Date: 22/05/2018.

Main data table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (mAOD), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results). Includes 'MADE GROUND' description and 'EOH at 0.70m - Refusal'.

Observations / Remarks table with sub-sections: Backfill, Dynamic Sampling Runs, Installations, Groundwater Strikes, Hammer Ref & Energy Ratio (%).



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426956.92</b>   | Northing: <b>557412.41</b> | From (m)<br>0.00 - 1.20<br>1.20 - 6.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>85.01mAOD</b> | Final Depth: <b>6.45m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 22/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 22/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 6.00          | 76        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 1.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 6.45 | Arisings    |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 7  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 6  | Large Bulk       | 0 |
| Disturbed                    | 14 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        | Hammer Ref |
| Split Spoon                       | 1.20      | 1.00       | Dry       | 2             | 8          | 450                    | 8  | N=8 (1,1/2,2,2,2)      | MOD 01     |
| Split Spoon                       | 2.00      | 1.00       | Dry       | 7             | 17         | 450                    | 17 | N=17 (3,4/4,4,4,5)     | MOD 01     |
| Split Spoon                       | 3.00      | 1.00       | Dry       | 11            | 25         | 450                    | 25 | N=25 (6,5/5,5,7,8)     | MOD 01     |
| Split Spoon                       | 4.00      | 1.00       | Dry       | 11            | 36         | 450                    | 36 | N=36 (4,7/10,8,8,10)   | MOD 01     |
| Split Spoon                       | 5.00      | 1.00       | Dry       | 5             | 15         | 450                    | 15 | N=15 (2,3/3,4,4,4)     | MOD 01     |
| Split Spoon                       | 6.00      | 1.00       | Dry       | 13            | 54         | 450                    | 54 | N=54 (6,7/10,13,15,16) | MOD 01     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.00 - 2.00                         | 101       | 70         |         |
| 2.00 - 3.00                         | 101       | 90         |         |
| 3.00 - 4.00                         | 86        | 90         |         |
| 4.00 - 5.00                         | 86        | 100        |         |
| 5.00 - 6.00                         | 76        | 90         |         |



|                                      |                              |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426956.92</b>    | Northing: <b>557412.41</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 6.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>85.01m AOD</b> | Final Depth: <b>6.45m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 22/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 22/05/2018 |

| Depth (m)   | Strata Description                                                                                                                                                          | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                      |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|--------------------------------------|
|             |                                                                                                                                                                             |        |                               |                      |                         |                 |                         | Depth (m)         | Ref   | Test Results                         |
| 0.00 - 1.20 | MADE GROUND: Dark brown gravelly clayey fine to coarse SAND with frequent rootlets. Gravel is subangular to subrounded fine to coarse sandstone, brick, coal and limestone. |        | 0.00 - 1.20                   | 82.51                | 116<br>1.00             |                 |                         | 0.00 - 1.20       | 7 B   | SPT(S) 1.20m, N=8 (1,1/2,2,2,2)      |
| 0.20        |                                                                                                                                                                             |        | 1 D                           |                      |                         |                 |                         |                   |       |                                      |
| 0.30        |                                                                                                                                                                             |        | 2 ES                          |                      |                         |                 |                         |                   |       |                                      |
| 0.50        |                                                                                                                                                                             |        | 3 D                           |                      |                         |                 |                         |                   |       |                                      |
| 0.70        |                                                                                                                                                                             |        | 4 ES                          |                      |                         |                 |                         |                   |       |                                      |
| 1.00 - 2.00 | MADE GROUND: Firm dark grey sandy very gravelly CLAY. Gravel is subangular to angular fine to coarse mudstone, coal, sandstone and rare brick. Sand is fine to coarse.      |        | 1.00 - 2.00                   | 80.11                |                         |                 |                         | 1.00              | 5 D   | SPT(S) 2.00m, N=17 (3,4/4,4,4,5)     |
| 1.00        |                                                                                                                                                                             |        | 6 ES                          |                      |                         |                 |                         |                   |       |                                      |
| 1.20 - 1.65 |                                                                                                                                                                             |        | 8 D                           |                      |                         |                 |                         |                   |       |                                      |
| 1.20 - 2.00 |                                                                                                                                                                             |        | 10 B                          |                      |                         |                 |                         |                   |       |                                      |
| 1.50        |                                                                                                                                                                             |        | 9 D                           |                      |                         |                 |                         |                   |       |                                      |
| 2.00 - 3.00 | MADE GROUND: Firm orangish grey locally black gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone mudstone and coal.      |        | 2.00 - 3.00                   | 78.56                |                         |                 |                         | 2.00              | 12 ES | SPT(S) 3.00m, N=25 (6,5/5,5,7,8)     |
| 2.00 - 2.45 |                                                                                                                                                                             |        | 11 D                          |                      |                         |                 |                         |                   |       |                                      |
| 2.00 - 3.00 |                                                                                                                                                                             |        | 14 B                          |                      |                         |                 |                         |                   |       |                                      |
| 2.50        |                                                                                                                                                                             |        | 13 D                          |                      |                         |                 |                         |                   |       |                                      |
| 3.00        |                                                                                                                                                                             |        | 16 ES                         |                      |                         |                 |                         |                   |       |                                      |
| 3.00 - 4.00 | EOH at 6.45m - Scheduled depth                                                                                                                                              |        | 3.00 - 4.00                   |                      |                         |                 |                         | 3.00 - 3.45       | 15 D  | SPT(S) 4.00m, N=36 (4,7/10,8,8,10)   |
| 3.00 - 4.00 |                                                                                                                                                                             |        | 18 B                          |                      |                         |                 |                         |                   |       |                                      |
| 3.50        |                                                                                                                                                                             |        | 17 D                          |                      |                         |                 |                         |                   |       |                                      |
| 4.00        |                                                                                                                                                                             |        | 20 ES                         |                      |                         |                 |                         |                   |       |                                      |
| 4.00 - 4.45 |                                                                                                                                                                             |        | 19 D                          |                      |                         |                 |                         |                   |       |                                      |
| 4.00 - 5.00 | EOH at 6.45m - Scheduled depth                                                                                                                                              |        | 4.00 - 5.00                   |                      |                         |                 |                         | 4.00 - 5.00       | 22 B  | SPT(S) 5.00m, N=15 (2,3/3,4,4,4)     |
| 4.50        |                                                                                                                                                                             |        | 21 D                          |                      |                         |                 |                         |                   |       |                                      |
| 5.00        |                                                                                                                                                                             |        | 24 ES                         |                      |                         |                 |                         |                   |       |                                      |
| 5.00 - 5.45 |                                                                                                                                                                             |        | 23 D                          |                      |                         |                 |                         |                   |       |                                      |
| 5.00 - 6.00 |                                                                                                                                                                             |        | 27 B                          |                      |                         |                 |                         |                   |       |                                      |
| 5.50        | EOH at 6.45m - Scheduled depth                                                                                                                                              |        | 5.50                          |                      |                         |                 |                         | 5.50              | 25 D  | SPT(S) 6.00m, N=54 (6,7/10,13,15,16) |
| 6.00 - 6.45 |                                                                                                                                                                             |        | 28 D                          |                      |                         |                 |                         |                   |       |                                      |
| 6.45        |                                                                                                                                                                             |        | 78.56                         |                      |                         |                 |                         |                   |       |                                      |
| 7.00        |                                                                                                                                                                             |        |                               |                      |                         |                 |                         |                   |       |                                      |
| 8.00        |                                                                                                                                                                             |        |                               |                      |                         |                 |                         |                   |       |                                      |
| 9.00        |                                                                                                                                                                             |        |                               |                      |                         |                 |                         |                   |       |                                      |
| 10.00       |                                                                                                                                                                             |        |                               |                      |                         |                 |                         |                   |       |                                      |

| Observations / Remarks                                                      | Misc. | Backfill                      |            | Dynamic Sampling Runs |              |            |              | Installations |                    |  |           |      |
|-----------------------------------------------------------------------------|-------|-------------------------------|------------|-----------------------|--------------|------------|--------------|---------------|--------------------|--|-----------|------|
|                                                                             |       | Depth (m)                     | Material   | From (m)              | To (m)       | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details |  | Depth (m) | Diam |
| No Groundwater Encountered<br>Casing Used<br>No Monitoring Points Installed |       | 0.00 - 6.45                   | Arisings   | 1.00                  | 2.00         | 101        | 70           |               |                    |  |           |      |
|                                                                             |       |                               |            | 2.00                  | 3.00         | 101        | 90           |               |                    |  |           |      |
|                                                                             |       |                               |            | 3.00                  | 4.00         | 86         | 90           |               |                    |  |           |      |
|                                                                             |       |                               |            | 4.00                  | 5.00         | 86         | 100          |               |                    |  |           |      |
|                                                                             |       |                               |            | 5.00                  | 6.00         | 76         | 90           |               |                    |  |           |      |
|                                                                             |       | Hammer Ref & Energy Ratio (%) |            |                       |              |            |              |               |                    |  |           |      |
|                                                                             |       | MOD 01 (67%)                  |            |                       |              |            |              |               |                    |  |           |      |
| Groundwater Strikes                                                         |       |                               |            |                       |              |            |              |               |                    |  |           |      |
|                                                                             |       | Strike (m)                    | Casing (m) | Sealed (m)            | Rises To (m) | Time (min) | Remarks      |               |                    |  |           |      |
|                                                                             |       |                               |            |                       |              |            |              |               |                    |  |           |      |



|                                      |                             |                            |                                              |                                                       |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------------|-------------------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                          |                                                       |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427188.21</b>   | Northing: <b>557314.13</b> | From (m)                                     | Method                                                | Plant Used                             | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.76mAOD</b> | Final Depth: <b>30.00m</b> | 0.00 - 1.20<br>1.20 - 15.00<br>15.00 - 30.00 | Inspection Pit<br>Rotary Coring<br>Rotary Open Holing | Hand Tools<br>Frasse PLG<br>Frasse PLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ASH</b>          | Grid System: <b>OSGB</b>   |                                              |                                                       |                                        | Start Date: 21/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                              |                                                       |                                        | End Date: 23/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 30.00         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.50            | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 24/05/2018                        |                    | 5.50   | 1.00 - 5.50    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 1.00  | Bentonite   |
| 1.00 - 5.60  | Gravel      |
| 5.60 - 30.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 7 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 6 | Large Bulk       | 0 |
| Disturbed                    | 6 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 12               |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                               |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|-------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result               | Hammer Ref |
| Split Spoon                       | 1.20      | -          | Dry       | 3             | 8          | 450                    | 8  | N=8 (1,2/2,2,2,2)             | AR1175     |
| Split Spoon                       | 2.20      | -          | Dry       | 4             | 33         | 450                    | 33 | N=33 (2,2/7,9,9,8)            | AR1175     |
| Split Spoon                       | 3.20      | -          | Dry       | 8             | 37         | 450                    | 37 | N=37 (4,4/4,9,12,12)          | AR1175     |
| Split Spoon                       | 4.20      | -          | Dry       | 8             | 16         | 450                    | 16 | N=16 (4,4/4,4,4,4)            | AR1175     |
| Split Spoon                       | 5.00      | -          | Dry       | 25            | 50         | 360                    |    | 50 (10,15/50 for 210mm)       | AR1175     |
| Split Spoon                       | 6.50      | 5.00       | Dry       | 25            | 50         | 220                    |    | 50 (25 for 125mm/50 for 95mm) | AR1175     |
| Split Spoon                       | 7.50      | 5.00       | Dry       | 24            | 50         | 245                    |    | 50 (11,13/50 for 95mm)        | AR1175     |
| Cone                              | 9.00      | 6.50       | Dry       | 25            | 50         | 125                    |    | 50 (25 for 40mm/50 for 85mm)  | AR1175     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 8 |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 5.00 - 15.00              | Water      | Cream        | 100      |
| 15.00 - 30.00             | Water      | Grey         | 100      |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.20                         | 128       | 100        |         |
| 2.20 - 3.20                         | 113       | 100        |         |
| 3.20 - 4.20                         | 113       | 100        |         |
| 4.20 - 5.00                         | 113       | 100        |         |



|                                      |                              |                            |                                              |                                                       |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------------|-------------------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                          |                                                       |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427188.21</b>    | Northing: <b>557314.13</b> | From (m)                                     | Method                                                | Plant Used                             | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.76m AOD</b> | Final Depth: <b>30.00m</b> | 0.00 - 1.20<br>1.20 - 15.00<br>15.00 - 30.00 | Inspection Pit<br>Rotary Coring<br>Rotary Open Holing | Hand Tools<br>Frasse PLG<br>Frasse PLG | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ASH</b>        | Grid System: <b>OSGB</b>   |                                              |                                                       |                                        | Start Date: 21/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                              |                                                       |                                        | Finish Date: 23/05/2018 |

| Strata Description                                                                                                                                                                                                | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                   |                             |                                             | Coring |          |     |     |     |    |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------------------------|-----------------------------|---------------------------------------------|--------|----------|-----|-----|-----|----|--|--|
|                                                                                                                                                                                                                   |        |                               |                       |                       |                         |                 |                         | Depth (m)                           | Ref                         | Test Results                                | Method | Core Run | TCR | SCR | RQD | If |  |  |
| MADE GROUND: Dark brown slightly gravelly fine to coarse SAND. Gravel is subangular fine to medium sandstone.                                                                                                     |        | (0.50)                        |                       |                       |                         |                 |                         | 0.00 - 0.50                         | 1 B                         |                                             |        |          |     |     |     |    |  |  |
| MADE GROUND: Soft to firm dark brown gravelly sandy CLAY. Gravel is angular fine to coarse sandstone and mudstone. Sand is fine to coarse.                                                                        |        | 0.50<br>(0.70)                | 81.26                 |                       |                         |                 |                         | 0.50<br>0.50<br>0.50 - 1.20         | 2 D<br>3 ES<br>4 B          |                                             |        |          |     |     |     |    |  |  |
| MADE GROUND: Firm to stiff fissured and desiccated dark brown slightly sandy gravelly CLAY with frequent rootlets. Gravel is angular to subangular fine to coarse sandstone. Sand is fine to coarse.              |        | 1.20<br>(3.80)                | 80.56                 |                       |                         |                 |                         | 1.20<br>1.20<br>1.20 - 2.20         | 5 D<br>6 ES<br>7 B          | SPT(S) 1.20m, N=8<br>(1,2/2,2,2,2)          |        |          |     |     |     |    |  |  |
| From 4.20m to 5.00m becomes sandy.                                                                                                                                                                                |        |                               |                       |                       |                         |                 |                         | 2.20<br>2.20<br>2.20 - 3.20         | 8 D<br>9 ES<br>10 B         | SPT(S) 2.20m, N=33<br>(2,2/7,9,9,8)         |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                   |        |                               |                       |                       |                         |                 |                         | 3.20<br>3.20<br>3.20<br>3.20 - 4.20 | 11 D<br>12 ES<br>13 B<br>ES | SPT(S) 3.20m, N=37<br>(4,4/4,9,12,12)       |        |          |     |     |     |    |  |  |
| NO RECOVERY.                                                                                                                                                                                                      |        | 5.00<br>(1.30)                | 76.76                 |                       |                         |                 |                         | 4.20<br>4.20<br>4.20 - 5.00         | 14 D<br>15 ES<br>16 B       | SPT(S) 4.20m, N=16<br>(4,4/4,4,4,4)         |        |          |     |     |     |    |  |  |
|                                                                                                                                                                                                                   |        |                               |                       |                       |                         |                 |                         | 5.00<br>5.00                        | 17 D<br>18 ES               | SPT(S) 5.00m, 50<br>(10,15/50 for 210mm)    |        |          |     |     |     |    |  |  |
| Very soft to firm dark brown gravelly sandy CLAY. Gravel is angular fine to coarse sandstone. Sand is fine to coarse.<br><i>From 6.50m to 7.00m, no recovery.</i>                                                 |        | 6.30<br>(1.20)                | 75.46                 |                       | 140<br>6.50             |                 |                         | 6.45 - 6.50                         | 8 C                         | SPT(S) 6.50m, 50 (25 for 125mm/50 for 95mm) |        |          |     |     |     |    |  |  |
| Weak brown MUDSTONE. Discontinuities are very closely to closely spaced subhorizontal planar undulating open rough.                                                                                               |        | 7.50<br>(0.95)                | 74.26                 |                       |                         |                 |                         | 7.50 - 7.91                         | 1 C                         | SPT(S) 7.50m, 50<br>(11,13/50 for 95mm)     |        |          |     |     |     |    |  |  |
| Weak to medium strong yellowish brown MUDSTONE/ SANDSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight clean.<br><i>From 9.00m to 9.50m, no recovery.</i> |        | 8.45<br>(2.40)                | 73.31                 |                       |                         |                 |                         | 8.22 - 8.37<br>8.73 - 8.90          | 2 C<br>7 C                  |                                             |        |          |     |     |     |    |  |  |
| Continued on Next Page                                                                                                                                                                                            |        |                               |                       |                       |                         |                 |                         | 9.90 - 10.00                        | 3 C                         | SPT(C) 9.00m, 50 (25 for 40mm/50 for 85mm)  |        |          |     |     |     |    |  |  |

|                        |       |                   |              |            |            |           |           |        |           |                    |  |             |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|-----------|--------|-----------|--------------------|--|-------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill  |        |           | Installations      |  |             |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m)  | To (m) | Material  | Instrument Details |  | Resp. Zone  | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00      | 1.00   | Bentonite |                    |  | 1.00 - 5.50 | 5.50      |      |
|                        |       |                   |              |            |            |           | 1.00      | 5.60   | Gravel    |                    |  |             |           |      |
|                        |       |                   |              |            | 5.60       | 30.00     | Bentonite |        |           |                    |  |             |           |      |
|                        |       | Water Strikes     |              |            |            |           |           |        |           |                    |  |             |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |           |        |           |                    |  |             |           |      |
|                        |       |                   |              |            |            |           |           |        |           |                    |  |             |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed









|                                |                                                       |                                                      |                       |                        |                        |              |
|--------------------------------|-------------------------------------------------------|------------------------------------------------------|-----------------------|------------------------|------------------------|--------------|
| Project No: <b>3043</b>        | Location Details                                      |                                                      | Methodology & Plant   |                        |                        | Scale: 1:50  |
|                                | Name: <b>A1 Birtley to Coalhouse</b>                  | Easting: <b>427108.42</b> Northing: <b>557307.90</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit | Plant Used: Hand Tools | Checked: RPH |
| Location: <b>Tyne and Wear</b> | Elevation: <b>80.99mAOD</b> Final Depth: <b>1.20m</b> |                                                      |                       |                        | Approved: BH           |              |
| Client: <b>SLIV</b>            | Logger: <b>RA</b> Grid System: <b>OSGB</b>            |                                                      |                       |                        | Start Date: 22/05/2018 |              |
|                                | Orientation: <b>N/A</b> Inclination: <b>90°</b>       |                                                      |                       |                        | End Date: 22/05/2018   |              |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 2 | Large Bulk       | 0 |
| Disturbed                  | 1 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Dynamic Sampling

Sheet 1 of 1

Exploratory Hole Number

BH17-50

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 427108.42, Northing: 557307.90, Elevation: 80.99m AOD, Final Depth: 1.20m, Logged By: RA, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: Depth (m): 0.00 - 1.20, Method: Inspection Pit, Plant Used: Hand Tools
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 22/05/2018
Finish Date: 22/05/2018

Strata Description: MADE GROUND: Dark grey gravelly silty fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint, clinker and sandstone.
Legend: [Cross-hatch pattern]
Depth (m) (Stratum Thickness): (1.20)
Reduced Level (mAOD): 79.79
Casing Ø (mm) Depth (m): [Blank]
Water Level (m): [Blank]
Installation / Backfill: [Diagonal hatch pattern]
Samples & Testing: Depth (m), Ref, Test Results

Observations / Remarks: Pit refused at 1.20m and 3 further attempts (BH17-50B-D) were made before deciding on the final borehole location (50E).
Misc: No Groundwater Encountered, Hole Not Cased, No Monitoring Points Installed
Backfill: Depth (m), Material, Arisings
Dynamic Sampling Runs: From (m), To (m), Diam (mm), Recovery (%), Remarks
Installations: Instrument Details, Resp. Zone, Depth (m), Diam
Groundwater Strikes: Strike (m), Casing (m), Sealed (m), Rises To (m), Time (min), Remarks
Hammer Ref & Energy Ratio (%)



|                                      |                              |                            |                         |                          |                          |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427102.20</b>    | Northing: <b>557311.57</b> | From (m)<br>0.00 - 1.20 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.09m AOD</b> | Final Depth: <b>1.20m</b>  |                         |                          |                          | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RA</b>            | Grid System: <b>OSGB</b>   |                         |                          |                          | Start Date: 22/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                         |                          |                          | End Date: 22/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 0 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 0 | Large Bulk       | 0 |
| Disturbed                    | 0 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

**No Samples Taken**

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



**CENTRAL ALLIANCE**  
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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-50A**  
FINAL



|                                      |                              |                            |                          |                          |                          |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |                          |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427102.20</b>    | Northing: <b>557311.57</b> | Depth (m)<br>0.00 - 1.20 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.09m AOD</b> | Final Depth: <b>1.20m</b>  |                          |                          |                          | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RA</b>         | Grid System: <b>OSGB</b>   |                          |                          |                          | Start Date: 22/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |                          |                          | Finish Date: 22/05/2018 |

| Strata Description                                                                                                                              | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|-----|
|                                                                                                                                                 |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref |
| MADE GROUND: Dark grey gravelly silty fine to coarse SAND with roots. Gravel is angular to subangular fine to coarse sandstone, brick and coal. |        | (1.20)                           |                         |                               |                 |                            |                   |     |
| EOH at 1.20m - Refusal                                                                                                                          |        | 1.20                             | 79.89                   |                               |                 |                            |                   |     |

|                                                                                                    |                                                                                                  |                               |                      |                       |            |              |              |               |                    |  |            |           |      |
|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------|----------------------|-----------------------|------------|--------------|--------------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks<br>Pit attempted at the top of the embankment and abandoned due to refusal. | Misc.<br><i>No Groundwater Encountered<br/>Hole Not Cased<br/>No Monitoring Points Installed</i> | Backfill                      |                      | Dynamic Sampling Runs |            |              |              | Installations |                    |  |            |           |      |
|                                                                                                    |                                                                                                  | Depth (m)<br>0.00 - 1.20      | Material<br>Arisings | From (m)              | To (m)     | Diam (mm)    | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                                                                                                    |                                                                                                  | Groundwater Strikes           |                      |                       |            |              |              |               |                    |  |            |           |      |
|                                                                                                    |                                                                                                  | Hammer Ref & Energy Ratio (%) | Strike (m)           | Casing (m)            | Sealed (m) | Rises To (m) | Time (min)   | Remarks       |                    |  |            |           |      |



|                                      |                              |                            |                     |                               |               |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|---------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |               | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427108.42</b>    | Northing: <b>557308.90</b> | From (m)            | Method                        | Plant Used    | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>80.99m AOD</b> | Final Depth: <b>30.00m</b> | 0.00 - 1.20         | Inspection Pit                | Comacchio 205 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ASH</b>           | Grid System: <b>OSGB</b>   | 1.20 - 5.20         | Dynamic Sampling (Windowless) | Comacchio 205 | Start Date: 22/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 5.20 - 16.70        | Rotary Coring                 | Comacchio 205 | End Date: 24/05/2018   |
|                                      |                              |                            | 16.70 - 30.00       | Rotary Open Holing            | Comacchio 205 |                        |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 30.00         | 140       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.00            | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| -                   | -          | 3.10       | 0          | 0.00        |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 24/05/2018                        | Standpipe Piezometer | 5.50   | 5.00 - 6.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.50  | Concrete    |
| 0.50 - 5.00  | Bentonite   |
| 5.00 - 6.00  | Gravel      |
| 6.00 - 30.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 2 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 5 | Large Bulk       | 0 |
| Disturbed                    | 6 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 4                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                      |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|----------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result      | Hammer Ref |
| Split Spoon                       | 2.20      | -          | -         | 8             | 17         | 450                    | 17 | N=17 (4,4/3,4,5,5)   | AR1175     |
| Split Spoon                       | 3.20      | -          | -         | 16            | 44         | 450                    | 44 | N=44 (8,8/9,7,13,15) | AR1175     |
| Split Spoon                       | 4.20      | -          | -         | 8             | 21         | 450                    | 21 | N=21 (4,4/5,5,5,6)   | AR1175     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 1.20 - 2.20               | Water      | Yellow       |          |
| 2.20 - 3.20               | Water      | Yellow       |          |
| 3.20 - 4.20               | Water      | Yellow       |          |
| 4.20 - 5.20               | Water      | Yellow       |          |
| 5.20 - 6.20               | Water      | Yellow       |          |
| 6.20 - 7.70               | Water      | Yellow       |          |
| 7.70 - 9.20               | Water      | Yellow       |          |
| 9.20 - 10.70              | Water      | Yellow       |          |
| 10.70 - 12.20             | Water      | Grey         |          |
| 12.20 - 13.70             | Water      | Grey         |          |
| 13.70 - 15.20             | Water      | Grey         |          |
| 15.20 - 16.70             | Water      | Grey         |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.20                         | 92        | 100        |         |
| 2.20 - 3.20                         | 92        | 100        |         |
| 3.20 - 4.20                         | 92        | 30         |         |
| 4.20 - 5.20                         | 92        | 30         |         |











|                                      |                             |                            |                       |                                            |                                      |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------|--------------------------------------------|--------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant   |                                            |                                      | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427424.44</b>   | Northing: <b>557178.62</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit<br>Cable Percussion | Plant Used: Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>82.39mAOD</b> | Final Depth: <b>6.35m</b>  | 1.20 - 6.35           |                                            |                                      | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>          | Grid System: <b>OSGB</b>   |                       |                                            |                                      | Start Date: 24/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                       |                                            |                                      | End Date: 24/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 6.35          | 200       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 5.70            | 200       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 5.50                | -          | -          | 20         | 5.20        |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 6.35 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 5  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 4  | Large Bulk       | 0 |
| Disturbed                    | 14 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                | Hammer Ref |
| Cone                              | 1.20      | 1.20       | -         | 3             | 14         | 450                    | 14 | N=14 (1,2/3,3,4,4)             | AR1134     |
| Cone                              | 2.50      | 2.50       | -         | 7             | 14         | 450                    | 14 | N=14 (3,4/3,4,3,4)             | AR1134     |
| Cone                              | 3.50      | 3.50       | -         | 6             | 40         | 450                    | 40 | N=40 (2,4/10,10,10,10)         | AR1134     |
| Cone                              | 4.50      | 4.50       | -         | 13            | 42         | 450                    | 42 | N=42 (5,8/9,10,11,12)          | AR1134     |
| Split Spoon                       | 5.50      | 5.50       | -         | 20            | 50         | 155                    |    | 50 (20 for 75mm/50 for 80mm)   | AR1134     |
| Cone                              | 5.90      | 5.70       | -         | 25            | 50         | 205                    |    | 50 (25 for 105mm/50 for 100mm) | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 6 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 5.70 - 5.90                         | 60              |             |        |

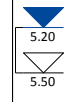
| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                              |                            |                                         |                                              |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant                     |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427424.44</b>    | Northing: <b>557178.62</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 6.35 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>82.39m AOD</b> | Final Depth: <b>6.35m</b>  |                                         |                                              |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ALB</b>        | Grid System: <b>OSGB</b>   |                                         |                                              |                                        | Start Date: 24/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                              |                                        | Finish Date: 24/05/2018 |

| Strata Description                                                                                                                                                                 | Legend      | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD)                      | Chiselling (mins)                            | Water Added (Litres) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                  |                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------|--------------------------------------------|----------------------------------------------|----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|-------|----------------------------------|----------------------------------|
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | Depth (m)         | Ref   | Test Results                     |                                  |
| MADE GROUND: TOPSOIL.<br>MADE GROUND: Dark brown slightly gravelly fine to coarse SAND with low cobble content. Gravel is subangular fine to coarse sandstone, brick and mudstone. |             | 0.15                             | 82.24                                      |                                              |                      |                          |                            |                 |                         | 0.20              | 1 D   |                                  |                                  |
|                                                                                                                                                                                    |             | 0.15                             |                                            |                                              |                      |                          |                            |                 |                         | 0.20              | 2 ES  |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 0.50              | 3 D   |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 0.50              | 4 ES  |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 1.00              | 5 D   |                                  |                                  |
| Yellowish brown medium dense to dense gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone.                                                   |             | (1.85)                           | 80.39                                      |                                              |                      |                          |                            |                 |                         | 1.00              | 5 D   | SPT(C) 1.20m, N=14 (1,2/3,3,4,4) |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 1.00              | 6 ES  |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 1.20              | 7 D   |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 1.20 - 1.65       | 8 D   |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 1.20 - 1.65       | 9 B   |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 2.00              | 10 D  |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 2.00              | 11 ES |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 2.50 - 2.95       | 12 D  |                                  | SPT(C) 2.50m, N=14 (3,4/3,4,3,4) |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 2.50 - 2.95       | 13 B  |                                  |                                  |
|                                                                                                                                                                                    |             |                                  |                                            |                                              |                      |                          |                            |                 |                         | 3.00              | 14 D  |                                  |                                  |
|                                                                                                                                                                                    | 3.00        | 15 ES                            |                                            |                                              |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
|                                                                                                                                                                                    | 3.50 - 3.95 | 16 D                             | SPT(C) 3.50m, N=40 (2,4/10,10,10,10)       |                                              |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
|                                                                                                                                                                                    | 3.50 - 3.95 | 17 B                             |                                            |                                              |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
|                                                                                                                                                                                    | 4.00        | 18 D                             |                                            |                                              |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
|                                                                                                                                                                                    | 4.50 - 4.95 | 19 D                             | SPT(C) 4.50m, N=42 (5,8/9,10,11,12)        |                                              |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
|                                                                                                                                                                                    | 4.50 - 4.95 | 20 B                             |                                            |                                              |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
|                                                                                                                                                                                    | 5.00        | 21 D                             |                                            |                                              |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
|                                                                                                                                                                                    | 5.50 - 5.95 | 22 D                             | SPT(S) 5.50m, 50 (20 for 75mm/50 for 80mm) |                                              |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
|                                                                                                                                                                                    | 5.90 - 6.35 | 23 D                             |                                            | SPT(C) 5.90m, 50 (25 for 105mm/50 for 100mm) |                      |                          |                            |                 |                         |                   |       |                                  |                                  |
| EOH at 6.35m - Refusal                                                                                                                                                             |             | 6.35                             | 76.04                                      |                                              |                      |                          | 200                        | 6.35            |                         |                   |       |                                  |                                  |



|                        |       |                     |              |            |            |           |          |        |               |                    |            |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|---------------|--------------------|------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        | Installations |                    |            |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details | Resp. Zone | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           | 0.00     | 6.35   | Bentonite     |                    |            |           |       |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |               |                    |            |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                    |            |           |       |
|                        |       | 5.50                | 5.20         | 20         |            |           |          |        |               |                    |            |           |       |

Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                             |                            |                     |                    |             |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------------------|-------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                    |             | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427527.68</b>   | Northing: <b>557062.42</b> | From (m)            | Method             | Plant Used  | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>85.18mAOD</b> | Final Depth: <b>23.50m</b> | 0.00 - 1.20         | Inspection Pit     | Hand Tools  | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB+GS</b>       | Grid System: <b>OSGB</b>   | 1.20 - 9.20         | Cable Percussion   | Dando 2000  | Start Date: 02/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    | 9.20 - 20.20        | Rotary Coring      | Beretta T41 | End Date: 08/05/2018   |
|                                      |                             |                            | 20.20 - 23.50       | Rotary Open Holing | Beretta T41 |                        |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 23.50         | 140       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 9.20            | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 08/05/2018                        | Standpipe Piezometer | 4.00   |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.10  | Concrete    |
| 0.10 - 3.50  | Bentonite   |
| 3.50 - 4.50  | Gravel      |
| 4.50 - 23.50 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 4  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 7  | Large Bulk       | 0 |
| Disturbed                    | 13 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 2                |   |
| Undisturbed Thin Wall (NR)   |    | 1                |   |
| Core Sample                  |    | 8                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | DRY       | 11            | 39         | 450                    | 39 | N=39 (4,7,7,9,9,14)                | DC01       |
| Split Spoon                       | 3.20      | 3.00       | DRY       | 9             | 25         | 450                    | 25 | N=25 (4,5/5,6,7,7)                 | DC01       |
| Split Spoon                       | 5.20      | 4.70       | DRY       | 25            | 50         | 180                    | 61 | 50 (25 for 95mm/50 for 85mm)       | DC01       |
| Split Spoon                       | 7.50      | 7.40       | DRY       | 16            | 61         | 450                    | 61 | N=61 (8,8/12,13,16,20)             | DC01       |
| Split Spoon                       | 8.80      | 8.50       | DRY       | 25            | 100        | 415                    |    | N=100 (25 for 130mm/100 for 285mm) | DC01       |
| Split Spoon                       | 9.20      | 9.00       | DRY       | 25            | 100        | 260                    |    | 100 (25 for 40mm/100 for 220mm)    | DC01       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| DC01            | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Chiselling  |                 | Water Added |        |
|-------------|-----------------|-------------|--------|
| Depth (m)   | Duration (mins) | Depth (m)   | Litres |
| 1.50 - 1.90 | 45              |             |        |
| 5.40 - 5.80 | 45              |             |        |
| 8.50 - 8.80 | 60              |             |        |
| 8.80 - 9.00 | 30              |             |        |

| Drilling Flush |            |              |          |
|----------------|------------|--------------|----------|
| Depth (m)      | Flush Type | Flush Colour | Return % |
| 9.20 - 10.20   | Water      | Yellow       | 100      |
| 10.20 - 11.70  | Water      | Yellow       | 100      |
| 11.70 - 12.70  | Water      | Grey         | 100      |
| 12.70 - 14.20  | Water      | Grey         | 100      |
| 14.20 - 15.70  | Water      | Grey         | 100      |
| 15.70 - 17.20  | Water      | Grey         | 100      |
| 17.20 - 18.70  | Water      | Grey         | 100      |
| 18.70 - 20.20  | Water      | Grey         | 100      |
| 20.20 - 23.50  | Water      | Grey         | 100      |

| Dynamic Sampling Runs |           |            |         |
|-----------------------|-----------|------------|---------|
| Depth (m)             | Diam (mm) | Recovery % | Remarks |
|                       |           |            |         |











|                                      |                              |                            |                                                             |                                                                           |                                          |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                         |                                                                           |                                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427547.92</b>    | Northing: <b>557121.93</b> | From (m)                                                    | Method                                                                    | Plant Used                               | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>89.84m AOD</b> | Final Depth: <b>21.00m</b> | 0.00 - 1.20<br>1.20 - 4.00<br>4.00 - 14.00<br>14.00 - 21.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring<br>Rotary Open Holing | Hand Tools<br>Beretta T41<br>Beretta T41 | Approved: BH           |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                                             |                                                                           |                                          | Start Date: 09/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                                             |                                                                           |                                          | End Date: 11/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 21.00         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 6.50            | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 11/05/2018                        | Standpipe Piezometer | 4.50   | 4.00 - 5.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.30  | Concrete    |
| 0.30 - 4.00  | Bentonite   |
| 4.00 - 5.00  | Gravel      |
| 5.00 - 21.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 4 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 5 | Large Bulk       | 0 |
| Disturbed                    | 7 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 6                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                                                                                           |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|-----------------------------------------------------------------------------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                                                                                           | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 8             | 22         | 450                    | 22 | N=22 (3,5,5,5,6,6)<br>N=14 (2,3/3,4,4,3)<br>N=100 (7,10/100 for 265mm)<br>110 (25 for 60mm/110 for 145mm) | DC01       |
| Cone                              | 2.20      | 2.00       | -         | 5             | 14         | 450                    | 14 |                                                                                                           | DC01       |
| Split Spoon                       | 3.20      | 3.00       | -         | 17            | 100        | 415                    |    |                                                                                                           | DC01       |
| Split Spoon                       | 4.00      | 3.00       | -         | 25            | 110        | 205                    |    |                                                                                                           | DC01       |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| DC01            | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 3.40 - 3.80                         | 45              |             |        |
| 3.80 - 4.00                         | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 4.00 - 5.00               | Water      | Yellow       | 100      |
| 5.00 - 21.00              | Water      |              | 0        |

| Applicable to Dynamic Sampling Only |           |            |         |  |
|-------------------------------------|-----------|------------|---------|--|
| Dynamic Sampling Runs               |           |            |         |  |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |  |
|                                     |           |            |         |  |



|                                      |                              |                            |                                                             |                                                                           |                                          |                         |
|--------------------------------------|------------------------------|----------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                         |                                                                           |                                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427547.92</b>    | Northing: <b>557121.93</b> | From (m)                                                    | Method                                                                    | Plant Used                               | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>89.84m AOD</b> | Final Depth: <b>21.00m</b> | 0.00 - 1.20<br>1.20 - 4.00<br>4.00 - 14.00<br>14.00 - 21.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring<br>Rotary Open Holing | Hand Tools<br>Beretta T41<br>Beretta T41 | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                                                             |                                                                           |                                          | Start Date: 09/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                                             |                                                                           |                                          | Finish Date: 11/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                  |                                       |                                               | Coring |              |     |     |     |    |   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|----------------------------------------------------|---------------------------------------|-----------------------------------------------|--------|--------------|-----|-----|-----|----|---|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | Depth (m)                                          | Ref                                   | Test Results                                  | Method | Core Run     | TCR | SCR | RQD | If |   |
| MADE GROUND: Dark brown and black slightly gravelly slightly clayey fine to coarse sand TOPSOIL. Gravel is angular to subangular fine to coarse mudstone and brick.                                                                                                                                                                                                                                                                                                                                                                                                              |        | (0.70)                        |                       |                       |                         |                 |                         | 0.20                                               | 1 ES                                  |                                               |        |              |     |     |     |    |   |
| MADE GROUND: Firm black slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse mudstone brick sandstone and quartz.                                                                                                                                                                                                                                                                                                                                                                                                                |        | 0.70                          | 89.14                 |                       |                         |                 |                         | 0.50<br>0.70<br>0.70<br>0.70                       | 2 B<br>3 ES<br>4 B                    |                                               |        |              |     |     |     |    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | (2.40)                        |                       |                       |                         |                 |                         | 1.20 - 1.65<br>1.20 - 1.70                         | 5 D<br>6 B                            | SPT(S) 1.20m, N=22 (3,5/5,5,6,6)              |        |              |     |     |     |    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                               |                       |                       |                         |                 |                         | 2.00<br>2.00<br>2.20 - 2.65<br>2.20 - 2.70         | 7 D<br>8 ES<br>9 D<br>10 B            | SPT(C) 2.20m, N=14 (2,3/3,4,4,3)              |        |              |     |     |     |    |   |
| Orangish brown fine to coarse SAND with bands of firm orangish brown sandy clay. Gravel is angular fine to coarse sandstone.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        | 3.10                          | 86.74                 |                       |                         |                 |                         | 3.00<br>3.00<br>3.10<br>3.20 - 3.65<br>3.20 - 3.70 | 11 D<br>12 ES<br>13 D<br>14 D<br>15 B | SPT(S) 3.20m, N=100 (7,10/100 for 265mm)      |        |              |     |     |     |    |   |
| Weak to medium strong greyish yellow medium to coarse grained SANDSTONE. Discontinuities are set 1) medium spaced subhorizontal (10-20 degrees) rough undulating and set 2) medium spaced subvertical (60-70 degrees) rough undulating.<br><i>From 4.00m to 4.14m recovered as subangular fine to coarse gravel.</i><br><i>From 4.74m to 5.00m recovered as sandy slightly clayey subangular to subrounded gravel. Sand is fine to coarse.</i>                                                                                                                                   |        | 4.00                          | 85.84                 |                       |                         |                 |                         | 4.00                                               | 16 D                                  | SPT(S) 4.00m, 110 (25 for 60mm/110 for 145mm) |        |              |     |     |     |    |   |
| <i>From 5.11m to 5.30m recovered as slightly clayey subangular to subrounded gravel. Sand is fine to coarse.</i><br><i>From 5.48m to 5.65m 1 no. vertical discontinuity (85-90 degrees) rough undulating.</i><br><i>From 5.78m to 5.83m recovered as subangular fine to coarse gravel.</i>                                                                                                                                                                                                                                                                                       |        | (2.50)                        |                       |                       |                         |                 |                         | 4.40 - 4.55                                        | 1 C                                   |                                               |        | 4.00<br>5.00 | 100 | 64  | 64  |    | 3 |
| <i>From 6.27m to 6.50m recovered as slightly sandy subangular to subrounded fine to coarse gravel. Sand is fine to coarse.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        | 6.50 (0.20)                   | 83.34                 |                       | 140                     | 6.50            |                         |                                                    |                                       |                                               |        |              |     |     |     |    |   |
| Weathered SANDSTONE recovered as greyish yellow sandy subangular to subrounded fine to coarse sandstone mudstone, coal and brick GRAVEL. Sand is fine to coarse.                                                                                                                                                                                                                                                                                                                                                                                                                 |        | 6.70                          | 83.14                 |                       |                         |                 |                         | 6.75 - 6.93                                        | 3 C                                   |                                               |        |              |     |     |     |    |   |
| Weak to medium strong greyish yellow medium to coarse grained SANDSTONE. Discontinuities are set 1) very closely to closely spaced subhorizontal (10-20 degrees) rough undulating and set 2) medium to widely spaced subvertical (70-80 degrees) rough undulating.<br><i>From 6.88m to 6.95m recovered as subangular fine to coarse gravel.</i><br><i>From 7.10m to 7.27m recovered as slightly sandy clayey subangular to subrounded fine to coarse sandstone and coal gravel.</i><br><i>From 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degrees) rough undulating.</i> |        |                               |                       |                       |                         |                 |                         |                                                    |                                       |                                               |        |              |     |     |     |    |   |
| <i>From 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.65m to 8.75m, 9.00m to 9.08m and 9.35m to 9.40m recovered as sandy clayey subangular to subrounded fine to coarse gravel and rare coal. Sand is fine to coarse.</i><br><i>From 9.60m to 10.00m recovered as slightly gravelly fine to coarse sand.</i>                                                                                                                                                                                                                                                                 |        |                               |                       |                       |                         |                 |                         | 9.39 - 9.50                                        | 4 C                                   |                                               |        |              |     |     |     |    |   |

Continued on Next Page

| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill |                              |                               |                                              | Installations        |            |             |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|----------|------------------------------|-------------------------------|----------------------------------------------|----------------------|------------|-------------|------|
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m)                       | Material                      | Instrument Details                           |                      | Resp. Zone | Depth (m)   | Diam |
|                        |       |                   |      |           |            |           |          | 0.00<br>0.30<br>4.00<br>5.00 | 0.30<br>4.00<br>5.00<br>21.00 | Concrete<br>Bentonite<br>Gravel<br>Bentonite | Standpipe Piezometer |            | 4.00 - 5.00 | 4.50 |
|                        |       |                   |      |           |            |           |          |                              | Water Strikes                 |                                              |                      |            |             |      |
|                        |       |                   |      |           |            |           |          |                              | Strike (m)                    | Rises To (m)                                 | Time (min)           | Remarks    |             |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed





CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
Web: www.central-alliance.co.uk

Log Type
Combined Borehole

Sheet 3 of 3

Exploratory Hole Number

BH17-55

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 427547.92, Northing: 557121.93, Elevation: 89.84m AOD, Final Depth: 21.00m, Logged By: GS, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: From (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 09/05/2018
Finish Date: 11/05/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results), Method, Coring (Core Run, TCR, SCR, RQD, If). Includes entries for Yellow SANDSTONE and Grey MUDSTONE, and a note 'EOH at 21.00m - Scheduled depth'.

Observations / Remarks table with columns: Misc., Shift Information (Date, Time, Depth (m), Casing (m), Water (m)), Backfill (From (m), To (m), Material), Installations (Instrument Details, Resp. Zone, Depth (m), Diam), Water Strikes (Strike (m), Rises To (m), Time (min), Remarks). Includes a red note: 'No Groundwater Encountered Casing Used Monitoring Point/s Installed'.





|                                      |                             |                            |                             |                                    |                          |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------|------------------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant         |                                    |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424924.57</b>   | Northing: <b>558540.30</b> | Depth (m)                   | Method                             | Plant Used               | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.82mAOD</b> | Final Depth: <b>51.92m</b> | 0.00 - 1.20<br>1.20 - 51.92 | Inspection Pit<br>Cable Percussion | Hand Tools<br>Dando 2000 | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                             |                                    |                          | Start Date: 09/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                             |                                    |                          | Finish Date: 16/04/2018 |

| Strata Description                                                                                                                                                               | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                  |                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|------------------------------------|----------------------------------------------------------|
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)                          | Ref                                                      |
| MADE GROUND: CONCRETE.                                                                                                                                                           |        | (0.15)                        |                      |                   |                      |                       |                         |                 |                         |                                    |                                                          |
| MADE GROUND: Dark brownish yellow very gravelly coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone.                                                        |        | 0.15<br>(0.25)                | 11.66                |                   |                      |                       |                         |                 |                         | 0.20<br>0.20                       | 1 ES<br>2 D<br>PID 0.20m = 1.2ppm                        |
| At 0.15m plastic membrane.                                                                                                                                                       |        | 0.40<br>(0.30)                | 11.42                |                   |                      |                       |                         |                 |                         | 0.50<br>0.60<br>0.70               | 3 D<br>4 B<br>5 ES<br>PID 0.70m = 1.3ppm                 |
| MADE GROUND: Orangish brown sandy subangular to subrounded fine to coarse sandstone and rare brick GRAVEL. Sand is fine to coarse.                                               |        | 0.70<br>(0.20)                | 11.12                |                   |                      |                       |                         |                 |                         | 1.00<br>1.00                       | 6 D<br>7 ES<br>PID 1.00m = 1.0ppm                        |
| At 0.40m geotextile.                                                                                                                                                             |        | 0.90<br>(0.30)                | 10.92                |                   |                      |                       |                         |                 |                         | 1.20 - 1.65<br>1.20 - 1.65         | 8 D<br>9 B                                               |
| MADE GROUND: Yellowish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone, limestone, mudstone and brick.           |        | 1.20                          | 10.62                |                   |                      |                       |                         |                 |                         |                                    |                                                          |
| MADE GROUND: Yellowish black gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, coal and rare brick.            |        | (2.30)                        |                      |                   |                      |                       |                         |                 |                         | 2.00<br>2.00                       | 10 D<br>11 ES                                            |
| MADE GROUND: Soft to firm brownish grey slightly gravelly slightly sandy locally laminated CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine coal and brick. |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.50 - 2.95                        | 12 UT                                                    |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.00<br>3.00                       | 13 D<br>14 ES                                            |
| Loose brownish grey fine to coarse SAND.                                                                                                                                         |        | 3.50                          | 8.32                 |                   |                      |                       |                         |                 |                         | 3.50 - 3.95<br>3.50 - 3.95         | 15 D<br>16 B                                             |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.00<br>4.00                       | 17 D<br>18 ES                                            |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 4.50 - 4.95<br>4.50 - 4.95         | 19 UT-<br>NR<br>20 B                                     |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.00                               | 21 D                                                     |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.50 - 5.95<br>5.50 - 5.95         | 22 D<br>23 B                                             |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.00                               | 24 D                                                     |
| From 6.00m with rare thin coal bands.                                                                                                                                            |        | (5.50)                        |                      |                   |                      |                       |                         |                 |                         | 6.50 - 6.95<br>6.50 - 6.95         | 25 D<br>26 B                                             |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.00                               | 27 D                                                     |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.50 - 7.95<br>7.50 - 7.95         | 28 D<br>29 B                                             |
| From 7.50m becomes slightly gravelly. Gravel is subangular to subrounded fine to coarse sandstone and coal.                                                                      |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.00                               | 30 D                                                     |
|                                                                                                                                                                                  |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.50 - 8.95<br>8.50 - 8.95         | 31 D<br>32 B                                             |
| Yellowish brown gravelly sandy subangular to subrounded sandstone COBBLES. Gravel is subangular to subrounded fine to coarse sandstone. Sand is fine to coarse.                  |        | 9.00<br>(0.50)                | 2.82                 |                   |                      |                       |                         |                 |                         | 9.00                               | 33 D                                                     |
| Firm brown thinly laminated CLAY.                                                                                                                                                |        | 9.50<br>(0.50)                | 2.32                 |                   |                      |                       |                         |                 |                         | 9.50<br>9.50 - 9.95<br>9.50 - 9.95 | 34 D<br>35 D<br>36 B<br>SPT(S) 9.50m, N=18 (2,2/4,4,5,5) |
| Continued on Next Page                                                                                                                                                           |        | 10.00                         | 1.82                 |                   |                      |                       |                         | 250<br>10.00    |                         | 10.00                              | 37 D                                                     |

|                                                                                                  |                                                                                                                                   |                   |       |           |            |           |          |        |               |                      |              |            |         |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------|-------|-----------|------------|-----------|----------|--------|---------------|----------------------|--------------|------------|---------|
| Observations / Remarks<br>Running sands causing slow progress: 09.04.18: 0.75hrs, 12.04.18: 5hrs | Misc.<br>Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed<br>Hammer Ref. & Energy Ratio (%)<br>AR1134 (56%) | Shift Information |       |           |            | Backfill  |          |        | Installations |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | Date              | Time  | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details   | Resp. Zone   | Depth (m)  | Diam.   |
|                                                                                                  |                                                                                                                                   | 09/04             | 06:00 | 29.00     | 10.00      | DRY       | 0.00     | 1.00   | Concrete      | Standpipe Piezometer | 2.00 - 9.50  | 9.30       |         |
|                                                                                                  |                                                                                                                                   | 09/04             | 19:30 | 8.50      | 8.50       | 5.10      | 1.00     | 2.00   | Bentonite     |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | 10/04             | 06:00 | 45.00     | 10.00      | DRY       | 2.00     | 9.50   | Sand          |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | 10/04             | 19:30 | 29.00     | 10.00      | DRY       | 9.50     | 51.92  | Bentonite     |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | 11/04             | 06:00 | 48.45     | 45.00      | 40.10     |          |        |               |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | 11/04             | 19:30 | 45.00     | 10.00      | DRY       |          |        |               |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | 12/04             | 06:00 | 50.45     | 50.00      | 20.90     |          |        |               |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | 12/04             | 19:30 | 48.45     | 45.00      | 20.30     |          |        |               |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | 13/04             | 06:00 | 52.15     | 51.70      | 20.90     |          |        |               |                      |              |            |         |
|                                                                                                  |                                                                                                                                   | 13/04             | 19:30 | 50.45     | 50.00      | 21.20     |          |        |               |                      |              |            |         |
|                                                                                                  |                                                                                                                                   |                   |       |           |            |           |          |        |               | Groundwater Strikes  |              |            |         |
|                                                                                                  |                                                                                                                                   |                   |       |           |            |           |          |        |               | Strike (m)           | Rises To (m) | Time (min) | Remarks |
|                                                                                                  |                                                                                                                                   |                   |       |           |            |           |          |        |               | 48.00                | 40.10        | 20         |         |



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Log Type  
**Cable Percussion**  
Sheet 2 of 6

Exploratory Hole Number  
**BH17-60**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424924.57</b>    | Northing: <b>558540.30</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.82m AOD</b> | Final Depth: <b>51.92m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 09/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 16/04/2018 |

| Strata Description                | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |                                   |                       |                                   |
|-----------------------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----------------------------------|-----------------------|-----------------------------------|
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref                               | Test Results          |                                   |
| Firm brown thinly laminated CLAY. |        |                               |                       |                   |                      |                       |                         |                 |                         | 10.50 - 10.95     | 38 UT-NR<br>39 B                  | 15 blows, 0% Recovery |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         | 11.00             | 40 D                              |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         |                   | 12.00                             | 41 D                  | SPT(S) 12.00m, N=13 (1,2/2,3,4,4) |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         |                   | 12.00 - 12.45                     | 42 D                  |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         |                   | 12.00 - 12.45                     | 43 B                  |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         |                   | 13.00                             | 44 D                  |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         |                   | 13.50 - 13.95                     | 45 UT                 | 20 blows, 100% Recovery           |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         |                   | 14.00                             | 46 D                  |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         |                   | 15.00                             | 47 D                  | SPT(S) 15.00m, N=15 (2,2/3,4,4,4) |
|                                   |        |                               |                       |                   |                      |                       |                         |                 |                         |                   | 15.00 - 15.45                     | 48 D                  |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 15.00 - 15.45           | 49 B              |                                   |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 16.00                   | 50 D              |                                   |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 16.50 - 16.95           | 51 UT             | 25 blows, 100% Recovery           |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 17.00                   | 52 D              |                                   |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 18.00                   | 53 D              | SPT(S) 18.00m, N=18 (2,4/5,5,4,4) |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 18.00 - 18.45           | 54 D              |                                   |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 18.00 - 18.45           | 55 B              |                                   |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 19.00                   | 56 D              |                                   |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 19.50 - 19.95           | 57 UT             | 20 blows, 100% Recovery           |                       |                                   |
|                                   |        |                               |                       |                   |                      |                       |                         |                 | 20.00                   | 58 D              |                                   |                       |                                   |

From 16.50m becomes firm to stiff.

Continued on Next Page

|                                                                                                  |                                                                                                                                   |                     |              |            |            |           |          |        |               |                      |             |           |       |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------|------------|------------|-----------|----------|--------|---------------|----------------------|-------------|-----------|-------|
| Observations / Remarks<br>Running sands causing slow progress: 09.04.18: 0.75hrs, 12.04.18: 5hrs | Misc.<br>Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed<br>Hammer Ref. & Energy Ratio (%)<br>AR1134 (56%) | Shift Information   |              |            |            |           | Backfill |        | Installations |                      |             |           |       |
|                                                                                                  |                                                                                                                                   | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details   | Resp. Zone  | Depth (m) | Diam. |
|                                                                                                  |                                                                                                                                   |                     |              |            |            |           |          |        |               | Standpipe Piezometer | 2.00 - 9.50 | 9.30      |       |
|                                                                                                  |                                                                                                                                   | Groundwater Strikes |              |            |            |           |          |        |               |                      |             |           |       |
|                                                                                                  |                                                                                                                                   | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |               |                      |             |           |       |
|                                                                                                  |                                                                                                                                   |                     |              |            |            |           |          |        |               |                      |             |           |       |







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Log Type

Cable Percussion

Sheet 4 of 6

Exploratory Hole Number

BH17-60

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details: Easting: 424924.57, Northing: 558540.30, Elevation: 11.82m AOD, Final Depth: 51.92m, Logged By: GS, Grid System: OSG, Orientation: N/A, Inclinon: 90°, Methodology & Plant: Depth (m), Method, Plant Used, Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 09/04/2018, Finish Date: 16/04/2018

Main data table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Chiselling (mins), Water Added (Litres), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation/Backfill, Samples & Testing (Depth (m), Ref, Test Results). Includes data for Firm brown thinly laminated CLAY from 30.00m to 40.00m depth.

Observations / Remarks, Misc., Shift Information, Backfill, Installations. Includes notes on running sands and groundwater encountered.



|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424924.57</b>   | Northing: <b>558540.30</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.82mAOD</b> | Final Depth: <b>51.92m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 09/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 16/04/2018 |

| Strata Description                | Legend | Depth (m) (Stratum Thickness)              | Reduced Level (mAOD) | Chiselling (mins)                     | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |
|-----------------------------------|--------|--------------------------------------------|----------------------|---------------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|
|                                   |        |                                            |                      |                                       |                      |                       |                         |                 |                         | Depth (m)         | Ref |
| Firm brown thinly laminated CLAY. |        |                                            |                      |                                       |                      |                       |                         | 40.10           |                         |                   |     |
|                                   |        | 40.50 - 40.95                              | 99 UT                | 25 blows, 100% Recovery               |                      |                       |                         |                 |                         |                   |     |
|                                   |        | 41.00                                      | 100 D                |                                       |                      |                       |                         |                 |                         |                   |     |
|                                   |        | 42.00                                      | 101 D                |                                       |                      |                       |                         |                 |                         |                   |     |
|                                   |        | 42.00 - 42.45                              | 102 D                | SPT(S) 42.00m, N=40 (5,8/10,10,10,10) |                      |                       |                         |                 |                         |                   |     |
|                                   |        | 42.45                                      | 103 B                |                                       |                      |                       |                         |                 |                         |                   |     |
|                                   |        | 43.00                                      | 104 D                |                                       |                      |                       |                         |                 |                         |                   |     |
|                                   |        | 43.50 - 43.95                              | 105 UT               | 25 blows, 100% Recovery               |                      |                       |                         |                 |                         |                   |     |
|                                   |        | 44.00                                      | 106 D                |                                       |                      |                       |                         |                 |                         |                   |     |
|                                   |        | 45.00                                      | 107 D                |                                       |                      |                       |                         |                 |                         |                   |     |
| 45.00 - 45.45                     | 108 D  | SPT(S) 45.00m, N=27 (2,4/7,6,6,8)          |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 45.45 - 45.45                     | 109 B  |                                            |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 46.00                             | 110 D  |                                            |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 46.50 - 46.95                     | 111 UT | 25 blows, 100% Recovery                    |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 47.00                             | 112 D  |                                            |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 47.50                             | 113 D  |                                            |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 48.00                             | 114 D  |                                            |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 48.00 - 48.45                     | 115 D  | SPT(S) 48.00m, N=34 (3,5/7,7,10,10)        |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 48.45 - 48.45                     | 116 B  |                                            |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 49.00                             | 117 D  |                                            |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 50.00                             | 118 D  |                                            |                      |                                       |                      |                       |                         |                 |                         |                   |     |
| 50.00 - 50.45                     | 119 D  | SPT(S) 50.00m, N=50 (10,10/10,10,12,14,14) |                      |                                       |                      |                       |                         |                 |                         |                   |     |

From 47.50m becomes sandy. Sand is fine to coarse.

Dense grey slightly gravelly fine to coarse SAND.

Continued on Next Page

|                                                                                                  |                                                                                                                                   |                     |              |            |            |           |          |        |          |                      |             |           |       |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|----------------------|-------------|-----------|-------|
| Observations / Remarks<br>Running sands causing slow progress: 09.04.18: 0.75hrs, 12.04.18: 5hrs | Misc.<br>Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed<br>Hammer Ref. & Energy Ratio (%)<br>AR1134 (56%) | Shift Information   |              |            |            |           | Backfill |        |          | Installations        |             |           |       |
|                                                                                                  |                                                                                                                                   | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details   | Resp. Zone  | Depth (m) | Diam. |
|                                                                                                  |                                                                                                                                   |                     |              |            |            |           |          |        |          | Standpipe Piezometer | 2.00 - 9.50 | 9.30      |       |
|                                                                                                  |                                                                                                                                   | Groundwater Strikes |              |            |            |           |          |        |          |                      |             |           |       |
|                                                                                                  |                                                                                                                                   | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                      |             |           |       |



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Log Type

Cable Percussion

Sheet 6 of 6

Exploratory Hole Number

BH17-60

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details: Easting: 424924.57, Northing: 558540.30, Elevation: 11.82m AOD, Final Depth: 51.92m, Logged By: GS, Grid System: OSG, Orientation: N/A, Inclinaton: 90°, Methodology & Plant: Depth (m), Method, Plant Used, Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 09/04/2018, Finish Date: 16/04/2018

Main log table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (m AOD), Chiselling (mins), Water Added (Litres), Hole Ø (mm) Depth (m), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results). Includes descriptions of SAND, GRAVEL, and MUDSTONE.

Observations / Remarks, Misc., Shift Information, Backfill, Installations. Includes notes on running sands and groundwater encountered.



|                                      |                              |                            |                                         |                                                |                                        |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|------------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424926.96</b>    | Northing: <b>558537.62</b> | From (m)<br>0.00 - 1.00<br>1.00 - 80.00 | Method<br>Inspection Pit<br>Rotary Open Holing | Plant Used<br>Hand Tools<br>Fraste PLG | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.39m AOD</b> | Final Depth: <b>80.00m</b> |                                         |                                                |                                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>            | Grid System: <b>OSGB</b>   |                                         |                                                |                                        | Start Date: 06/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                |                                        | End Date: 20/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 80.00         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 49.80           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 80.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 2 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 1 | Large Bulk       | 0 |
| Disturbed                    | 3 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 0 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 1.00 - 80.00              | Water      |              | 100      |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Rotary  
Borehole**

Sheet 1 of 8

Exploratory Hole Number

**BH17-61**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                       |                        |                        |                         |             |
|--------------------------------------|------------------------------|----------------------------|-----------------------|------------------------|------------------------|-------------------------|-------------|
| Project No: <b>3043</b>              | Location Details             |                            |                       | Methodology & Plant    |                        |                         | Scale: 1:50 |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424926.96</b>    | Northing: <b>558537.62</b> | From (m): 0.00 - 1.00 | Method: Inspection Pit | Plant Used: Hand Tools | Checked By: RPH         |             |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.39m AOD</b> | Final Depth: <b>80.00m</b> | 1.00 - 80.00          | Rotary Open Holing     | Fraste PLG             | Approved By: BH         |             |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                       |                        |                        | Start Date: 06/04/2018  |             |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                       |                        |                        | Finish Date: 20/04/2018 |             |

| Strata Description                                                                                                                                                                                        | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|------|
|                                                                                                                                                                                                           |        |                                  |                       |                          |                            |                 |                         | Depth (m)         | Ref  |
| MADE GROUND: GRASSCRETE with rebar.                                                                                                                                                                       |        | (0.15)                           |                       |                          |                            |                 |                         | 0.10              | 1 D  |
| MADE GROUND: Dark brown slightly sandy clayey angular to subangular fine to coarse concrete and brick GRAVEL with high cobble content. Sand is fine to coarse. Cobbles are subangular concrete and brick. |        | 0.15                             | 12.24                 |                          |                            |                 |                         | 0.40              | 2 ES |
|                                                                                                                                                                                                           |        | (0.85)                           |                       |                          |                            |                 |                         | 0.50              | 3 D  |
|                                                                                                                                                                                                           |        |                                  |                       |                          |                            |                 |                         | 0.50 - 1.00       | 4 B  |
|                                                                                                                                                                                                           |        |                                  |                       |                          |                            |                 |                         | 0.80              | 5 ES |
| Inspection Pit terminated at 1.00m due to concrete obstruction.                                                                                                                                           |        |                                  |                       |                          |                            |                 |                         |                   |      |
| 1 CLAY (Driller's Description).                                                                                                                                                                           |        | 1.00                             | 11.39                 |                          |                            |                 |                         | 1.00              | 6 D  |
| Continued on Next Page                                                                                                                                                                                    |        |                                  |                       |                          |                            |                 |                         |                   |      |

|                                                                                |                                                                                                                                                       |                   |       |           |            |                |          |        |               |                    |            |           |      |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------|-----------|------------|----------------|----------|--------|---------------|--------------------|------------|-----------|------|
| Observations / Remarks<br>Running sands causing slow progress: 16.04.18: 10hrs | Misc.<br><i>No Groundwater Encountered</i><br><i>Casing Used</i><br><i>No Monitoring Point Installed</i><br><i>Hammer Ref. &amp; Energy Ratio (%)</i> | Shift Information |       |           |            |                | Backfill |        | Installations |                    |            |           |      |
|                                                                                |                                                                                                                                                       | Date              | Time  | Depth (m) | Casing (m) | Water (m)      | From (m) | To (m) | Material      | Instrument Details | Resp. Zone | Depth (m) | Diam |
|                                                                                |                                                                                                                                                       |                   |       |           |            |                | 0.00     | 80.00  | Bentonite     |                    |            |           |      |
|                                                                                |                                                                                                                                                       |                   |       |           |            | Drilling Fluid |          |        |               |                    |            |           |      |
|                                                                                |                                                                                                                                                       | Depth (m)         | Type  | Colour    | Return %   |                |          |        |               |                    |            |           |      |
|                                                                                |                                                                                                                                                       | 1.00 - 80.00      | Water |           | 100        |                |          |        |               |                    |            |           |      |













# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type

**Rotary  
Borehole**

Sheet 6 of 8

Exploratory Hole Number

**BH17-61**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424926.96</b>    | Northing: <b>558537.62</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.39m AOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 06/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 20/04/2018 |

| Strata Description                                | Legend           | Depth (m)<br>(Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |  |
|---------------------------------------------------|------------------|----------------------------------|-----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|-----|--------------|--|
|                                                   |                  |                                  |                       |                          |                            |                 |                         | Depth (m)         | Ref | Test Results |  |
| Weak SANDSTONE (Driller's Description).           | [Dotted Pattern] |                                  |                       |                          |                            |                 |                         |                   |     |              |  |
| Grey SANDSTONE/SILTSTONE (Driller's Description). | [Dotted Pattern] | 55.00                            | -42.61                |                          |                            |                 |                         |                   |     |              |  |
| Continued on Next Page                            |                  |                                  |                       |                          |                            |                 |                         |                   |     |              |  |

|                                                                                |                                                                                                                                     |                   |      |           |            |           |          |        |               |                    |            |           |      |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|-----------|------------|-----------|----------|--------|---------------|--------------------|------------|-----------|------|
| Observations / Remarks<br>Running sands causing slow progress: 16.04.18: 10hrs | Misc.<br><i>No Groundwater Encountered<br/>Casing Used<br/>No Monitoring Point Installed<br/>Hammer Ref. &amp; Energy Ratio (%)</i> | Shift Information |      |           |            |           | Backfill |        | Installations |                    |            |           |      |
|                                                                                |                                                                                                                                     | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details | Resp. Zone | Depth (m) | Diam |
|                                                                                |                                                                                                                                     |                   |      |           |            |           | 0.00     | 80.00  | Bentonite     |                    |            |           |      |
|                                                                                |                                                                                                                                     | Drilling Fluid    |      |           |            | Depth (m) | Type     | Colour | Return %      |                    |            |           |      |







|                                      |                             |                            |                             |                                      |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------|--------------------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant         |                                      |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424987.54</b>   | Northing: <b>558536.91</b> | From (m)                    | Method                               | Plant Used               | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.22mAOD</b> | Final Depth: <b>80.00m</b> | 0.00 - 1.20<br>1.20 - 80.00 | Inspection Pit<br>Rotary Open Holing | Hand Tools<br>Fraste PLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>TS</b>           | Grid System: <b>OSGB</b>   |                             |                                      |                          | Start Date: 23/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                             |                                      |                          | End Date: 27/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 80.00         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 25.00           | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 80.00 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 0 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 0 | Large Bulk       | 0 |
| Disturbed                    | 0 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

**No Samples Taken**

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type

**Rotary  
Borehole**

Sheet 1 of 8

Exploratory Hole Number

**BH17-64**

**FINAL**



CENTRAL ALLIANCE  
**GEO**

|                                      |                             |                            |                         |                                                |                                        |                         |
|--------------------------------------|-----------------------------|----------------------------|-------------------------|------------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant     |                                                |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424987.54</b>   | Northing: <b>558536.91</b> | From (m)<br>0.00 - 1.20 | Method<br>Inspection Pit<br>Rotary Open Holing | Plant Used<br>Hand Tools<br>Fraste PLG | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.22mAOD</b> | Final Depth: <b>80.00m</b> | 1.20 - 80.00            |                                                |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>TS</b>        | Grid System: <b>OSGB</b>   |                         |                                                |                                        | Start Date: 23/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                         |                                                |                                        | Finish Date: 27/04/2018 |

| Strata Description                          | Legend | Depth (m)<br>(Stratum<br>Thickness) | Reduced<br>Level<br>(mAOD) | Hole $\phi$<br>(mm)<br>Depth (m) | Casing $\phi$<br>(mm)<br>Depth (m) | Water<br>Level (m) | Installation /<br>Backfill | Samples & Testing |     |              |  |
|---------------------------------------------|--------|-------------------------------------|----------------------------|----------------------------------|------------------------------------|--------------------|----------------------------|-------------------|-----|--------------|--|
|                                             |        |                                     |                            |                                  |                                    |                    |                            | Depth (m)         | Ref | Test Results |  |
| CLAY (Driller's Description).               |        |                                     |                            |                                  |                                    |                    |                            |                   |     |              |  |
| At 7.00m coal band (Driller's Description). |        |                                     |                            |                                  |                                    |                    |                            |                   |     |              |  |
| Continued on Next Page                      |        |                                     |                            |                                  |                                    |                    |                            |                   |     |              |  |

| Observations / Remarks                                                                                                                                                      | Misc. | Shift Information                                                                                            |          |           |            |           | Backfill |        | Installations |                    |            |           |      |        |          |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------|----------|-----------|------------|-----------|----------|--------|---------------|--------------------|------------|-----------|------|--------|----------|--|--|--|--|
|                                                                                                                                                                             |       | Date                                                                                                         | Time     | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details | Resp. Zone | Depth (m) | Diam |        |          |  |  |  |  |
|                                                                                                                                                                             |       |                                                                                                              |          |           |            |           | 0.00     | 80.00  | Bentonite     |                    |            |           |      |        |          |  |  |  |  |
|                                                                                                                                                                             |       | No Groundwater Encountered<br>Casing Used<br>No Monitoring Point Installed<br>Hammer Ref. & Energy Ratio (%) |          |           |            |           |          |        |               |                    |            |           |      |        |          |  |  |  |  |
| Drilling Fluid <table border="1"> <tr> <th>Depth (m)</th> <th>Type</th> <th>Colour</th> <th>Return %</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table> |       |                                                                                                              |          |           |            |           |          |        |               |                    |            | Depth (m) | Type | Colour | Return % |  |  |  |  |
| Depth (m)                                                                                                                                                                   | Type  | Colour                                                                                                       | Return % |           |            |           |          |        |               |                    |            |           |      |        |          |  |  |  |  |
|                                                                                                                                                                             |       |                                                                                                              |          |           |            |           |          |        |               |                    |            |           |      |        |          |  |  |  |  |





**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Rotary Borehole**  
Sheet 3 of 8

Exploratory Hole Number  
**BH17-64**  
**FINAL**



|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424987.54</b>   | Northing: <b>558536.91</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>13.22mAOD</b> | Final Depth: <b>80.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>TS</b>        | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 23/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 27/04/2018 |

| Strata Description            | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |  |
|-------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--|
|                               |        |                               |                      |                       |                         |                 |                         | Depth (m)         | Ref | Test Results |  |
| CLAY (Driller's Description). |        | (50.00)                       |                      |                       | 140<br>25.00            |                 |                         |                   |     |              |  |
| Continued on Next Page        |        |                               |                      |                       |                         |                 |                         |                   |     |              |  |

|                        |       |                   |      |           |            |           |          |        |           |                    |            |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|----------|--------|-----------|--------------------|------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill |        |           | Installations      |            |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material  | Instrument Details | Resp. Zone | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00     | 80.00  | Bentonite |                    |            |           |      |
|                        |       | Drilling Fluid    |      |           |            | Depth (m) | Type     | Colour | Return %  |                    |            |           |      |

No Groundwater Encountered  
Casing Used  
No Monitoring Point Installed  
Hammer Ref. & Energy Ratio (%)















|                                      |                             |                            |                                            |                                                     |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------|-----------------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                        |                                                     |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425833.07</b>   | Northing: <b>558236.66</b> | From (m)                                   | Method                                              | Plant Used                             | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>37.98mAOD</b> | Final Depth: <b>12.00m</b> | 0.00 - 1.20<br>1.20 - 7.78<br>7.00 - 12.00 | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000<br>Frasco PLG | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS+ASH</b>       | Grid System: <b>OSGB</b>   |                                            |                                                     |                                        | Start Date: 03/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                            |                                                     |                                        | End Date: 03/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 7.78          | 150       |
| 12.00         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 5.50            | 200       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                        |        |                |           |
|-----------------------------------|------------------------|--------|----------------|-----------|
| Date                              | Instrument Details     | To (m) | Resp. Zone (m) | Diam (mm) |
| 18/05/2018                        | Standpipe Piezometer   | 0.00   | 2.00 - 5.00    |           |
| 18/05/2018                        | Water Level Datalogger | 4.50   | 2.00 - 5.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 2.00  | Bentonite   |
| 2.00 - 5.00  | Gravel      |
| 5.00 - 12.00 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 8  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 6  | Large Bulk       | 0 |
| Disturbed                    | 13 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    |                  | 1 |
| Undisturbed Thin Wall (NR)   |    |                  | 2 |
| Core Sample                  |    |                  | 6 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                               |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|-------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result               | Hammer Ref |
| Cone                              | 1.20      | 1.20       | DRY       | 2             | 5          | 450                    | 5  | N=5 (1,1/1,2,1,1)             | AR1134     |
| Cone                              | 3.50      | 3.50       | DRY       | 3             | 8          | 450                    | 8  | N=8 (1,2/2,1,2,3)             | AR1134     |
| Split Spoon                       | 5.50      | 5.50       | DRY       | 9             | 16         | 450                    | 16 | N=16 (5,4/3,3,5,5)            | AR1134     |
| Split Spoon                       | 7.50      | 5.50       | DRY       | 25            | 50         | 140                    |    | 50 (25 for 45mm/50 for 95mm)  | AR1134     |
| Cone                              | 7.70      | 5.50       | DRY       | 25            | 50         | 155                    |    | 50 (25 for 50mm/50 for 105mm) | AR1134     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 7.40 - 7.70                         | 90              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                             |                            |                                                      |                                                             |                                                    |                         |
|--------------------------------------|-----------------------------|----------------------------|------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                                  |                                                             |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425833.07</b>   | Northing: <b>558236.66</b> | From (m): 0.00 - 1.20<br>1.20 - 7.78<br>7.00 - 12.00 | Method: Inspection Pit<br>Cable Percussion<br>Rotary Coring | Plant Used: Hand Tools<br>Dando 2000<br>Frasco PLG | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>37.98mAOD</b> | Final Depth: <b>12.00m</b> |                                                      |                                                             |                                                    | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS+ASH</b>    | Grid System: <b>OSGB</b>   |                                                      |                                                             |                                                    | Start Date: 03/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                                      |                                                             |                                                    | Finish Date: 03/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                               | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                                                 |                                           |                                                                                           | Coring |          |     |     |     |    |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-----------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------|--------|----------|-----|-----|-----|----|--|--|--|
|                                                                                                                                                                                                                                                                                                  |        |                               |                      |                       |                         |                 |                         | Depth (m)                                                                         | Ref                                       | Test Results                                                                              | Method | Core Run | TCR | SCR | RQD | If |  |  |  |
| <b>MADE GROUND: TOPSOIL.</b><br>MADE GROUND: Yellowish brown slightly sandy very gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, limestone, coal and brick. Cobbles are subangular sandstone and mudstone. |        | (0.10)<br>0.10                | 37.88                |                       |                         |                 |                         | 0.20<br>0.30<br>0.50<br>0.60<br>0.70                                              | 1 D<br>2 ES<br>3 D<br>4 B<br>5 ES         |                                                                                           |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                                                                                                                  |        | (2.10)                        |                      |                       |                         |                 |                         | 1.00<br>1.00<br>1.20 - 1.65                                                       | 6 D<br>7 ES<br>9 B                        | SPT(C) 1.20m, N=5 (1,1/1,2,1,1)                                                           |        |          |     |     |     |    |  |  |  |
| <b>MADE GROUND: Soft to firm orangish brown gravelly sandy silty CLAY.</b> Gravel is subangular to subrounded fine to coarse sandstone, mudstone, coal and brick. Sand is fine to coarse.                                                                                                        |        | 2.20                          | 35.78                |                       |                         |                 |                         | 2.00<br>2.00<br>2.20<br>2.50 - 2.95<br>2.50 - 2.95<br>3.00<br>3.00<br>3.50 - 3.95 | 10 D<br>11 ES<br>12 D<br>13 UT-NR<br>14 B | 100 blows, 0% Recovery                                                                    |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                                                                                                                  |        | (3.30)                        |                      |                       |                         |                 |                         | 4.00<br>4.00<br>4.50 - 4.95                                                       | 15 D<br>16 ES<br>18 B                     | SPT(C) 3.50m, N=8 (1,2/2,1,2,3)                                                           |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                                                                                                                  |        |                               |                      |                       |                         |                 |                         | 5.00<br>5.00                                                                      | 19 D<br>20 ES<br>21 UT                    | 20 blows, 75% Recovery                                                                    |        |          |     |     |     |    |  |  |  |
| Extremely weathered orangish grey MUDSTONE recovered as firm to stiff silty gravelly clay. Gravel is subangular to subrounded fine to coarse with coal.                                                                                                                                          |        | 5.50                          | 32.48                |                       |                         | 200<br>5.50     |                         | 5.50 - 5.95<br>5.50 - 5.95                                                        | 22 D<br>23 ES<br>24 D<br>25 B             | SPT(S) 5.50m, N=16 (5,4/3,5,5)                                                            |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                                                                                                                  |        | (2.00)                        |                      |                       |                         |                 |                         | 6.00<br>6.00<br>6.50 - 6.95<br>6.50 - 6.95                                        | 26 D<br>27 ES<br>28 UT-NR<br>29 B         | 50 blows, 0% Recovery                                                                     |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                                                                                                                  |        |                               |                      |                       |                         |                 |                         | 7.00<br>7.17 - 7.32<br>7.30                                                       | 30 D<br>3 C<br>31 D                       |                                                                                           |        |          |     |     |     |    |  |  |  |
| At 7.30m, discontinuities are subvertical (80-90 degrees) planar smooth tight clean.                                                                                                                                                                                                             |        | 7.50                          | 30.48                |                       |                         |                 |                         | 7.50 - 7.78                                                                       | 32 D                                      | SPT(S) 7.50m, 50 (25 for 45mm/50 for 95mm)<br>SPT(C) 7.70m, 50 (25 for 50mm/50 for 105mm) |        |          |     |     |     |    |  |  |  |
| Extremely weak dark grey with orange staining SILTSTONE recovered as dark grey and orange slightly sandy angular fine to coarse gravel. Sand is fine to coarse.<br>From 7.50m to 7.70m, no recovery.<br>From 8.10m to 8.15m, stiff dark grey gravelly clay.                                      |        | (0.65)                        |                      | 150<br>7.78           |                         |                 |                         |                                                                                   |                                           |                                                                                           |        |          |     |     |     |    |  |  |  |
| Weak to medium strong dark grey SILTSTONE. Discontinuities are very closely to closely subhorizontal (0-10 degrees) planar smooth with clay infill.<br>From 8.15m to 8.60m, discontinuities are subvertical (80 degrees) planar smooth tight clean.<br>From 9.00m to 9.70m, no recovery.         |        | 8.15                          | 29.83                |                       |                         |                 |                         | 8.73 - 8.85                                                                       | 1 C                                       |                                                                                           |        |          |     |     |     |    |  |  |  |
|                                                                                                                                                                                                                                                                                                  |        | (2.55)                        |                      |                       |                         |                 |                         |                                                                                   |                                           |                                                                                           |        |          |     |     |     |    |  |  |  |

|                        |       |                   |              |            |            |           |                      |                       |                                  |                                                |  |                            |              |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------------------|-----------------------|----------------------------------|------------------------------------------------|--|----------------------------|--------------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill             |                       |                                  | Installations                                  |  |                            |              |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m)             | To (m)                | Material                         | Instrument Details                             |  | Resp. Zone                 | Depth (m)    | Diam |
|                        |       | 15/04             | 18:00        | 7.00       | 6.00       | -         | 0.00<br>2.00<br>5.00 | 2.00<br>5.00<br>12.00 | Bentonite<br>Gravel<br>Bentonite | Standpipe Piezometer<br>Water Level Datalogger |  | 2.00 - 5.00<br>2.00 - 5.00 | 0.00<br>4.50 |      |
|                        |       | Water Strikes     |              |            |            |           |                      |                       |                                  |                                                |  |                            |              |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |                      |                       |                                  |                                                |  |                            |              |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
Wakefield WF2 0XJ  
Tel +44(0)1924 229889  
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Log Type  
**Combined Borehole**  
Sheet 2 of 2

Exploratory Hole Number  
**BH17-68**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425833.07</b>    | Northing: <b>558236.66</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>37.98m AOD</b> | Final Depth: <b>12.00m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS+ASH</b>     | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 03/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 03/05/2018 |

| Strata Description                                                                                                                                                                                                                                                         | Legend     | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |          |     |     |     |    |  |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|----|
|                                                                                                                                                                                                                                                                            |            |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run | TCR | SCR | RQD | If |  |    |
| From 10.50m to 10.70m, no recovery.                                                                                                                                                                                                                                        | XXXXXX     | 10.70                         | 27.28                 |                       |                         |                 |                         | 10.44 - 10.50     | 4 C |              |        |          |     |     |     |    |  | 12 |
| Medium strong to strong dark grey MUDSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight with orange staining.<br>From 10.80m to 11.30m, discontinuities are subvertical (60-80 degrees) planar smooth tight clean. | XXXXXXXXXX | (1.30)                        |                       |                       |                         |                 |                         | 10.50 - 10.55     | 6 C |              |        |          |     |     |     |    |  | NR |
| From 11.70m to 12.00m, discontinuities are extremely closely spaced subvertical (60-80 degrees) planar with orange staining.                                                                                                                                               | XXXXXXXXXX | 12.00                         | 25.98                 | 92<br>12.00           |                         |                 |                         | 11.60 - 11.70     | 2 C |              |        |          |     |     |     |    |  | 11 |
| EOH at 12.00m - Scheduled Depth                                                                                                                                                                                                                                            | XXXXXXXXXX |                               |                       |                       |                         |                 |                         | 11.82 - 11.90     | 5 C |              |        |          |     |     |     |    |  | 20 |

|                        |       |                   |      |           |            |           |           |               |              |                        |             |           |      |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|---------------|--------------|------------------------|-------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |               |              | Installations          |             |           |      |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)        | Material     | Instrument Details     | Resp. Zone  | Depth (m) | Diam |
|                        |       |                   |      |           |            |           | 0.00      | 2.00          | Bentonite    | Standpipe Piezometer   | 2.00 - 5.00 | 0.00      |      |
|                        |       |                   |      |           |            |           | 2.00      | 5.00          | Gravel       | Water Level Datalogger | 2.00 - 5.00 | 4.50      |      |
|                        |       |                   |      |           | 5.00       | 12.00     | Bentonite |               |              |                        |             |           |      |
|                        |       |                   |      |           |            |           |           | Water Strikes |              |                        |             |           |      |
|                        |       |                   |      |           |            |           |           | Strike (m)    | Rises To (m) | Time (min)             | Remarks     |           |      |
|                        |       |                   |      |           |            |           |           |               |              |                        |             |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed





|                                      |                             |                            |                                            |                                                     |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------|-----------------------------------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                        |                                                     |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425909.56</b>   | Northing: <b>558068.28</b> | From (m)                                   | Method                                              | Plant Used               | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>46.07mAOD</b> | Final Depth: <b>14.10m</b> | 0.00 - 1.20<br>1.20 - 6.10<br>6.10 - 14.10 | Inspection Pit<br>Cable Percussion<br>Rotary Coring | Hand Tools<br>Dando 2000 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ST+ASH</b>       | Grid System: <b>OSGB</b>   |                                            |                                                     |                          | Start Date: 09/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                            |                                                     |                          | End Date: 09/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 6.10          | 150       |
| 14.10         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 4.50            | 200       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 02/06/2018                        | Standpipe Piezometer | 0.00   | 6.00 - 14.10   | 50mm      |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.40  | Concrete    |
| 0.40 - 6.00  | Bentonite   |
| 6.00 - 14.10 | Gravel      |

| Sample Summary               |    |                  |    |
|------------------------------|----|------------------|----|
| <i>Environmental Samples</i> |    |                  |    |
| Soil                         | 6  | Water            | 0  |
| <i>Geotechnical Samples</i>  |    |                  |    |
| Bulk                         | 3  | Large Bulk       | 0  |
| Disturbed                    | 10 | Disturbed (NR)   | 0  |
| Piston                       | 0  | Piston (NR)      | 0  |
| Undisturbed                  | 0  | Undisturbed (NR) | 0  |
| Undisturbed Thin Wall        |    |                  | 2  |
| Undisturbed Thin Wall (NR)   |    |                  | 0  |
| Core Sample                  |    |                  | 11 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                               |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|-------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result               | Hammer Ref |
| Cone                              | 1.20      | 1.20       | DRY       | 5             | 22         | 450                    | 22 | N=22 (2,3/4,5,8,5)            | AR1134     |
| Cone                              | 3.50      | 3.50       | DRY       | 5             | 23         | 450                    | 23 | N=23 (2,3/5,5,5,8)            | AR1134     |
| Split Spoon                       | 5.50      | 4.50       | DRY       | 25            | 50         | 250                    |    | 50 (25 for 95mm/50 for 155mm) | AR1134     |
| Cone                              | 5.90      | 4.50       | DRY       | 25            | 50         | 195                    |    | 50 (25 for 95mm/50 for 100mm) | AR1134     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
| 5.70 - 5.90                         | 60              |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



# CENTRAL ALLIANCE

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Log Type  
**Combined Borehole**  
Sheet 1 of 2

Exploratory Hole Number  
**BH17-69**  
FINAL



|                                      |                             |                            |                                                        |                                                               |                                        |                         |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------------------|---------------------------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                                    |                                                               |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425909.56</b>   | Northing: <b>558068.28</b> | From (m)<br>0.00 - 1.20<br>1.20 - 6.10<br>6.10 - 14.10 | Method<br>Inspection Pit<br>Cable Percussion<br>Rotary Coring | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>46.07mAOD</b> | Final Depth: <b>14.10m</b> |                                                        |                                                               |                                        | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ST+ASH</b>    | Grid System: <b>OSGB</b>   |                                                        |                                                               |                                        | Start Date: 09/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                                        |                                                               |                                        | Finish Date: 09/05/2018 |

| Strata Description                                                                                                                                                                                          | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                          |                                                |                                             | Coring |          |     |     |     |    |  |  |  |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|----------------------|--------------------------|----------------------------|-----------------|-------------------------|------------------------------------------------------------|------------------------------------------------|---------------------------------------------|--------|----------|-----|-----|-----|----|--|--|--|----|
|                                                                                                                                                                                                             |        |                                  |                      |                          |                            |                 |                         | Depth (m)                                                  | Ref                                            | Test Results                                | Method | Core Run | TCR | SCR | RQD | If |  |  |  |    |
| MADE GROUND: Grass over dark brown gravelly sandy clayey TOPSOIL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone.                                                      |        | (1.00)                           |                      |                          |                            |                 |                         | 0.20<br>0.20<br>0.50<br>0.50<br>0.60                       | 1 D<br>2 ES<br>3 D<br>4 ES<br>5 B              |                                             |        |          |     |     |     |    |  |  |  |    |
| MADE GROUND: Yellowish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone.                                                             |        | (1.30)                           | 45.07                |                          |                            |                 |                         | 1.00<br>1.00<br>1.00<br>1.20<br>1.20 - 1.65                | 3 ES<br>6 D<br>7 ES<br>8 D<br>9 B              | SPT(C) 1.20m, N=22 (2,3/4,5,8,5)            |        |          |     |     |     |    |  |  |  |    |
| Firm greyish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium sandstone and coal.                                                     |        | (0.70)                           | 43.77                |                          |                            |                 |                         | 2.00<br>2.00<br>2.30<br>2.50 - 2.95                        | 10 D<br>11 ES<br>12 D<br>13 UT                 |                                             |        |          |     |     |     |    |  |  |  |    |
| Firm to stiff brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and coal.                                                |        | (2.50)                           | 43.07                |                          |                            |                 |                         | 3.00<br>3.00<br>3.50 - 3.95<br>4.00<br>4.50 - 4.95<br>5.00 | 14 D<br>15 ES<br>16 B<br>17 D<br>18 UT<br>19 D | SPT(C) 3.50m, N=23 (2,3/5,5,5,8)            |        |          |     |     |     |    |  |  |  |    |
| Grey SANDSTONE recovered as sandy angular to subrounded gravel. Sand is fine to coarse.<br><i>From 6.00m to 6.60m, no recovery.</i>                                                                         |        | (0.60)                           | 40.57                |                          |                            |                 |                         | 5.50 - 5.95                                                | 20 D                                           | SPT(S) 5.50m, 50 (25 for 95mm/50 for 155mm) |        |          |     |     |     |    |  |  |  |    |
| Dark grey angular coarse siltstone GRAVEL.                                                                                                                                                                  |        | (0.75)                           | 39.97                | 150<br>6.10              |                            |                 |                         |                                                            |                                                |                                             |        |          |     |     |     |    |  |  |  | NR |
| Firm to stiff orangish brown gravelly sandy CLAY. Gravel is angular to subangular fine to coarse sandstone.<br><i>From 7.00m to 7.25m, no recovery.</i>                                                     |        | (0.40)                           | 39.22                |                          |                            |                 |                         | 6.95 - 7.00                                                | 10 C                                           |                                             |        |          |     |     |     |    |  |  |  | NI |
| Firm dark grey gravelly CLAY with thin bands of black carbonaceous mudstone and coal. Gravel is angular fine to coarse mudstone.<br><i>From 8.30m to 8.64m, becoming extremely weak dark grey mudstone.</i> |        | (1.39)                           | 38.82                |                          |                            |                 |                         | 8.15 - 8.25                                                | 11 C                                           |                                             |        |          |     |     |     |    |  |  |  | NR |
| Very weak orangish brown fine to medium grained SANDSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight clean.                                       |        | 8.64<br>(0.03)                   | 37.43<br>37.40       |                          |                            |                 |                         |                                                            |                                                |                                             |        |          |     |     |     |    |  |  |  | 12 |
| Extremely weak dark grey MUDSTONE. Discontinuities are extremely closely spaced subhorizontal (0-10 degrees) planar tight with clay infill.                                                                 |        | 8.67<br>(0.33)                   | 37.07                |                          |                            |                 |                         |                                                            |                                                |                                             |        |          |     |     |     |    |  |  |  | NI |
| Black COAL.                                                                                                                                                                                                 |        | 9.00<br>(0.15)                   | 36.92                |                          |                            |                 |                         |                                                            |                                                |                                             |        |          |     |     |     |    |  |  |  | 12 |
| Extremely weak dark grey MUDSTONE recovered as very stiff                                                                                                                                                   |        | 9.15<br>(0.10)                   | 36.82                |                          |                            |                 |                         |                                                            |                                                |                                             |        |          |     |     |     |    |  |  |  | NI |
|                                                                                                                                                                                                             |        | 9.25<br>(0.35)                   | 36.47                |                          |                            |                 |                         | 9.45 - 9.60                                                | 1 C                                            |                                             |        |          |     |     |     |    |  |  |  | 12 |
|                                                                                                                                                                                                             |        | 9.60<br>(0.15)                   | 36.32                |                          |                            |                 |                         | 9.78 - 9.84                                                | 7 C                                            |                                             |        |          |     |     |     |    |  |  |  | NI |
|                                                                                                                                                                                                             |        | 9.75                             |                      |                          |                            |                 |                         |                                                            |                                                |                                             |        |          |     |     |     |    |  |  |  |    |

|                        |       |                   |              |            |            |           |                      |                       |                                 |                      |              |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------------------|-----------------------|---------------------------------|----------------------|--------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill             |                       |                                 | Installations        |              |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m)             | To (m)                | Material                        | Instrument Details   | Resp. Zone   | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00<br>0.40<br>6.00 | 0.40<br>6.00<br>14.10 | Concrete<br>Bentonite<br>Gravel | Standpipe Piezometer | 6.00 - 14.10 | 0.00      | 50mm |
|                        |       | Water Strikes     |              |            |            |           |                      |                       |                                 |                      |              |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |                      |                       |                                 |                      |              |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

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Log Type  
**Combined Borehole**  
Sheet 2 of 2

Exploratory Hole Number  
**BH17-69**  
FINAL



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425909.56</b>    | Northing: <b>558068.28</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>46.07m AOD</b> | Final Depth: <b>14.10m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ST+ASH</b>     | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 09/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 09/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                        | Legend    | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |          |                |     |     |    |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------|-----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|----------------|-----|-----|----|----|
|                                                                                                                                                                                                                                                                                                                                                           |           |                               |                       |                       |                         |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run | TCR            | SCR | RQD | If |    |
| 11 gravelly clay. Gravel is angular fine to coarse. Very weak to weak orangish brown fine to medium grained SANDSTONE. Discontinuities are closely spaced subhorizontal (0-10 degrees) planar smooth tight clean. Very weak dark brown MUDSTONE recovered as gravelly sandy clay. Gravel is angular fine to coarse. Sand is fine to coarse.               | [Pattern] | (1.45)                        |                       |                       |                         |                 |                         | 10.15 - 10.45     | 2 C |              |        |          | 9.60<br>11.10  | 100 | 100 | 90 | 4  |
| 12 Weak to medium strong orangish brown fine to medium grained SANDSTONE. Discontinuities are closely spaced subhorizontal (0-10 degrees) planar smooth tight clean. Very weak dark orangish brown MUDSTONE recovered as gravelly sandy clay. Gravel is angular to subangular fine to coarse. Sand is fine to coarse. From 11.25m to 11.80m, no recovery. | [Pattern] | 11.20                         | 34.87                 |                       |                         |                 |                         | 11.25 - 11.30     | 6 C |              |        |          | 11.10<br>11.50 | 63  | 63  | 38 | NR |
| 13 Medium strong to strong dark grey fine grained SANDSTONE. Discontinuities are closely spaced subhorizontal (0-10 degrees) planar smooth tight clean.                                                                                                                                                                                                   | [Pattern] | (2.10)                        |                       |                       |                         |                 |                         | 12.37 - 12.66     | 3 C |              |        |          |                |     |     |    |    |
|                                                                                                                                                                                                                                                                                                                                                           |           |                               |                       |                       |                         |                 |                         | 12.70 - 12.83     | 4 C |              |        |          |                |     |     |    | 4  |
|                                                                                                                                                                                                                                                                                                                                                           |           |                               |                       |                       |                         |                 |                         | 13.03 - 13.28     | 5 C |              |        |          |                |     |     |    |    |
|                                                                                                                                                                                                                                                                                                                                                           |           |                               |                       |                       |                         |                 |                         | 13.28 - 13.34     | 8 C |              |        |          | 12.70<br>14.10 | 93  | 93  | 68 |    |
| 14 Medium strong dark grey MUDSTONE. Discontinuities are very closely spaced (40-60 degrees) planar with clay infill. EOH at 14.10m - Scheduled Depth                                                                                                                                                                                                     | [Pattern] | 13.95<br>(0.15)<br>14.10      | 32.12<br>31.97        | <u>92</u><br>14.10    |                         |                 |                         | 14.00 - 14.10     | 9 C |              |        |          |                |     |     |    | 20 |

|                        |       |                   |              |            |            |           |                      |                       |                                 |                      |              |           |      |
|------------------------|-------|-------------------|--------------|------------|------------|-----------|----------------------|-----------------------|---------------------------------|----------------------|--------------|-----------|------|
| Observations / Remarks | Misc. | Shift Information |              |            |            |           | Backfill             |                       |                                 | Installations        |              |           |      |
|                        |       | Date              | Time         | Depth (m)  | Casing (m) | Water (m) | From (m)             | To (m)                | Material                        | Instrument Details   | Resp. Zone   | Depth (m) | Diam |
|                        |       |                   |              |            |            |           | 0.00<br>0.40<br>6.00 | 0.40<br>6.00<br>14.10 | Concrete<br>Bentonite<br>Gravel | Standpipe Piezometer | 6.00 - 14.10 | 0.00      | 50mm |
|                        |       | Water Strikes     |              |            |            |           |                      |                       |                                 |                      |              |           |      |
|                        |       | Strike (m)        | Rises To (m) | Time (min) | Remarks    |           |                      |                       |                                 |                      |              |           |      |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed



|                                      |                              |                            |                     |                               |                        |                        |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Eastings: <b>426415.33</b>   | Northing: <b>557672.39</b> | From (m)            | Method                        | Plant Used             | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>79.54m AOD</b> | Final Depth: <b>5.18m</b>  | 0.00 - 1.20         | Inspection Pit                | Hand Tools             | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>LW</b>            | Grid System: <b>OSGB</b>   | 1.20 - 5.20         | Dynamic Sampling (Windowless) | Modular Window Sampler | Start Date: 21/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    | 5.20 - 5.28         | Dynamic Probing               | Modular Window Sampler | End Date: 21/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
|                     |            |            |            |             |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 5.18 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 5  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 6  | Large Bulk       | 0 |
| Disturbed                  | 11 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                        |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result        | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 3             | 12         | 450                    | 12 | N=12 (1,2,3,3,4)       | MOD 02     |
| Split Spoon                       | 2.00      | -          | -         | 8             | 29         | 450                    | 29 | N=29 (4,4,7,6,7,9)     | MOD 02     |
| Split Spoon                       | 3.00      | -          | -         | 10            | 26         | 450                    | 26 | N=26 (4,6,5,6,7,8)     | MOD 02     |
| Split Spoon                       | 4.00      | -          | -         | 10            | 18         | 450                    | 18 | N=18 (4,6,5,4,5,4)     | MOD 02     |
| Split Spoon                       | 5.00      | -          | -         | 25            | 51         | 220                    |    | 51 (11,14/51 for 70mm) | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 87        | 90         |         |
| 2.00 - 3.00                         | 70        | 100        |         |
| 3.00 - 4.00                         | 70        | 95         |         |
| 4.00 - 5.00                         | 55        | 80         |         |



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Log Type
Dynamic Sampling & Probe
Sheet 1 of 1

Exploratory Hole Number

BH17-71

FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 426415.33, Northing: 557672.39, Elevation: 79.54m AOD, Final Depth: 5.18m, Logger: LW, Grid System: OSGB, Orientation: N/A, Inclination: 90°
Methodology & Plant: Depth (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 21/05/2018
Finish Date: 21/05/2018

Main log table with columns: Blows / 100mm, Strata Description, Legend, Depth (m), Reduced Level (mAOD), Casing Ø (mm), Water Level (m), Installation / Backfill, Samples & Testing (Depth, Ref, Test Results). Includes soil descriptions like 'MADE GROUND: Dark brown slightly gravelly sandy CLAY' and 'Orangish brown gravelly fine to coarse SAND'.

Observations / Remarks, Misc., Equipment Information, Dynamic Sampling Runs, Installations, Groundwater Strikes. Includes equipment details for DPSH-B (750mm, 64.0kg) and MOD 02 (65%).



|                                      |                             |                            |                                            |                                                                  |                                              |                        |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------|------------------------------------------------------------------|----------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                        |                                                                  |                                              | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426618.26</b>   | Northing: <b>557570.49</b> | From (m)                                   | Method                                                           | Plant Used                                   | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.17mAOD</b> | Final Depth: <b>16.30m</b> | 0.00 - 1.20<br>1.20 - 7.30<br>7.30 - 16.30 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Rotary Coring | Hand Tools<br>Massenza MIP3<br>Massenza MIP3 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ+GS</b>        | Grid System: <b>OSGB</b>   |                                            |                                                                  |                                              | Start Date: 12/07/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                            |                                                                  |                                              | End Date: 12/07/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 16.30         | 92        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 7.30            | 140       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                      |        |                |           |
|-----------------------------------|----------------------|--------|----------------|-----------|
| Date                              | Instrument Details   | To (m) | Resp. Zone (m) | Diam (mm) |
| 19/06/2018                        | Standpipe Piezometer | 5.00   | 3.50 - 5.50    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.50  | Concrete    |
| 0.50 - 3.50  | Bentonite   |
| 3.50 - 5.50  | Sand        |
| 5.50 - 16.30 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 4 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 4 | Large Bulk       | 0 |
| Disturbed                    | 4 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 7                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
| 7.30 - 16.30              | Air/Mist   | Brown        | 99       |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.20                         | 117       | 40         |         |
| 1.60 - 2.60                         | 117       | 100        |         |





|                                      |                             |                            |                     |        |            |                         |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426618.26</b>   | Northing: <b>557570.49</b> | From (m)            | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>81.17mAOD</b> | Final Depth: <b>16.30m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ+GS</b>     | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 12/07/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 12/07/2018 |

| Strata Description                                                                                                                                                           | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              | Coring |          |     |     |     |    |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|--------|----------|-----|-----|-----|----|--|--|--|--|
|                                                                                                                                                                              |        |                               |                      |                       |                         |                 |                         | Depth (m)         | Ref | Test Results | Method | Core Run | TCR | SCR | RQD | If |  |  |  |  |
| From 10.30m to 10.70m, recovered as slightly clayey sandy subangular to subrounded fine to coarse gravel. Sand is fine to coarse.                                            |        |                               |                      |                       |                         |                 |                         | 10.25 - 10.30     | 6 C |              |        |          |     |     |     |    |  |  |  |  |
| From 10.70m to 11.80m, no recovery.                                                                                                                                          |        | (7.50)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 11.80m to 12.00m, recovered as sandy subangular to subrounded fine to coarse gravel. Sand is fine to coarse.                                                            |        |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 12.00m to 12.80m, no recovery.                                                                                                                                          |        |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 13.45m to 13.85m, no recovery.                                                                                                                                          |        |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| From 13.85m to 14.05m, recovered as sandy subangular to subrounded fine to coarse gravel. Sand is fine to coarse.                                                            |        |                               |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| NO RECOVERY.                                                                                                                                                                 |        | 14.80                         | 66.37                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                              |        | (0.80)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| Extremely weak destructured to residual dark to light grey MUDSTONE recovered non-intact as gravelly clay. Gravel is angular to subangular fine to medium mudstone and coal. |        | 15.60                         | 65.57                |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
|                                                                                                                                                                              |        | (0.70)                        |                      |                       |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |
| EOH at 16.30m - Scheduled Depth                                                                                                                                              |        | 16.30                         | 64.87                | 92<br>16.30           |                         |                 |                         |                   |     |              |        |          |     |     |     |    |  |  |  |  |

| Observations / Remarks | Misc.                                                                     | Shift Information |      |           |            |           | Backfill  |            |              | Installations        |             |           |      |
|------------------------|---------------------------------------------------------------------------|-------------------|------|-----------|------------|-----------|-----------|------------|--------------|----------------------|-------------|-----------|------|
|                        |                                                                           | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)     | Material     | Instrument Details   | Resp. Zone  | Depth (m) | Diam |
|                        | No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |                   |      |           |            |           | 0.00      | 0.50       | Concrete     | Standpipe Piezometer | 3.50 - 5.50 | 5.00      |      |
|                        |                                                                           |                   |      |           |            |           | 0.50      | 3.50       | Bentonite    |                      |             |           |      |
|                        |                                                                           |                   |      |           |            |           | 3.50      | 5.50       | Sand         | Water Strikes        |             |           |      |
|                        |                                                                           |                   |      |           | 5.50       | 16.30     | Bentonite | Strike (m) | Rises To (m) | Time (min)           | Remarks     |           |      |





|                                      |                             |                            |                                        |                                                           |                                        |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427293.50</b>   | Northing: <b>557250.93</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.35 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Fratec SLG | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>80.72mAOD</b> | Final Depth: <b>4.35m</b>  |                                        |                                                           |                                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                        | Start Date: 16/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                        | End Date: 16/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |
|               |           |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |
|                 |           |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |
|                     |            |            |            |             |         |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 18/05/2018                        | Standpipe          | 0.00   | 1.00 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.00 | Bentonite   |
| 1.00 - 4.00 | Gravel      |
| 4.00 - 4.35 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 6  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 4  | Large Bulk       | 0 |
| Disturbed                  | 10 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 1                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                     |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|---------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result     | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 3             | 32         | 450                    | 32 | N=32 (1,2/4,17,7,4) | AR1175     |
| Split Spoon                       | 3.00      | -          | -         | 6             | 24         | 450                    | 24 | N=24 (3,3/5,5,6,8)  | AR1175     |
| Split Spoon                       | 3.90      | -          | -         | 8             | 27         | 450                    | 27 | N=27 (3,5/5,7,7,8)  | AR1175     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1175          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |
|                           |            |              |          |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 113       | 100        |         |
| 2.00 - 3.00                         | 113       | 50         |         |
| 3.00 - 3.90                         | 113       | 50         |         |



|                                      |                             |                            |                                         |                                                           |                                        |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427293.50</b>   | Northing: <b>557250.93</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 4.35 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Fraste SLG | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>80.72mAOD</b> | Final Depth: <b>4.35m</b>  |                                         |                                                           |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                        | Start Date: 16/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                        | Finish Date: 16/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                          | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                                                                                                                                                                                              |                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                             |        |                                  |                         |                               |                 |                         | Depth (m)                                                                                                                                                                                                                      | Ref                                                                                         |
| <b>MADE GROUND: TOPSOIL.</b><br>MADE GROUND: Soft to firm dark brown and black slightly silty gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone, brick and concrete. Cobbles are subangular sandstone, brick and concrete. |        | (0.10)<br>0.10                   | 80.62                   |                               |                 |                         | 0.10 - 1.20<br>7 B<br>1 D<br>2 ES<br>0.20<br>3 D<br>0.30<br>4 ES<br>0.50<br>1.00<br>5 D<br>1.00<br>6 ES<br>1.20 - 1.65<br>8 D<br>1.20 - 1.65<br>9 B                                                                            | SPT(S) 1.20m, N=32 (1,2/4,17,7,4)                                                           |
| <b>MADE GROUND: Yellowish orangish brown slightly gravelly slightly silty clayey fine to coarse SAND.</b> Gravel is subangular to subrounded fine to coarse sandstone, siltstone, coal and brick.                                                                                           |        | (1.90)<br>2.00                   | 78.72                   |                               |                 |                         | 1.90<br>10 ES<br>2.00<br>12 D<br>2.00 - 2.45<br>11 UT-NR<br>13 B<br>2.45<br>14 D<br>3.00<br>15 ES<br>3.00 - 3.45<br>16 D<br>3.00 - 3.45<br>17 B<br>3.50<br>18 D<br>3.90 - 4.35<br>19 D<br>3.90 - 4.35<br>20 D<br>4.00<br>21 ES | SPT(S) 3.00m, N=24 (3,3/5,5,6,8)<br><br>0% Recovery<br><br>SPT(S) 3.90m, N=27 (3,5/5,7,7,8) |
| <b>Orangish yellow coarse grained SANDSTONE.</b><br>EOH at 4.35m - Scheduled Depth                                                                                                                                                                                                          |        | 4.20<br>(0.15)<br>4.35           | 76.52<br>76.37          |                               |                 |                         |                                                                                                                                                                                                                                |                                                                                             |

|                        |                                                                              |             |            |                       |            |           |              |               |                    |  |             |           |      |
|------------------------|------------------------------------------------------------------------------|-------------|------------|-----------------------|------------|-----------|--------------|---------------|--------------------|--|-------------|-----------|------|
| Observations / Remarks | Misc.                                                                        | Backfill    |            | Dynamic Sampling Runs |            |           |              | Installations |                    |  |             |           |      |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>Monitoring Point/s Installed | Depth (m)   | Material   | From (m)              | To (m)     | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone  | Depth (m) | Diam |
|                        |                                                                              | 0.00 - 1.00 | Bentonite  | 1.20                  | 2.00       | 113       | 100          |               | Standpipe          |  | 1.00 - 4.00 | 0.00      |      |
|                        |                                                                              | 1.00 - 4.00 | Gravel     | 2.00                  | 3.00       | 113       | 50           |               |                    |  |             |           |      |
|                        |                                                                              | 4.00 - 4.35 | Bentonite  | 3.00                  | 3.90       | 113       | 50           |               |                    |  |             |           |      |
|                        | Hammer Ref & Energy Ratio (%)                                                |             |            |                       |            |           |              |               |                    |  |             |           |      |
|                        | <b>AR1175 (56%)</b>                                                          |             |            |                       |            |           |              |               |                    |  |             |           |      |
| Groundwater Strikes    |                                                                              |             |            |                       |            |           |              |               |                    |  |             |           |      |
| Strike (m)             |                                                                              | Casing (m)  | Sealed (m) | Rises To (m)          | Time (min) | Remarks   |              |               |                    |  |             |           |      |
|                        |                                                                              |             |            |                       |            |           |              |               |                    |  |             |           |      |



|                                      |                             |                            |                       |                        |                        |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------|------------------------|------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant   |                        |                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425287.00</b>   | Northing: <b>558582.99</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit | Plant Used: Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.67mAOD</b> | Final Depth: <b>10.00m</b> | 1.20 - 10.00          | Cable Percussion       | Dando 2000             | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ALB</b>          | Grid System: <b>OSGB</b>   |                       |                        |                        | Start Date: 19/02/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                       |                        |                        | End Date: 19/02/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 10.00         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 1.50            | 150       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 0.70                | -          | -          | 20         | 0.60        |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 19/02/2018                        | Standpipe          | 3.00   | 1.00 - 3.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.30  | Concrete    |
| 0.30 - 1.00  | Bentonite   |
| 1.00 - 3.00  | Gravel      |
| 3.00 - 10.00 | Bentonite   |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 5  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 7  | Large Bulk       | 0 |
| Disturbed                    | 17 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 3                |   |
| Undisturbed Thin Wall (NR)   |    | 1                |   |
| Core Sample                  |    | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | 1.00       | -         | 3             | 15         | 450                    | 15 | N=15 (1,2/3,4,4,4) | AR1134     |
| Split Spoon                       | 2.50      | 1.50       | -         | 7             | 16         | 450                    | 16 | N=16 (3,4/5,3,3,5) | AR1134     |
| Split Spoon                       | 4.50      | 1.50       | -         | 5             | 13         | 450                    | 13 | N=13 (2,3/3,3,3,4) | AR1134     |
| Split Spoon                       | 6.50      | 1.50       | -         | 5             | 13         | 450                    | 13 | N=13 (2,3/3,4,3,3) | AR1134     |
| Split Spoon                       | 8.50      | 1.50       | -         | 5             | 12         | 450                    | 12 | N=12 (2,3/3,3,3,3) | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Cable Percussion**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-75**  
FINAL



|                                      |                             |                            |                                          |                                              |                                        |                         |
|--------------------------------------|-----------------------------|----------------------------|------------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant                      |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425287.00</b>   | Northing: <b>558582.99</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 10.00 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.67mAOD</b> | Final Depth: <b>10.00m</b> |                                          |                                              |                                        | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>ALB</b>       | Grid System: <b>OSGB</b>   |                                          |                                              |                                        | Start Date: 19/02/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                          |                                              |                                        | Finish Date: 19/02/2018 |

| Strata Description                                                                                                                                                                                                           | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm)<br>Depth (m) | Casing Ø (mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |          |                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|----------------------|-------------------|----------------------|--------------------------|----------------------------|-----------------|-------------------------|-------------------|----------|----------------------------------|
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | Depth (m)         | Ref      | Test Results                     |
| <b>MADE GROUND: TOPSOIL.</b>                                                                                                                                                                                                 |        | (0.10)                           | 17.57                |                   |                      |                          |                            |                 |                         | 0.20              | 1 D      | PID 0.20m = 0.7ppm               |
| <b>MADE GROUND: Dark grey slightly sandy very gravelly CLAY with roots and low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone and brick. Cobbles are subangular brick.</b> |        | 0.10                             | 17.47                |                   |                      |                          |                            |                 |                         | 0.20              | 1 ES     |                                  |
|                                                                                                                                                                                                                              |        | (0.10)                           |                      |                   |                      |                          |                            |                 |                         | 0.40              | 2 D      |                                  |
|                                                                                                                                                                                                                              |        | 0.20                             |                      |                   |                      |                          |                            |                 |                         | 0.70              | 2 ES     | PID 0.70m = 0.9ppm               |
| <b>MADE GROUND: Dark grey and brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and brick.</b>                                     |        | (2.50)                           |                      |                   |                      | 150                      |                            |                 |                         | 1.20              | 4 D      | SPT(S) 1.20m, N=15 (1,2/3,4,4,4) |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      | 1.50                     |                            |                 |                         | 1.20 - 1.65       | 5 D      |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 1.20 - 1.65       | 6 B      |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 1.50              | 3 ES     | PID 1.50m = 0.3ppm               |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 2.00              | 7 D      |                                  |
|                                                                                                                                                                                                                              |        | 2.70                             | 14.97                |                   |                      |                          |                            |                 |                         | 2.50              | 4 ES     | SPT(S) 2.50m, N=16 (3,4/5,3,3,5) |
| <b>Soft to firm light grey and brown slightly sandy laminated CLAY with occasional silt lenses. Sand is fine.</b>                                                                                                            |        |                                  |                      |                   |                      |                          |                            |                 |                         | 2.50 - 2.95       | 8 D      | PID 2.50m = 0.0ppm               |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 2.50 - 2.95       | 9 B      |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 3.00              | 10 D     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 3.50              | 5 ES     | 15 blows, 100% Recovery          |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 3.50 - 3.95       | 11 UT    | PID 3.50m = 0.0ppm               |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 4.00              | 12 D     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 4.50 - 4.95       | 13 D     | SPT(S) 4.50m, N=13 (2,3/3,3,4)   |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 4.50 - 4.95       | 14 B     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 5.00              | 15 D     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 5.50 - 5.95       | 16 UT    | 27 blows, 100% Recovery          |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 6.00              | 17 D     |                                  |
|                                                                                                                                                                                                                              |        | (7.30)                           |                      |                   |                      |                          |                            |                 |                         | 6.50 - 6.95       | 18 D     | SPT(S) 6.50m, N=13 (2,3/3,3,3)   |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 6.50 - 6.95       | 19 B     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 7.00              | 20 D     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 7.50 - 7.95       | 21 UT-NR | 20 blows, 0% Recovery            |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 7.50 - 7.95       | 22 B     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 8.00              | 23 D     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 8.50 - 8.95       | 24 D     | SPT(S) 8.50m, N=12 (2,3/3,3,3)   |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 8.50 - 8.95       | 25 B     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 9.00              | 26 D     |                                  |
|                                                                                                                                                                                                                              |        |                                  |                      |                   |                      |                          |                            |                 |                         | 9.50 - 9.95       | 27 UT    |                                  |
| <b>EOH at 10.00m - Scheduled Depth</b>                                                                                                                                                                                       |        | 10.00                            | 7.67                 |                   |                      | 150                      |                            |                 |                         | 10.00             | 28 D     |                                  |

|                        |       |                   |      |           |            |           |           |                     |              |                    |               |             |           |       |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|---------------------|--------------|--------------------|---------------|-------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |                     |              |                    | Installations |             |           |       |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)              | Material     | Instrument Details |               | Resp. Zone  | Depth (m) | Diam. |
|                        |       |                   |      |           |            |           | 0.00      | 0.30                | Concrete     | Standpipe          |               | 1.00 - 3.00 | 3.00      |       |
|                        |       |                   |      |           |            |           | 0.30      | 1.00                | Bentonite    |                    |               |             |           |       |
|                        |       |                   |      |           | 1.00       | 3.00      | Gravel    |                     |              |                    |               |             |           |       |
|                        |       |                   |      |           | 3.00       | 10.00     | Bentonite |                     |              |                    |               |             |           |       |
|                        |       |                   |      |           |            |           |           | Groundwater Strikes |              |                    |               |             |           |       |
|                        |       |                   |      |           |            |           |           | Strike (m)          | Rises To (m) | Time (min)         | Remarks       |             |           |       |
|                        |       |                   |      |           |            |           |           | 0.70                | 0.60         | 20                 |               |             |           |       |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                              |                            |                                         |                                              |                                        |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                              |                                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424878.12</b>    | Northing: <b>558592.48</b> | From (m)<br>0.00 - 1.20<br>1.20 - 10.00 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.29m AOD</b> | Final Depth: <b>10.00m</b> |                                         |                                              |                                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>ST</b>            | Grid System: <b>OSGB</b>   |                                         |                                              |                                        | Start Date: 10/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                              |                                        | End Date: 10/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 10.00         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 9.50            | 200       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 2.50                | -          | -          | 20         | 2.00        |         |
| 5.50                | -          | -          | 20         | 2.50        |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 10/05/2018                        | Standpipe          | 8.50   | 2.50 - 8.50    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 0.50  | Concrete    |
| 0.50 - 2.50  | Bentonite   |
| 2.50 - 8.00  | Gravel      |
| 8.00 - 8.50  | Bentonite   |
| 8.50 - 10.00 | Arisings    |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 5  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 8  | Large Bulk       | 0 |
| Disturbed                    | 17 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    |                  | 1 |
| Undisturbed Thin Wall (NR)   |    |                  | 2 |
| Core Sample                  |    |                  | 0 |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Cone                              | 1.20      | 1.20       | DRY       | 3             | 6          | 450                    | 6  | N=6 (1,2/1,2,1,2)  | AR1134     |
| Cone                              | 2.50      | 2.50       | 2.00      | 1             | 5          | 450                    | 5  | N=5 (1,0/1,1,1,2)  | AR1134     |
| Split Spoon                       | 3.50      | 3.50       | 2.70      | 1             | 4          | 450                    | 4  | N=4 (1,0/1,1,1,1)  | AR1134     |
| Split Spoon                       | 5.50      | 5.50       | 2.80      | 0             | 4          | 450                    | 4  | N=4 (0,0/1,1,1,1)  | AR1134     |
| Split Spoon                       | 6.50      | 6.50       | 2.80      | 2             | 6          | 450                    | 6  | N=6 (1,1/2,2,1,1)  | AR1134     |
| Split Spoon                       | 8.50      | 8.50       | 3.50      | 2             | 10         | 450                    | 10 | N=10 (1,1/2,2,3,3) | AR1134     |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1134          | 56               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



**CENTRAL ALLIANCE**  
EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way  
Wakefield 41 Business Park  
Wakefield WF2 0XJ  
Tel +44(0)1924 229889  
Web: www.central-alliance.co.uk

Log Type  
**Cable Percussion**  
Sheet 1 of 1

Exploratory Hole Number  
**BH17-76**  
FINAL



|                                      |                              |                            |                                          |                                              |                                        |                         |
|--------------------------------------|------------------------------|----------------------------|------------------------------------------|----------------------------------------------|----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant                      |                                              |                                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424878.12</b>    | Northing: <b>558592.48</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 10.00 | Method<br>Inspection Pit<br>Cable Percussion | Plant Used<br>Hand Tools<br>Dando 2000 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.29m AOD</b> | Final Depth: <b>10.00m</b> |                                          |                                              |                                        | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>ST</b>         | Grid System: <b>OSGB</b>   |                                          |                                              |                                        | Start Date: 10/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                          |                                              |                                        | Finish Date: 10/05/2018 |

| Strata Description                                                                                                                                                                                                              | Legend | Depth (m) (Stratum Thickness) | Reduced Level (m AOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |          |                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|-----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|-------------------|----------|----------------------------------|
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | Depth (m)         | Ref      | Test Results                     |
| MADE GROUND: Vegetation over TOPSOIL.                                                                                                                                                                                           |        | 0.05                          | 11.24                 |                   |                      |                       |                         |                 |                         | 0.20              | 1 D      |                                  |
| MADE GROUND: Dark brown gravelly clayey fine to coarse SAND with low cobble content. Gravel is angular to subrounded fine to coarse sandstone, coal, concrete and brick. Cobbles are angular to subangular sandstone and brick. |        | 0.05                          |                       |                   |                      |                       |                         |                 |                         | 0.20              | 2 ES     |                                  |
|                                                                                                                                                                                                                                 |        | (2.45)                        |                       |                   |                      |                       |                         |                 |                         | 0.50              | 3 D      |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 0.50              | 4 ES     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 0.60              | 5 B      |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 1.00              | 6 D      |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 1.00              | 7 ES     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 1.20              | 8 D      |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 1.20 - 1.65       | 10 B     | SPT(C) 1.20m, N=6 (1,2/1,2,1,2)  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         | 2.00            |                         | 2.00              | 11 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         | 2.00            |                         | 2.00              | 12 ES    |                                  |
| Soft greyish brown slightly sandy silty CLAY. Sand is fine.                                                                                                                                                                     |        | 2.50                          | 8.79                  |                   |                      |                       |                         | 2.50            |                         | 2.50 - 2.95       | 14 B     | SPT(C) 2.50m, N=5 (1,0/1,1,1,2)  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         | 2.50            |                         | 3.00              | 15 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 3.50 - 3.95       | 16 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 3.50 - 3.95       | 17 B     | SPT(S) 3.50m, N=4 (1,0/1,1,1,1)  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 4.00              | 18 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 4.50 - 4.95       | 19 UT-NR | 15 blows, 0% Recovery            |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 4.50 - 4.95       | 20 B     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 5.00              | 21 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         | 5.50            |                         | 5.50 - 5.95       | 22 D     |                                  |
| Brown silty fine to medium SAND with occasional silt pockets.                                                                                                                                                                   |        | 5.50                          | 5.79                  |                   |                      |                       |                         |                 |                         | 5.50 - 5.95       | 23 ES    | SPT(S) 5.50m, N=4 (0,0/1,1,1,1)  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 6.00              | 24 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 6.50 - 6.95       | 25 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 6.50 - 6.95       | 26 B     | SPT(S) 6.50m, N=6 (1,1/2,2,1,1)  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 7.00              | 27 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 7.50 - 7.95       | 28 UT    | 20 blows, 75% Recovery           |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 8.00              | 29 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 8.50 - 8.95       | 30 D     |                                  |
| Soft locally firm laminated brown CLAY.                                                                                                                                                                                         |        | 8.50                          | 2.79                  |                   |                      |                       |                         |                 |                         | 8.50 - 8.95       | 31 B     | SPT(S) 8.50m, N=10 (1,1/2,2,3,3) |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 9.00              | 32 D     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 9.50 - 9.95       | 33 UT-NR | 15 blows, 0% Recovery            |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 9.50 - 9.95       | 34 B     |                                  |
|                                                                                                                                                                                                                                 |        |                               |                       |                   |                      |                       |                         |                 |                         | 10.00             | 35 D     |                                  |
| EOH at 10.00m - Scheduled depth                                                                                                                                                                                                 |        | 10.00                         | 1.29                  |                   |                      |                       |                         |                 |                         |                   |          |                                  |

|                        |       |                   |      |           |            |           |           |                     |              |                    |               |             |           |       |
|------------------------|-------|-------------------|------|-----------|------------|-----------|-----------|---------------------|--------------|--------------------|---------------|-------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information |      |           |            |           | Backfill  |                     |              |                    | Installations |             |           |       |
|                        |       | Date              | Time | Depth (m) | Casing (m) | Water (m) | From (m)  | To (m)              | Material     | Instrument Details |               | Resp. Zone  | Depth (m) | Diam. |
|                        |       |                   |      |           |            |           | 0.00      | 0.50                | Concrete     | Standpipe          |               | 2.50 - 8.50 | 8.50      |       |
|                        |       |                   |      |           |            |           | 0.50      | 2.50                | Bentonite    |                    |               |             |           |       |
|                        |       |                   |      |           | 2.50       | 8.00      | Gravel    |                     |              |                    |               |             |           |       |
|                        |       |                   |      |           | 8.00       | 8.50      | Bentonite |                     |              |                    |               |             |           |       |
|                        |       |                   |      |           | 8.50       | 10.00     | Arisings  |                     |              |                    |               |             |           |       |
|                        |       |                   |      |           |            |           |           | Groundwater Strikes |              |                    |               |             |           |       |
|                        |       |                   |      |           |            |           |           | Strike (m)          | Rises To (m) | Time (min)         | Remarks       |             |           |       |
|                        |       |                   |      |           |            |           |           | 2.50                | 2.00         | 20                 |               |             |           |       |
|                        |       |                   |      |           |            |           |           | 5.50                | 2.50         | 20                 |               |             |           |       |

Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1134 (56%)



|                                      |                             |                            |                             |                                    |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------|------------------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant         |                                    |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424898.17</b>   | Northing: <b>558464.95</b> | From (m)                    | Method                             | Plant Used               | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.56mAOD</b> | Final Depth: <b>10.45m</b> | 0.00 - 1.20<br>1.20 - 10.45 | Inspection Pit<br>Cable Percussion | Hand Tools<br>Dando 4000 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   |                             |                                    |                          | Start Date: 07/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                             |                                    |                          | End Date: 09/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 10.45         | 150       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 4.50            | 150       |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
|                     |            |            |            |             |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 10/04/2018                        | Standpipe          | 10.00  | 3.00 - 10.00   |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill     |             |
|--------------|-------------|
| Depth (m)    | Legend Code |
| 0.00 - 3.00  | Bentonite   |
| 3.00 - 10.45 | Gravel      |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       |    | Water            |   |
|                            | 5  |                  | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       |    | Large Bulk       |   |
|                            | 6  |                  | 0 |
| Disturbed                  |    | Disturbed (NR)   |   |
|                            | 18 |                  | 0 |
| Piston                     |    | Piston (NR)      |   |
|                            | 0  |                  | 0 |
| Undisturbed                |    | Undisturbed (NR) |   |
|                            | 0  |                  | 0 |
| Undisturbed Thin Wall      |    |                  |   |
|                            |    |                  | 4 |
| Undisturbed Thin Wall (NR) |    |                  |   |
|                            |    |                  | 0 |
| Core Sample                |    |                  |   |
|                            |    |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | 1.20       | DRY       | 4             | 12         | 450                    | 12 | N=12 (2,2/3,2,4,3) | AR1710     |
| Split Spoon                       | 2.00      | 2.00       | DRY       | 11            | 23         | 450                    | 23 | N=23 (5,6/4,7,6,6) | AR1710     |
| Split Spoon                       | 3.00      | 3.00       | DRY       | 3             | 5          | 450                    | 5  | N=5 (1,2/1,1,2,1)  | AR1710     |
| Split Spoon                       | 5.00      | 4.00       | DRY       | 4             | 8          | 450                    | 8  | N=8 (2,2/1,3,2,2)  | AR1710     |
| Split Spoon                       | 7.00      | 4.00       | DRY       | 7             | 13         | 450                    | 13 | N=13 (4,3/3,4,3,3) | AR1710     |
| Split Spoon                       | 9.00      | 4.00       | DRY       | 8             | 17         | 450                    | 17 | N=17 (3,5/3,4,5,5) | AR1710     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| AR1710          | 61               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



|                                      |                             |                            |                        |                        |                        |                         |
|--------------------------------------|-----------------------------|----------------------------|------------------------|------------------------|------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:           |                            | Methodology & Plant    |                        |                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424898.17</b>   | Northing: <b>558464.95</b> | Depth (m): 0.00 - 1.20 | Method: Inspection Pit | Plant Used: Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.56mAOD</b> | Final Depth: <b>10.45m</b> | 1.20 - 10.45           | Cable Percussion       | Dando 4000             | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>RJ</b>        | Grid System: <b>OSGB</b>   |                        |                        |                        | Start Date: 07/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                        |                        |                        | Finish Date: 09/04/2018 |

| Strata Description                                                                                                                                                                                       | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Chiselling (mins) | Water Added (Litres) | Hole Ø (mm) Depth (m) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing   |                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------|----------------------|-----------------------|-------------------------|-----------------|-------------------------|---------------------|----------------------------------|
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | Depth (m)           | Ref                              |
| MADE GROUND: Firm dark brown slightly gravelly CLAY with medium cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are subrounded of various lithologies. |        | 1.70                          |                      |                   |                      |                       |                         |                 |                         | 0.10 1 D            |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 0.40 2 ES           | PID 0.40m = 0.1ppm               |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 0.50 3 D            |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 0.50 - 1.00 4 B     |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 0.80 5 ES           | PID 0.80m = 0.2ppm               |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 1.00 6 D            |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 1.20 - 1.65 7 D     | SPT(S) 1.20m, N=12 (2,2/3,2,4,3) |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 1.20 - 1.70 8 B     |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 1.50 9 ES           | PID 1.50m = 3.1ppm               |
| MADE GROUND: Brown sandy slightly clayey angular to subrounded fine to coarse roadstone GRAVEL. Sand is fine to coarse.                                                                                  |        | 1.70                          | 10.86                |                   |                      |                       |                         |                 |                         | 1.70 10 D           |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.00 11 D           | SPT(S) 2.00m, N=23 (5,6/4,7,6,6) |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.50 12 D           |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 2.50 13 ES          | PID 2.50m = 2.0ppm               |
| Soft brownish grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies.                                              |        | 3.00                          | 9.56                 |                   |                      |                       |                         |                 |                         | 3.00 - 3.45 14 D    | SPT(S) 3.00m, N=5 (1,2/1,1,2,1)  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.00 - 3.50 15 B    |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.50 16 D           | PID 3.50m = 0.8ppm               |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 3.50 17 ES          |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       | 150                     |                 |                         | 4.00 - 4.45 18 UT   | 37 blows, 100% Recovery          |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       | 4.50                    |                 |                         | 4.50 19 D           |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.00 - 5.45 20 D    | SPT(S) 5.00m, N=8 (2,2/1,3,2,2)  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.00 - 5.50 21 B    |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 5.50 22 D           |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.00 - 6.45 23 UT   | 45 blows, 100% Recovery          |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 6.50 24 D           |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.00 - 7.45 25 D    | SPT(S) 7.00m, N=13 (4,3/3,4,3,3) |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.00 - 7.50 26 B    |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 7.50 27 D           |                                  |
| Very soft brown very sandy CLAY. Sand is fine to coarse.                                                                                                                                                 |        | 7.50                          | 5.06                 |                   |                      |                       |                         |                 |                         | 8.00 - 8.45 28 UT   | 50 blows, 100% Recovery          |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 8.50 29 D           |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.00 - 9.45 30 D    | SPT(S) 9.00m, N=17 (3,5/3,4,5,5) |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.00 - 9.50 31 B    |                                  |
|                                                                                                                                                                                                          |        |                               |                      |                   |                      |                       |                         |                 |                         | 9.50 32 D           |                                  |
| Continued on Next Page                                                                                                                                                                                   |        |                               |                      |                   |                      |                       |                         |                 |                         | 10.00 - 10.45 33 UT | 55 blows, 100% Recovery          |

|                                                                                                                             |                     |                   |            |           |            |           |          |        |               |                    |              |           |       |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|------------|-----------|------------|-----------|----------|--------|---------------|--------------------|--------------|-----------|-------|
| Observations / Remarks                                                                                                      | Misc.               | Shift Information |            |           |            |           | Backfill |        | Installations |                    |              |           |       |
|                                                                                                                             |                     | Date              | Time       | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material      | Instrument Details | Resp. Zone   | Depth (m) | Diam. |
|                                                                                                                             |                     |                   |            |           |            |           | 0.00     | 3.00   | Bentonite     | Standpipe          | 3.00 - 10.00 | 10.00     |       |
|                                                                                                                             |                     |                   |            |           |            |           | 3.00     | 10.45  | Gravel        |                    |              |           |       |
| No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed<br>Hammer Ref. & Energy Ratio (%)<br>AR1710 (61%) | Groundwater Strikes |                   |            |           |            |           |          |        |               |                    |              |           |       |
|                                                                                                                             | Strike (m)          | Rises To (m)      | Time (min) | Remarks   |            |           |          |        |               |                    |              |           |       |
|                                                                                                                             |                     |                   |            |           |            |           |          |        |               |                    |              |           |       |





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Log Type  
**Cable Percussion**  
Sheet 2 of 2

Exploratory Hole Number  
**BH17-77**  
**FINAL**



|                                      |                              |                            |                     |        |            |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details:            |                            | Methodology & Plant |        |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424898.17</b>    | Northing: <b>558464.95</b> | Depth (m)           | Method | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.56m AOD</b> | Final Depth: <b>10.45m</b> |                     |        |            | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                     |        |            | Start Date: 07/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |        |            | Finish Date: 09/04/2018 |

| Strata Description                                       | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Chiselling<br>(mins) | Water Added<br>(Litres) | Hole Ø<br>(mm)<br>Depth (m) | Casing Ø<br>(mm)<br>Depth (m) | Water Level<br>(m) | Installation/<br>Backfill | Samples & Testing |     |              |
|----------------------------------------------------------|--------|----------------------------------|-------------------------|----------------------|-------------------------|-----------------------------|-------------------------------|--------------------|---------------------------|-------------------|-----|--------------|
|                                                          |        |                                  |                         |                      |                         |                             |                               |                    |                           | Depth (m)         | Ref | Test Results |
| Very soft brown very sandy CLAY. Sand is fine to coarse. |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     |              |
| EOH at 10.45m - Scheduled Depth                          |        | 10.45                            | 2.11                    |                      |                         | 150<br>10.45                |                               |                    |                           |                   |     |              |
| 11                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 11           |
| 12                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 12           |
| 13                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 13           |
| 14                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 14           |
| 15                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 15           |
| 16                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 16           |
| 17                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 17           |
| 18                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 18           |
| 19                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 19           |
| 20                                                       |        |                                  |                         |                      |                         |                             |                               |                    |                           |                   |     | 20           |

|                        |       |                     |              |            |            |           |          |        |          |                    |              |           |       |
|------------------------|-------|---------------------|--------------|------------|------------|-----------|----------|--------|----------|--------------------|--------------|-----------|-------|
| Observations / Remarks | Misc. | Shift Information   |              |            |            |           | Backfill |        |          | Installations      |              |           |       |
|                        |       | Date                | Time         | Depth (m)  | Casing (m) | Water (m) | From (m) | To (m) | Material | Instrument Details | Resp. Zone   | Depth (m) | Diam. |
|                        |       |                     |              |            |            |           |          |        |          | Standpipe          | 3.00 - 10.00 | 10.00     |       |
|                        |       | Groundwater Strikes |              |            |            |           |          |        |          |                    |              |           |       |
|                        |       | Strike (m)          | Rises To (m) | Time (min) | Remarks    |           |          |        |          |                    |              |           |       |
|                        |       |                     |              |            |            |           |          |        |          |                    |              |           |       |

No Groundwater Encountered  
Casing Used  
Monitoring Point/s Installed  
Hammer Ref. & Energy Ratio (%)  
AR1710 (61%)





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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-01**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425211.65</b>    | Northing: <b>558486.98</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.54m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS+NE</b>         | Grid System: <b>OSGB</b>   |                     |  | Start Date: 18/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 18/01/2018 |

| Strata Description                                                                                                                                                                         | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                            |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: Greyish brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is subangular to subrounded fine to medium brick and sandstone. Sand is fine to coarse.             |        | (0.20)                           | 16.34                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 10.8ppm |
| MADE GROUND: Firm to stiff light brownish grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium brick, coal and sandstone. Sand is fine to coarse. |        | 0.20                             |                         |                 |                         |                   |      |                     |
|                                                                                                                                                                                            |        | (1.00)                           |                         |                 |                         | 0.80              | 2 ES | PID 0.80m = 8.2ppm  |
| EOH at 1.20m - Scheduled depth                                                                                                                                                             |        | 1.20                             | 15.34                   |                 |                         |                   |      |                     |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>○ |



|                                      |                       |                           |                         |                                                      |                                            |                        |
|--------------------------------------|-----------------------|---------------------------|-------------------------|------------------------------------------------------|--------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details      |                           | Methodology & Plant     |                                                      |                                            | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>N/A</b>   | Northing: <b>N/A</b>      | From (m)<br>0.00 - 1.20 | Method<br>Inspection Pit<br>Static Cone Penetrometer | Plant Used<br>Hand Tools<br>Massenza MIP18 | Checked:               |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>N/A</b> | Final Depth: <b>1.20m</b> | 1.20 - 18.77            |                                                      |                                            | Approved:              |
| Client: <b>SLV</b>                   | Logger: <b>NE</b>     | Grid System:              |                         |                                                      |                                            | Start Date: 18/01/2018 |
|                                      | Orientation:          | Inclination:              |                         |                                                      |                                            | End Date: 18/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

**No Samples Taken**

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-01A**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                       |                           |                     |  |                         |
|--------------------------------------|-----------------------|---------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details      |                           | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>N/A</b>   | Northing: <b>N/A</b>      | Inspection Pit      |  | Checked By:             |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>N/A</b> | Final Depth: <b>1.20m</b> | Hand Tools          |  | Approved By:            |
| Client: <b>SLV</b>                   | Logger: <b>NE</b>     | Grid System:              |                     |  | Start Date: 18/01/2018  |
|                                      | Orientation:          | Inclination:              |                     |  | Finish Date: 18/01/2018 |

| Strata Description                                                                                                                                                                         | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |     |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|----------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                            |        |                                  |                         |                 |                            | Depth (m)         | Ref | Test Results |
| MADE GROUND: Greyish brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is subangular to subrounded fine to medium brick and sandstone. Sand is fine to coarse.             |        | (0.20)                           |                         |                 |                            |                   |     |              |
| MADE GROUND: Firm to stiff light brownish grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium brick, coal and sandstone. Sand is fine to coarse. |        | 0.20                             |                         |                 |                            |                   |     |              |
|                                                                                                                                                                                            |        | (1.00)                           |                         |                 |                            |                   |     |              |
| EOH at 1.20m - Scheduled Depth                                                                                                                                                             |        | 1.20                             |                         |                 |                            |                   |     |              |

|                        |                            |         |                      |                                                                                                                                            |
|------------------------|----------------------------|---------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill | Pit Dimensions                                                                                                                             |
|                        | From (m)                   | Remarks |                      |                                                                                                                                            |
|                        |                            |         | Shoring:             | <div style="text-align: center;">             m<br/> <br/>             m<br/>             Orientation:<br/>             °           </div> |
|                        |                            |         | Stability:           |                                                                                                                                            |
|                        |                            |         | Backfill: Arisings   |                                                                                                                                            |



|                                      |                              |                            |                         |                          |                          |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425248.33</b>    | Northing: <b>558512.47</b> | From (m)<br>0.00 - 0.80 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.00m AOD</b> | Final Depth: <b>0.80m</b>  | Logger: <b>GS</b>       | Grid System: <b>OSGB</b> |                          | Approved: BH           |
| Client: <b>SLV</b>                   | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                         |                          |                          | Start Date: 24/01/2018 |
|                                      |                              |                            |                         |                          |                          | End Date: 24/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.80 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 1 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-02**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425248.33</b>    | Northing: <b>558512.47</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.00m AOD</b> | Final Depth: <b>0.80m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 24/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 24/01/2018 |

| Strata Description                                                                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                                               |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: TOPSOIL.                                                                                                                                                                                         |        | (0.10)                           | 16.90                   |                 |                         |                   |      |                     |
| MADE GROUND: Brownish grey gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse mudstone, siltstone, sandstone and brick. Cobbles are subangular to subrounded sandstone. |        | 0.10                             |                         |                 |                         | 0.20              | 1 ES | PID 0.20m = 20.3ppm |
|                                                                                                                                                                                                               |        | (0.70)                           |                         |                 |                         |                   |      |                     |
| At 0.80m 1 no. yellowish orange fine grained sandstone boulder.<br>EOH at 0.80m - Abandoned due to cobble/boulder obstruction                                                                                 |        | 0.80                             | 16.20                   |                 |                         |                   |      |                     |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |







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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-02a**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425266.30</b>    | Northing: <b>558515.29</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.00m AOD</b> | Final Depth: <b>0.80m</b>  | Hand Tool           |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 25/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 25/01/2018 |

| Strata Description                                                                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                                               |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: TOPSOIL.                                                                                                                                                                                         |        | (0.10)                           | 16.90                   |                 |                         |                   |      |                     |
| MADE GROUND: Brownish grey gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse mudstone, siltstone, sandstone and brick. Cobbles are subangular to subrounded sandstone. |        | 0.10                             |                         |                 |                         | 0.20              | 1 ES | PID 0.20m = 16.1ppm |
|                                                                                                                                                                                                               |        | (0.70)                           |                         |                 |                         |                   |      |                     |
| At 0.80m 1 no. yellowish orange fine grained sandstone boulder.<br>EOH at 0.80m - Abandoned due to cobble/boulder obstruction                                                                                 |        | 0.80                             | 16.20                   |                 |                         |                   |      |                     |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |



|                                      |                             |                            |                                         |                                                      |                                            |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|------------------------------------------------------|--------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                      |                                            | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425264.11</b>   | Northing: <b>558481.40</b> | From (m)<br>0.00 - 1.20<br>1.20 - 16.11 | Method<br>Inspection Pit<br>Static Cone Penetrometer | Plant Used<br>Hand Tools<br>Massenza MIP18 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.19mAOD</b> | Final Depth: <b>1.20m</b>  |                                         |                                                      |                                            | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                         |                                                      |                                            | Start Date: 18/01/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                      |                                            | End Date: 18/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 2 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



# CENTRAL ALLIANCE

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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-03**

**FINAL**



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425264.11</b>    | Northing: <b>558481.40</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.19m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 18/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 18/01/2018 |

| Strata Description                                                                                                                                                                        | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                           |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: TOPSOIL.                                                                                                                                                                     |        | (0.10)                           |                         |                 |                         |                   |      |                     |
| MADE GROUND: Firm orangish brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is subangular to subrounded fine to medium sandstone coal and brick. Sand is fine to coarse. |        | 0.10<br>(0.20)                   | 17.09                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 10.2ppm |
| MADE GROUND: Yellowish brown slightly clayey subangular to subrounded fine to coarse sandstone and mudstone GRAVEL and COBBLES.                                                           |        | 0.30<br>(0.20)                   | 16.89                   |                 |                         |                   |      |                     |
| MADE GROUND: Firm light to dark brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse brick sandstone mudstone and coal. Sand is fine to coarse. |        | 0.50<br>(0.70)                   | 16.69                   |                 |                         | 0.80              | 2 ES | PID 0.80m = 10.5ppm |
| EOH at 1.20m - Scheduled depth                                                                                                                                                            |        | 1.20                             | 15.99                   |                 |                         |                   |      |                     |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>○ |



|                                      |                             |                            |                         |                          |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425290.50</b>   | Northing: <b>558461.61</b> | From (m)<br>0.00 - 1.20 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.09mAOD</b> | Final Depth: <b>1.20m</b>  |                         |                          |                          | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                         |                          |                          | Start Date: 18/01/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                         |                          |                          | End Date: 18/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-04**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425290.50</b>    | Northing: <b>558461.61</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.09m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 18/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 18/01/2018 |

| Strata Description                                                                                                                   | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                    |
|--------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|--------------------|
|                                                                                                                                      |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results       |
| MADE GROUND: TOPSOIL.                                                                                                                |        | (0.10)                           | 15.99                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 5.2ppm |
| MADE GROUND: Soft brown slightly gravelly CLAY with rootlets. Gravel is subangular to subrounded fine to medium sandstone and brick. |        | 0.10                             |                         |                 |                         |                   |      |                    |
|                                                                                                                                      |        | (1.00)                           | 14.99                   |                 |                         | 0.80              | 2 ES | PID 0.80m = 4.9ppm |
|                                                                                                                                      |        | 1.10                             |                         |                 |                         |                   |      |                    |
| MADE GROUND: Firm laminated orangish grey CLAY.                                                                                      |        | (0.10)                           | 14.89                   |                 |                         |                   |      |                    |
| EOH at 1.20m - CPT not undertaken.                                                                                                   |        | 1.20                             |                         |                 |                         |                   |      |                    |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>○ |





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Log Type

**Trial Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-05**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425264.25</b>    | Northing: <b>558481.16</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.23m AOD</b> | Final Depth: <b>0.90m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 18/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 18/01/2018 |

| Strata Description                                                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                               |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: Soft dark grey slightly gravelly slightly sandy CLAY with rootlets. Gravel is subangular to subrounded fine to coarse brick coal sandstone and mudstone. Sand is fine to coarse. |        | (0.30)                           |                         |                 |                         | 0.20              | 1 ES | PID 0.20m = 10.1ppm |
| MADE GROUND: Yellowish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and siltstone.                                 |        | 0.30                             | 16.93                   |                 |                         |                   |      |                     |
| MADE GROUND: Yellowish orange angular to subangular sandstone COBBLES.                                                                                                                        |        | (0.40)                           |                         |                 |                         |                   |      |                     |
| MADE GROUND: Greyish brown slightly sandy clayey angular to subangular sandstone GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are angular to subangular sandstone.         |        | 0.70                             | 16.53                   |                 |                         |                   |      |                     |
|                                                                                                                                                                                               |        | (0.10)                           | 16.43                   |                 |                         |                   |      |                     |
|                                                                                                                                                                                               |        | 0.80                             | 16.33                   |                 |                         | 0.85              | 2 ES | PID 0.85m = 11.2ppm |
|                                                                                                                                                                                               |        | (0.10)                           |                         |                 |                         |                   |      |                     |
|                                                                                                                                                                                               |        | 0.90                             |                         |                 |                         |                   |      |                     |
| EOH at 0.90m - Pit terminated upon hard strata                                                                                                                                                |        |                                  |                         |                 |                         |                   |      |                     |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>○ |



|                                      |                              |                            |                             |                                            |                             |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------------|--------------------------------------------|-----------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant         |                                            |                             | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425290.90</b>    | Northing: <b>558461.94</b> | From (m)                    | Method                                     | Plant Used                  | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.09m AOD</b> | Final Depth: <b>1.20m</b>  | 0.00 - 1.20<br>1.20 - 11.48 | Inspection Pit<br>Static Cone Penetrometer | Hand Tool<br>Massenza MIP18 | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                             |                                            |                             | Start Date: 25/01/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                             |                                            |                             | End Date: 25/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 2 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-06**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425290.90</b>    | Northing: <b>558461.94</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.09m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tool           |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 25/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 25/01/2018 |

| Strata Description                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                     |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: TOPSOIL.                                                                                                                                                               |        | (0.10)                           | 15.99                   |                 |                         |                   |      |                     |
| MADE GROUND: Brownish yellow sandy subangular to subrounded fine to coarse sandstone and siltstone GRAVEL. Sand is medium to coarse.                                                |        | 0.10                             | 15.89                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 42.3ppm |
| MADE GROUND: Soft to firm dark brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone, siltstone, brick and coal.<br><i>At 0.20m geotextile.</i> |        | (0.10)                           |                         |                 |                         |                   |      |                     |
|                                                                                                                                                                                     |        | 0.20                             |                         |                 |                         |                   |      |                     |
|                                                                                                                                                                                     |        | (1.00)                           |                         |                 |                         | 0.80              | 2 ES | PID 0.80m = 19.6ppm |
| <i>From 0.80m to 0.95m concrete.</i>                                                                                                                                                |        |                                  |                         |                 |                         |                   |      |                     |
| EOH at 1.20m - Scheduled depth                                                                                                                                                      |        | 1.20                             | 14.89                   |                 |                         |                   |      |                     |

|                        |                            |         |                                                   |                                |
|------------------------|----------------------------|---------|---------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                              | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                   |                                |
|                        |                            |         | Shoring: None<br>Stability:<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |





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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-06A**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                       |                           |                     |  |                         |
|--------------------------------------|-----------------------|---------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details      |                           | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>N/A</b>   | Northing: <b>N/A</b>      | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>N/A</b> | Final Depth: <b>1.20m</b> | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>NE</b>     | Grid System: <b>OSGB</b>  |                     |  | Start Date: 25/01/2018  |
|                                      | Orientation:          | Inclination:              |                     |  | Finish Date: 25/01/2018 |

| Strata Description                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                     |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| MADE GROUND: TOPSOIL.                                                                                                                                                               |        | (0.10)                           |                         |                 |                         |                   |     |              |
| MADE GROUND: Brownish yellow sandy subangular to subrounded fine to coarse sandstone and siltstone GRAVEL. Sand is medium to coarse.                                                |        | 0.10                             |                         |                 |                         |                   |     |              |
| MADE GROUND: Soft to firm dark brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone, siltstone, brick and coal.<br><i>At 0.20m geotextile.</i> |        | (0.10)<br>0.20                   |                         |                 |                         |                   |     |              |
|                                                                                                                                                                                     |        | (1.00)                           |                         |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled Depth                                                                                                                                                      |        | 1.20                             |                         |                 |                         |                   |     |              |

|                        |                            |         |                      |                                                                                                                |
|------------------------|----------------------------|---------|----------------------|----------------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill | Pit Dimensions                                                                                                 |
|                        | From (m)                   | Remarks |                      |                                                                                                                |
|                        |                            |         | Shoring:             | <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div> m<br>m<br>Orientation: |
|                        |                            |         | Stability:           |                                                                                                                |
|                        |                            |         | Backfill: Arisings   |                                                                                                                |



|                                      |                              |                            |                                         |                                                      |                                            |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|------------------------------------------------------|--------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                      |                                            | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425338.85</b>    | Northing: <b>558447.26</b> | From (m)<br>0.00 - 1.20<br>1.20 - 14.35 | Method<br>Inspection Pit<br>Static Cone Penetrometer | Plant Used<br>Hand Tools<br>Massenza MIP18 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.98m AOD</b> | Final Depth: <b>1.20m</b>  |                                         |                                                      |                                            | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                         |                                                      |                                            | Start Date: 18/01/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                      |                                            | End Date: 18/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 2 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-07**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425338.85</b>    | Northing: <b>558447.26</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.98m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 18/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 18/01/2018 |

| Strata Description                                                                                                                                                                                                               | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                                                                  |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: TOPSOIL.                                                                                                                                                                                                            |        | (0.10)                           | 15.88                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 11.2ppm |
| MADE GROUND: Firm dark brown slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone coal and brick.                                                                                  |        | 0.10                             |                         |                 |                         |                   |      |                     |
|                                                                                                                                                                                                                                  |        | (0.35)                           |                         |                 |                         |                   |      |                     |
| MADE GROUND: Firm orangish grey gravelly sandy CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone coal and brick. Cobbles are subangular to subrounded sandstone. Sand is fine to coarse. |        | 0.45                             | 15.53                   |                 |                         |                   |      |                     |
|                                                                                                                                                                                                                                  |        | (0.75)                           |                         |                 |                         | 0.80              | 2 ES | PID 0.80m = 0.2ppm  |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                   |        | 1.20                             | 14.78                   |                 |                         |                   |      |                     |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |





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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-08**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425368.45</b>    | Northing: <b>558455.35</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.50m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 18/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 18/01/2018 |

| Strata Description                                                                                                                                          | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|--------------------|
|                                                                                                                                                             |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results       |
| MADE GROUND: Soft to firm orangish brown slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to coarse coal brick and sandstone. |        | 0.30                             | 16.20                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 9.7ppm |
| MADE GROUND: Firm to stiff dark grey slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone and brick.          |        | 0.50                             |                         |                 |                         |                   |      |                    |
| Firm to stiff laminated dark orangish grey CLAY.                                                                                                            |        | 0.80                             | 15.70                   |                 |                         | 0.80              | 2 ES | PID 0.80m = 8.9ppm |
| EOH at 1.20m - Scheduled depth                                                                                                                              |        | 1.20                             | 15.30                   |                 |                         |                   |      |                    |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |



|                                      |                             |                            |                         |                          |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425420.42</b>   | Northing: <b>558451.46</b> | From (m)<br>0.00 - 1.20 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.27mAOD</b> | Final Depth: <b>1.20m</b>  |                         |                          |                          | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                         |                          |                          | Start Date: 18/01/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                         |                          |                          | End Date: 18/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 1.10                | -          | -          | 20         | 0.90        |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 2 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 0 | Large Bulk       | 0 |
| Disturbed                    | 0 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 2 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





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Log Type

**Trial Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-09**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425420.42</b>    | Northing: <b>558451.46</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.27m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 18/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 18/01/2018 |

| Strata Description                                                                                                                                                                                                                                                                 | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|--------------------|
|                                                                                                                                                                                                                                                                                    |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results       |
| MADE GROUND: Soft to firm brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is subangular to subrounded fine to coarse sandstone limestone mudstone coal and brick. Sand is fine to coarse.                                                                        |        | 0.30                             | 17.97                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 6.1ppm |
| MADE GROUND: Yellowish brown slightly sandy slightly clayey subangular to subrounded fine to coarse sandstone GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded sandstone.<br><br><i>From 0.65m to 0.85m 1no. yellowish orange sandstone boulder.</i> |        | 0.55                             |                         |                 |                         |                   |      |                    |
| MADE GROUND: Dark yellowish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone mudstone coal and brick.                                                                                                       |        | 0.85<br>(0.35)                   | 17.42                   | 0.90<br>1.10    |                         | 0.85              | 2 ES | PID 0.85m = 2.1ppm |
| EOH at 1.20m - CPT not undertaken.                                                                                                                                                                                                                                                 |        |                                  |                         |                 |                         |                   |      |                    |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>○ |



|                                      |                              |                            |                         |                          |                         |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------|--------------------------|-------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant     |                          |                         | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425399.51</b>    | Northing: <b>558468.99</b> | From (m)<br>0.00 - 1.20 | Method<br>Inspection Pit | Plant Used<br>Hand Tool | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.89m AOD</b> | Final Depth: <b>1.20m</b>  |                         |                          |                         | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                         |                          |                         | Start Date: 26/01/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                         |                          |                         | End Date: 26/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 2 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-10**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425399.51</b>    | Northing: <b>558468.99</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.89m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tool           |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 26/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 26/01/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                             | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                                                                                                                                                                |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: Brownish grey subangular to subrounded fine to coarse sandstone siltstone and brick GRAVEL.                                                                                                                                                                                                                       |        | (0.10)                           | 17.79                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 22.3ppm |
| MADE GROUND: Yellowish brown gravelly clayey fine SAND. Gravel is subangular to subrounded fine to coarse sandstone.                                                                                                                                                                                                           |        | 0.10                             |                         |                 |                         |                   |      |                     |
| MADE GROUND: Brownish yellow slightly sandy clayey subangular to subrounded fine to medium siltstone, sandstone, mudstone, brick and ceramic GRAVEL. Sand is fine to coarse At 0.30m geotextile.<br>From 0.40m to 0.50m 1no. yellowish brown siltstone boulder.<br>From 0.70m to 0.90m 1no. yellowish brown siltstone boulder. |        | (0.20)                           |                         |                 |                         |                   |      |                     |
|                                                                                                                                                                                                                                                                                                                                |        | 0.30                             | 17.59                   |                 |                         |                   |      |                     |
| MADE GROUND: Brownish black gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone and mudstone.<br><br>From 1.15m becomes laminated.                                                                                                                                                                      |        | (0.60)                           | 16.99                   |                 |                         | 0.80              | 2 ES | PID 0.80m = 31.5ppm |
|                                                                                                                                                                                                                                                                                                                                |        | 0.90                             |                         |                 |                         |                   |      |                     |
|                                                                                                                                                                                                                                                                                                                                |        | (0.30)                           | 16.69                   |                 |                         |                   |      |                     |
| EOH at 1.20m - CPT not undertaken.                                                                                                                                                                                                                                                                                             |        | 1.20                             | 16.69                   |                 |                         |                   |      |                     |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |



|                                      |                             |                            |                         |                          |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425412.25</b>   | Northing: <b>558478.16</b> | From (m)<br>0.00 - 1.20 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.27mAOD</b> | Final Depth: <b>1.20m</b>  |                         |                          |                          | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                         |                          |                          | Start Date: 23/01/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>N/A</b>    |                         |                          |                          | End Date: 23/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 1.10                | -          | -          | 20         | 1.10        |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 2 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type

**Trial Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-11**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425412.25</b>    | Northing: <b>558478.16</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.27m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 23/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 23/01/2018 |

| Strata Description                                                                                                                                                                     | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level (mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|----------------------|-----------------|-------------------------|-------------------|------|--------------------|
|                                                                                                                                                                                        |        |                                  |                      |                 |                         | Depth (m)         | Ref  | Test Results       |
| MADE GROUND: Brown gravelly CLAY with rootlets. Gravel is subangular to subrounded fine to coarse mudstone siltstone and coal.                                                         |        | (0.70)                           |                      |                 |                         | 0.20              | 1 ES | PID 0.20m = 0.6ppm |
| MADE GROUND: Greyish black subangular to subrounded fine to coarse sandstone and mudstone GRAVEL with low cobble content. Cobbles are subangular to subrounded sandstone and mudstone. |        | 0.70<br>(0.20)                   | 17.58                |                 |                         | 0.80              | 2 ES | PID 0.80m = 0.8ppm |
| MADE GROUND: Brownish black gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone siltstone and mudstone.<br><i>At 1.10m, groundwater encountered.</i>            |        | (0.30)                           | 17.38                |                 |                         |                   |      |                    |
| EOH at 1.20m - CPT not undertaken.                                                                                                                                                     |        | 1.20                             | 17.08                | 1.10<br>1.10    |                         |                   |      |                    |

| Observations / Remarks       | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|------------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Groundwater strike at 1.10m. | From (m)                   | Remarks | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |





|                                |                                                        |                                                      |                     |                         |                        |
|--------------------------------|--------------------------------------------------------|------------------------------------------------------|---------------------|-------------------------|------------------------|
| Project No: <b>3043</b>        | Location Details                                       |                                                      | Methodology & Plant |                         | Scale: 1:30            |
|                                | Name: <b>A1 Birtley to Coalhouse</b>                   | Easting: <b>425441.78</b> Northing: <b>558463.67</b> | Inspection Pit      |                         | Checked By: RPH        |
| Location: <b>Tyne and Wear</b> | Elevation: <b>20.26m AOD</b> Final Depth: <b>1.20m</b> | Hand Tool                                            |                     | Approved By: BH         | Start Date: 23/01/2018 |
| Client: <b>SLV</b>             | Logger: <b>GS</b> Grid System: <b>OSGB</b>             |                                                      |                     | Finish Date: 23/01/2018 |                        |
|                                | Orientation: <b>N/A</b> Inclination: <b>N/A</b>        |                                                      |                     |                         |                        |

| Strata Description                                                                                                                                                                                                                                                                                                                                                   | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------|-------------------------|-------------------|------|--------------------|
|                                                                                                                                                                                                                                                                                                                                                                      |        |                               |                      |                 |                         | Depth (m)         | Ref  | Test Results       |
| <p>MADE GROUND: Brownish black gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone siltstone mudstone coal and brick.</p> <p>MADE GROUND: CONCRETE.</p> <p>MADE GROUND: Firm to stiff orangish grey gravelly CLAY. Gravel is subangular to subrounded fine to coarse coal concrete and brick.</p> <p><i>From 0.70m becomes laminated.</i></p> |        | (0.20)                        | 20.06<br>20.01       |                 |                         | 0.20              | 1 ES | PID 0.20m = 1.0ppm |
|                                                                                                                                                                                                                                                                                                                                                                      |        | (0.05)                        |                      |                 |                         |                   |      |                    |
|                                                                                                                                                                                                                                                                                                                                                                      |        | 0.25                          |                      |                 |                         |                   |      |                    |
|                                                                                                                                                                                                                                                                                                                                                                      |        | (0.95)                        |                      |                 |                         |                   |      |                    |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                                                                                                                                                       |        | 1.20                          | 19.06                |                 |                         |                   |      |                    |

|                        |                            |         |                                                          |                             |
|------------------------|----------------------------|---------|----------------------------------------------------------|-----------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions              |
|                        | From (m)                   | Remarks |                                                          |                             |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation: ° |







|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425427.66</b>    | Northing: <b>558451.72</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.83m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tool           |  | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 27/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 27/01/2018 |

| Strata Description                                                                                                                                                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|---------------------|
|                                                                                                                                                                                                                                                                                               |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results        |
| MADE GROUND: TOPSOIL.                                                                                                                                                                                                                                                                         |        | (0.10)                           | 18.73                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 29.6ppm |
| MADE GROUND: Soft to firm slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone siltstone coal and brick.<br><br><i>From 0.40m becomes very gravelly with low cobble content. Cobbles are subangular to subrounded sandstone.</i> |        | 0.10                             |                         |                 |                         |                   |      |                     |
|                                                                                                                                                                                                                                                                                               |        | (1.10)                           | 17.63                   |                 |                         | 0.80              | 2 ES | PID 0.80m = 35.9ppm |
| <i>From 1.10m becomes slightly gravelly.</i>                                                                                                                                                                                                                                                  |        |                                  |                         |                 |                         |                   |      |                     |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                                                                                |        | 1.20                             |                         |                 |                         |                   |      |                     |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |





# CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-14**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425401.28</b>    | Northing: <b>558432.04</b> | Inspection Pit      |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.42m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tool           |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 23/01/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 23/01/2018 |

| Strata Description                                                                                                                                                                                                                                                               | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |     |                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|----------------------------|-------------------|-----|--------------------|
|                                                                                                                                                                                                                                                                                  |        |                                  |                         |                 |                            | Depth (m)         | Ref | Test Results       |
| MADE GROUND: TOPSOIL.                                                                                                                                                                                                                                                            |        | (0.20)                           |                         |                 |                            |                   |     |                    |
| MADE GROUND: Firm orangish brown gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse coal brick sandstone and siltstone. Cobbles are subangular to subrounded sandstone and siltstone.<br><i>From 0.20m to 0.40m becomes very gravelly.</i> |        | 0.20                             | 16.22                   |                 |                            |                   |     | PID 0.20m = 0.6ppm |
| MADE GROUND: Firm to stiff laminated slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse coal, brick and sandstone.                                                                                                                                        |        | (0.60)                           |                         |                 |                            |                   |     |                    |
|                                                                                                                                                                                                                                                                                  |        | 0.80                             | 15.62                   |                 |                            |                   |     | PID 0.80m = 0.7ppm |
|                                                                                                                                                                                                                                                                                  |        | (0.40)                           |                         |                 |                            |                   |     |                    |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                                                                   |        | 1.20                             | 15.22                   |                 |                            |                   |     |                    |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |





|                                |                                                        |                                                      |                     |                         |                        |
|--------------------------------|--------------------------------------------------------|------------------------------------------------------|---------------------|-------------------------|------------------------|
| Project No: <b>3043</b>        | Location Details                                       |                                                      | Methodology & Plant |                         | Scale: 1:30            |
|                                | Name: <b>A1 Birtley to Coalhouse</b>                   | Easting: <b>425450.85</b> Northing: <b>558425.94</b> | Inspection Pit      |                         | Checked By: RPH        |
| Location: <b>Tyne and Wear</b> | Elevation: <b>18.91m AOD</b> Final Depth: <b>1.20m</b> | Hand Tool                                            |                     | Approved By: BH         | Start Date: 23/01/2018 |
| Client: <b>SLV</b>             | Logger: <b>GS</b> Grid System: <b>OSGB</b>             |                                                      |                     | Finish Date: 23/01/2018 |                        |
|                                | Orientation: <b>N/A</b> Inclination: <b>N/A</b>        |                                                      |                     |                         |                        |

| Strata Description                                                                                                                                                     | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|--------------------|
|                                                                                                                                                                        |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results       |
| MADE GROUND: TOPSOIL.                                                                                                                                                  |        | (0.20)                           |                         |                 |                         |                   |      |                    |
| MADE GROUND: Firm greyish brown gravelly CLAY with rootlets. Gravel is subangular to subrounded fine to coarse brick, concrete, siltstone, coal and ceramic fragments. |        | 0.20                             | 18.71                   |                 |                         | 0.20              | 1 ES | PID 0.20m = 0.8ppm |
|                                                                                                                                                                        |        | (1.00)                           |                         |                 |                         | 0.80              | 2 ES | PID 0.80m = 0.8ppm |
| EOH at 1.20m - Scheduled depth                                                                                                                                         |        | 1.20                             | 17.71                   |                 |                         |                   |      |                    |

|                        |                            |         |                                                          |                             |
|------------------------|----------------------------|---------|----------------------------------------------------------|-----------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions              |
|                        | From (m)                   | Remarks |                                                          |                             |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation: ° |





CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-16**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                          |  |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425545.14</b>    | Northing: <b>558410.88</b> | Static Cone Penetrometer |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.68m AOD</b> | Final Depth: <b>1.20m</b>  | Yanmar 9T                |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger:                      | Grid System: <b>OSGB</b>   |                          |  | Start Date: 10/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |  | Finish Date: 10/04/2018 |

| Strata Description                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                     |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| MADE GROUND: TOPSOIL.                                                                                                                               |        | (0.10)                           | 22.58                   |                 |                         |                   |     |              |
| Possible MADE GROUND: Black and dark brown sandy clayey angular to subrounded fine to coarse sandstone and mudstone GRAVEL. Sand is fine to coarse. |        | 0.10                             | 22.48                   |                 |                         |                   |     |              |
| Light brown and orangish brown sandy clayey angular to subrounded fine to coarse sandstone, mudstone and coal GRAVEL. Sand is fine to coarse.       |        | (0.10)                           |                         |                 |                         |                   |     |              |
|                                                                                                                                                     |        | 0.20                             |                         |                 |                         |                   |     |              |
|                                                                                                                                                     |        | (1.00)                           |                         |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled depth                                                                                                                      |        | 1.20                             | 21.48                   |                 |                         |                   |     |              |

|                        |                            |         |                      |                                                                                                           |
|------------------------|----------------------------|---------|----------------------|-----------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill | Pit Dimensions                                                                                            |
|                        | From (m)                   | Remarks |                      |                                                                                                           |
|                        |                            |         | Shoring:             | <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div> m<br>Orientation: |
|                        |                            |         | Stability:           |                                                                                                           |
|                        |                            |         | Backfill: Arisings   |                                                                                                           |



|                                      |                             |                            |                         |                                                      |                                       |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------|------------------------------------------------------|---------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant     |                                                      |                                       | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425565.39</b>   | Northing: <b>558378.99</b> | From (m)<br>0.00 - 1.20 | Method<br>Inspection Pit<br>Static Cone Penetrometer | Plant Used<br>Hand Tools<br>Yanmar 9T | Checked: JMH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.16mAOD</b> | Final Depth: <b>1.20m</b>  | 1.20 - 21.15            |                                                      |                                       | Approved: PH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                         |                                                      |                                       | Start Date: 10/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>N/A</b>    |                         |                                                      |                                       | End Date: 10/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 0.40                | -          | -          | 20         | 0.40        |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-17**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425565.39</b>    | Northing: <b>558378.99</b> | Inspection Pit      |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.16m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 10/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 10/04/2018 |

| Strata Description                                                                                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|--------------|
|                                                                                                                                                                                                                                                     |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results |
| TOPSOIL with rootlets.                                                                                                                                                                                                                              |        | (0.10)                           | 28.06                   |                 |                         |                   |      |              |
| Dark brown and black sandy clayey angular to subrounded fine to coarse sandstone and mudstone GRAVEL. Sand is fine to coarse.                                                                                                                       |        | 0.10<br>(0.20)                   |                         |                 |                         |                   |      |              |
| Light brown and dark brown sandy clayey angular to subrounded fine to coarse sandstone, mudstone and coal GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular sandstone.<br><i>At 0.40m, groundwater encountered.</i> |        | 0.30                             | 27.86                   | 0.40<br>0.40    |                         | 0.30              | 1 ES |              |
|                                                                                                                                                                                                                                                     |        | (0.90)                           |                         |                 |                         | 0.80              | 2 ES |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                                      |        | 1.20                             | 26.96                   |                 |                         |                   |      |              |

|                                                        |                            |         |                                                                                  |                                                  |
|--------------------------------------------------------|----------------------------|---------|----------------------------------------------------------------------------------|--------------------------------------------------|
| Observations / Remarks<br>Groundwater strike at 0.40m. | Breaking Out / Hard Strata |         | Stability & Backfill<br>Shoring: None<br>Stability: Stable<br>Backfill: Arisings | Pit Dimensions<br>0.40m<br><br>Orientation:<br>° |
|                                                        | From (m)                   | Remarks |                                                                                  |                                                  |



|                                      |                             |                            |                                        |                                                      |                                       |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|------------------------------------------------------|---------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                      |                                       | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425591.80</b>   | Northing: <b>558385.55</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.96 | Method<br>Inspection Pit<br>Static Cone Penetrometer | Plant Used<br>Hand Tools<br>Yanmar 9T | Checked: JMH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>27.15mAOD</b> | Final Depth: <b>1.20m</b>  |                                        |                                                      |                                       | Approved: PH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                      |                                       | Start Date: 11/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                      |                                       | End Date: 11/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-18**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425591.80</b>    | Northing: <b>558385.55</b> | Inspection Pit      |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>27.15m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: PH         |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 11/04/2018 |

| Strata Description                                                                                                                                       | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |      |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|----------------------------|-------------------|------|--------------|
|                                                                                                                                                          |        |                                  |                         |                 |                            | Depth (m)         | Ref  | Test Results |
| Dark brown TOPSOIL with rootlets.                                                                                                                        |        | (0.20)                           |                         |                 |                            |                   |      |              |
| Dark brown and black sandy clayey angular to subrounded fine to coarse coal, sandstone and mudstone GRAVEL. Sand is fine to coarse.                      |        | (0.20)                           | 26.95                   |                 |                            | 0.30              | 1 ES |              |
| Dark grey and black clayey angular to subangular fine to coarse mudstone GRAVEL with medium cobble content. Cobbles are subrounded to rounded sandstone. |        | 0.40                             | 26.75                   |                 |                            |                   |      |              |
|                                                                                                                                                          |        | (0.80)                           |                         |                 |                            | 0.80              | 2 ES |              |
| EOH at 1.20m - Scheduled depth                                                                                                                           |        | 1.20                             | 25.95                   |                 |                            |                   |      |              |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |



|                                      |                              |                            |                       |                          |                        |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------|--------------------------|------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant   |                          |                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425551.01</b>    | Northing: <b>558419.71</b> | From (m): 0.00 - 0.96 | Method: Inspection Pit   | Plant Used: Hand Tools | Checked: JMH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>25.06m AOD</b> | Final Depth: <b>0.96m</b>  | Logger:               | Grid System: <b>OSGB</b> |                        | Approved: PH           |
| Client: <b>SLIV</b>                  | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                       |                          |                        | Start Date: 11/04/2018 |
|                                      |                              |                            |                       |                          |                        | End Date: 11/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.96 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 0 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 0 | Large Bulk       | 0 |
| Disturbed                    | 0 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

**No Samples Taken**

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-19**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425551.01</b>    | Northing: <b>558419.71</b> | Inspection Pit      |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>25.06m AOD</b> | Final Depth: <b>0.96m</b>  | Hand Tools          |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger:                      | Grid System: <b>OSGB</b>   |                     |  | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 11/04/2018 |

| Strata Description                                                                                                                                                     | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                        |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| Dark brown TOPSOIL with roots and rootlets.                                                                                                                            |        | (0.10)                           | 24.96                   |                 |                         |                   |     |              |
| Dark brown and black sandy clayey angular to subrounded fine to coarse sandstone, mudstone and coal GRAVEL. Sand is fine to coarse.                                    |        | 0.10<br>(0.25)                   |                         |                 |                         |                   |     |              |
| Dark grey and black clayey angular to subangular fine to coarse predominantly mudstone GRAVEL with medium cobble content. Cobbles are subrounded to rounded sandstone. |        | 0.35<br>(0.61)                   | 24.71                   |                 |                         |                   |     |              |
| EOH at 0.96m - Refusal                                                                                                                                                 |        | 0.96                             | 24.10                   |                 |                         |                   |     |              |

|                        |                            |         |                                              |                                                                                                           |
|------------------------|----------------------------|---------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                                                                                            |
|                        | From (m)                   | Remarks |                                              |                                                                                                           |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div> m<br>Orientation: |



|                                      |                              |                            |                             |                                            |                         |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------------|--------------------------------------------|-------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant         |                                            |                         | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425550.16</b>    | Northing: <b>558420.25</b> | From (m)                    | Method                                     | Plant Used              | Checked: JMH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>25.30m AOD</b> | Final Depth: <b>1.20m</b>  | 0.00 - 1.20<br>1.20 - 12.64 | Inspection Pit<br>Static Cone Penetrometer | Hand Tools<br>Yanmar 9T | Approved: PH           |
| Client: <b>SLIV</b>                  | Logger: <b>JG</b>            | Grid System: <b>OSGB</b>   |                             |                                            |                         | Start Date: 11/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                             |                                            |                         | End Date: 11/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 0 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 0 | Large Bulk       | 0 |
| Disturbed                    | 0 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

**No Samples Taken**

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-19A**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                          |  |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425550.16</b>    | Northing: <b>558420.25</b> | Static Cone Penetrometer |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>25.30m AOD</b> | Final Depth: <b>1.20m</b>  | Yanmar 9T                |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger: <b>JG</b>            | Grid System: <b>OSGB</b>   |                          |  | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |  | Finish Date: 11/04/2018 |

| Strata Description                                                                                                                                                     | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                        |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| Dark brown TOPSOIL with roots and rootlets.                                                                                                                            |        | (0.10)<br>0.10                   | 25.20                   |                 |                         |                   |     |              |
| Dark brown and black sandy clayey angular to subrounded fine to coarse sandstone, mudstone and coal GRAVEL. Sand is fine to coarse.                                    |        | (0.30)<br>0.40                   | 24.90                   |                 |                         |                   |     |              |
| Dark grey and black clayey angular to subangular fine to coarse predominantly mudstone GRAVEL with medium cobble content. Cobbles are subrounded to rounded sandstone. |        | (0.80)<br>1.20                   | 24.10                   |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                         |        |                                  |                         |                 |                         |                   |     |              |

|                        |                            |         |                                              |                                 |
|------------------------|----------------------------|---------|----------------------------------------------|---------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                  |
|                        | From (m)                   | Remarks |                                              |                                 |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | m<br><br>m<br>Orientation:<br>° |







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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-20**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                          |  |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425583.53</b>    | Northing: <b>558374.22</b> | Static Cone Penetrometer |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>24.52m AOD</b> | Final Depth: <b>1.20m</b>  | Yanmar 9T                |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger: <b>JG</b>            | Grid System: <b>OSGB</b>   |                          |  | Start Date: 10/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |  | Finish Date: 10/04/2018 |

| Strata Description                                                                                                                                                                                                   | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                                                      |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| TOPSOIL with rootlets.                                                                                                                                                                                               |        | (0.20)                           |                         |                 |                         |                   |     |              |
| Dark brown and black sandy angular to subangular fine to coarse sandstone, coal and mudstone GRAVEL with medium cobble content. Cobbles are subangular to subrounded sandstone and mudstone. Sand is fine to coarse. |        | 0.20                             | 24.32                   |                 |                         |                   |     |              |
| Dark orangish brown angular to subangular fine to coarse sandstone GRAVEL with low cobble content. Cobbles are angular subangular sandstone.                                                                         |        | (0.30)                           |                         |                 |                         |                   |     |              |
|                                                                                                                                                                                                                      |        | 0.50                             | 24.02                   |                 |                         |                   |     |              |
|                                                                                                                                                                                                                      |        | (0.70)                           |                         |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                       |        | 1.20                             | 23.32                   |                 |                         |                   |     |              |

|                        |                            |         |                                              |                                                                                                                |
|------------------------|----------------------------|---------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                                                                                                 |
|                        | From (m)                   | Remarks |                                              |                                                                                                                |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | <div style="border: 1px solid black; width: 50px; height: 20px; margin: 0 auto;"></div> m<br>m<br>Orientation: |



|                                      |                             |                            |                     |                          |            |                        |
|--------------------------------------|-----------------------------|----------------------------|---------------------|--------------------------|------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant |                          |            | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425584.27</b>   | Northing: <b>558374.90</b> | From (m)            | Method                   | Plant Used | Checked: JMH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>24.52mAOD</b> | Final Depth: <b>1.20m</b>  | 0.00 - 1.20         | Inspection Pit           | Hand Tools | Approved: PH           |
| Client: <b>SLIV</b>                  | Logger: <b>JG</b>           | Grid System: <b>OSGB</b>   | 1.20 - 20.55        | Static Cone Penetrometer | Yanmar 9T  | Start Date: 10/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                     |                          |            | End Date: 10/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Trial Pit**  
Sheet 1 of 1

Exploratory Hole Number  
**CPT17-20A**  
**FINAL**



|                                |                                                        |                                                      |                          |                         |                        |
|--------------------------------|--------------------------------------------------------|------------------------------------------------------|--------------------------|-------------------------|------------------------|
| Project No: <b>3043</b>        | Location Details                                       |                                                      | Methodology & Plant      |                         | Scale: 1:30            |
|                                | Name: <b>A1 Birtley to Coalhouse</b>                   | Easting: <b>425584.27</b> Northing: <b>558374.90</b> | Static Cone Penetrometer |                         | Checked By: JMH        |
| Location: <b>Tyne and Wear</b> | Elevation: <b>24.52m AOD</b> Final Depth: <b>1.20m</b> | Yanmar 9T                                            |                          | Approved By: PH         | Start Date: 10/04/2018 |
| Client: <b>SLV</b>             | Logger: <b>JG</b> Grid System: <b>OSGB</b>             |                                                      |                          | Finish Date: 10/04/2018 |                        |
|                                | Orientation: <b>N/A</b> Inclination: <b>90°</b>        |                                                      |                          |                         |                        |

| Strata Description                                                                                                                                                                                                   | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                                                      |        |                               |                      |                 |                         | Depth (m)         | Ref | Test Results |
| TOPSOIL with rootlets.                                                                                                                                                                                               |        | (0.15)                        |                      |                 |                         |                   |     |              |
| Dark brown and black sandy angular to subangular fine to coarse sandstone, coal and mudstone GRAVEL with medium cobble content. Cobbles are subangular to subrounded sandstone and mudstone. Sand is fine to coarse. |        | 0.15                          | 24.37                |                 |                         |                   |     |              |
| Dark orangish brown angular to subangular fine to coarse sandstone GRAVEL with low cobble content. Cobbles are angular subangular sandstone.                                                                         |        | (0.35)                        |                      |                 |                         |                   |     |              |
|                                                                                                                                                                                                                      |        | 0.50                          | 24.02                |                 |                         |                   |     |              |
|                                                                                                                                                                                                                      |        | (0.70)                        |                      |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                       |        | 1.20                          | 23.32                |                 |                         |                   |     |              |

|                        |                            |         |                                              |                                                                                                                |
|------------------------|----------------------------|---------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                                                                                                 |
|                        | From (m)                   | Remarks |                                              |                                                                                                                |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div> m<br>m<br>Orientation: |





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Log Type

Trial Pit

Sheet 1 of 1

Exploratory Hole Number

CPT17-21

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, Final Depth, Logger, Grid System, Orientation, Inclination), Methodology & Plant (Inspection Pit, Hand Tools), Scale: 1:30, Checked By: JMH, Approved By: PH, Start Date: 10/04/2018, Finish Date: 10/04/2018

Main data table with columns: Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (mAOD), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results). Includes descriptions of soil layers and scheduled depth EOH at 1.20m.

Summary table with columns: Observations / Remarks, Breaking Out / Hard Strata (From (m), Remarks), Stability & Backfill (Shoring, Stability, Backfill), Pit Dimensions (0.40m, Orientation)





# CENTRAL ALLIANCE

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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-21A**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                          |  |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425612.65</b>    | Northing: <b>558368.54</b> | Static Cone Penetrometer |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>27.58m AOD</b> | Final Depth: <b>1.20m</b>  | Yanmar 9T                |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger: <b>JG</b>            | Grid System: <b>OSGB</b>   |                          |  | Start Date: 10/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |  | Finish Date: 10/04/2018 |

| Strata Description                                                                                                                                                                                                                                                         | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                                                                                                            |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| TOPSOIL with rootlets.                                                                                                                                                                                                                                                     |        | (0.10)                           | 27.48                   |                 |                         |                   |     |              |
| Dark brown and black sandy angular to subrounded fine to coarse sandstone, coal and mudstone GRAVEL with medium cobble content. Cobbles are subangular to subrounded sandstone and mudstone. Sand is fine to coarse.                                                       |        | 0.10                             |                         |                 |                         |                   |     |              |
| Dark orangish brown angular to subangular fine to coarse sandstone GRAVEL with high cobble content. Cobbles are angular to subangular sandstone.                                                                                                                           |        | (0.40)                           | 27.08                   |                 |                         |                   |     |              |
|                                                                                                                                                                                                                                                                            |        | 0.50                             |                         |                 |                         |                   |     |              |
| Dark brown and grey sandy angular to subrounded fine to coarse sandstone, mudstone and coal GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are subangular to subrounded mudstone and sandstone. Boulders are rounded mudstone. |        | (0.20)                           | 26.88                   |                 |                         |                   |     |              |
|                                                                                                                                                                                                                                                                            |        | 0.70                             |                         |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                                                             |        | (0.50)                           | 26.38                   |                 |                         |                   |     |              |
|                                                                                                                                                                                                                                                                            |        | 1.20                             |                         |                 |                         |                   |     |              |

|                        |                            |         |                                              |                                                                                                           |
|------------------------|----------------------------|---------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                                                                                            |
|                        | From (m)                   | Remarks |                                              |                                                                                                           |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | <div style="border: 1px solid black; width: 50px; height: 30px; margin: 0 auto;"></div> m<br>Orientation: |







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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-22**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                          |  |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425555.19</b>    | Northing: <b>558386.84</b> | Static Cone Penetrometer |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>21.93m AOD</b> | Final Depth: <b>1.20m</b>  | Yanmar 9T                |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger:                      | Grid System: <b>OSGB</b>   |                          |  | Start Date: 12/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |  | Finish Date: 12/04/2018 |

| Strata Description                                                                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                                                                     |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| TOPSOIL with roots.                                                                                                                                                                                                                 |        | (0.10)                           | 21.83                   |                 |                         |                   |     |              |
| Dark brown and black sandy angular to subrounded fine to coarse sandstone, coal and mudstone GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded sandstone and mudstone.                   |        | 0.10<br>(0.20)                   | 21.63                   |                 |                         |                   |     |              |
| Dark brown and grey slightly clayey sandy angular to subangular fine to coarse coal, sandstone and mudstone GRAVEL with medium cobble content. Cobbles are subangular to subrounded sandstone and mudstone. Sand is fine to coarse. |        | 0.30<br><br>(0.90)               |                         |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                      |        | 1.20                             | 20.73                   |                 |                         |                   |     |              |

|                        |                            |         |                                              |                                 |
|------------------------|----------------------------|---------|----------------------------------------------|---------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                  |
|                        | From (m)                   | Remarks |                                              |                                 |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | m<br><br>m<br>Orientation:<br>° |





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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-22A**

**FINAL**



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                          |  |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425555.78</b>    | Northing: <b>558386.03</b> | Static Cone Penetrometer |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>24.30m AOD</b> | Final Depth: <b>1.20m</b>  | Yanmar 9T                |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger:                      | Grid System: <b>OSGB</b>   |                          |  | Start Date: 12/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |  | Finish Date: 12/04/2018 |

| Strata Description                                                                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                                                                     |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| TOPSOIL with roots.                                                                                                                                                                                                                 |        | (0.15)                           |                         |                 |                         |                   |     |              |
| Dark brown and black sandy angular to subrounded fine to coarse sandstone, coal and mudstone GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded sandstone and mudstone.                   |        | 0.15<br>(0.15)<br>0.30           | 24.15<br>24.00          |                 |                         |                   |     |              |
| Dark brown and grey slightly clayey sandy angular to subangular fine to coarse coal, sandstone and mudstone GRAVEL with medium cobble content. Cobbles are subangular to subrounded sandstone and mudstone. Sand is fine to coarse. |        | (0.90)                           |                         |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                      |        | 1.20                             | 23.10                   |                 |                         |                   |     |              |

|                        |                            |         |                                              |                                 |
|------------------------|----------------------------|---------|----------------------------------------------|---------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                  |
|                        | From (m)                   | Remarks |                                              |                                 |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | m<br><br>m<br>Orientation:<br>° |



|                                      |                             |                            |                                        |                                                      |                                       |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|------------------------------------------------------|---------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                      |                                       | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425644.84</b>   | Northing: <b>558345.50</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.99 | Method<br>Inspection Pit<br>Static Cone Penetrometer | Plant Used<br>Hand Tools<br>Yanmar 9T | Checked: JMH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.26mAOD</b> | Final Depth: <b>1.20m</b>  |                                        |                                                      |                                       | Approved: PH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                      |                                       | Start Date: 11/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>N/A</b>    |                                        |                                                      |                                       | End Date: 11/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 1.00                | -          | -          | 20         | 1.00        |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



# CENTRAL ALLIANCE

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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-23**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425644.84</b>    | Northing: <b>558345.50</b> | Inspection Pit      |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.26m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 11/04/2018 |

| Strata Description                                                                                                                                                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|--------------|
|                                                                                                                                                                                                                                                                                               |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results |
| TOPSOIL with rootlets.                                                                                                                                                                                                                                                                        |        | (0.30)                           |                         |                 |                         | 0.30              | 1 ES |              |
| Dark brown and grey sandy slightly clayey angular to subangular fine to coarse coal, sandstone and mudstone GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are subangular to subrounded mudstone and sandstone. Boulders are subrounded mudstone. |        | (0.90)                           | 27.96                   |                 |                         | 0.80              | 2 ES |              |
| At 1.00m, groundwater encountered.                                                                                                                                                                                                                                                            |        |                                  |                         | 1.00<br>1.00    |                         |                   |      |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                                                                                |        | 1.20                             | 27.06                   |                 |                         |                   |      |              |

|                                                        |                            |         |                                                          |                                |
|--------------------------------------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks<br>Groundwater strike at 1.00m. | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                                                        | From (m)                   | Remarks |                                                          |                                |
|                                                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |





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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-23A**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                          |  |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425643.89</b>    | Northing: <b>558345.19</b> | Static Cone Penetrometer |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.29m AOD</b> | Final Depth: <b>1.20m</b>  | Yanmar 9T                |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger:                      | Grid System: <b>OSGB</b>   |                          |  | Start Date: 12/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |  | Finish Date: 12/04/2018 |

| Strata Description                                                                                                                                                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |     |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                                                                                                                               |        |                                  |                         |                 |                         | Depth (m)         | Ref | Test Results |
| TOPSOIL with rootlets.                                                                                                                                                                                                                                                                        |        | (0.30)                           |                         |                 |                         |                   |     |              |
| Dark brown and grey sandy slightly clayey angular to subangular fine to coarse coal, sandstone and mudstone GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are subangular to subrounded mudstone and sandstone. Boulders are subrounded mudstone. |        | (0.90)                           | 27.99                   |                 |                         |                   |     |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                                                                                |        | 1.20                             | 27.09                   |                 |                         |                   |     |              |

|                        |                            |         |                                              |                                 |
|------------------------|----------------------------|---------|----------------------------------------------|---------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                  |
|                        | From (m)                   | Remarks |                                              |                                 |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | m<br><br>m<br>Orientation:<br>° |



|                                      |                              |                            |                                        |                                                      |                                       |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|------------------------------------------------------|---------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                      |                                       | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425667.73</b>    | Northing: <b>558326.98</b> | From (m)<br>0.00 - 1.20<br>1.20 - 7.17 | Method<br>Inspection Pit<br>Static Cone Penetrometer | Plant Used<br>Hand Tools<br>Yanmar 9T | Checked: JMH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.46m AOD</b> | Final Depth: <b>1.20m</b>  |                                        |                                                      |                                       | Approved: PH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                                        |                                                      |                                       | Start Date: 11/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                                        |                                                      |                                       | End Date: 11/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
| 1.00                | -          | -          | 20         | 1.00        |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





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Log Type

**Trial Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-24**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425667.73</b>    | Northing: <b>558326.98</b> | Inspection Pit      |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.46m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 11/04/2018 |

| Strata Description                                                                                                                                                                                                                   | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |      |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|------|--------------|
|                                                                                                                                                                                                                                      |        |                                  |                         |                 |                         | Depth (m)         | Ref  | Test Results |
| TOPSOIL with rootlets.                                                                                                                                                                                                               |        | (0.40)                           |                         |                 |                         | 0.30              | 1 ES |              |
| Dark brown and grey gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse coal, sandstone and mudstone. Sand is fine to coarse.                                                                                        |        | 0.40                             | 28.06                   |                 |                         |                   |      |              |
|                                                                                                                                                                                                                                      |        | (0.30)                           |                         |                 |                         |                   |      |              |
| Dark brown and black sandy slightly clayey angular to subangular fine to coarse sandstone, coal and mudstone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded mudstone and sandstone. |        | 0.70                             | 27.76                   |                 |                         | 0.80              | 2 ES |              |
|                                                                                                                                                                                                                                      |        | (0.50)                           |                         |                 |                         |                   |      |              |
| EOH at 1.20m - Scheduled depth                                                                                                                                                                                                       |        | 1.20                             | 27.26                   | 1.00<br>1.00    |                         |                   |      |              |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |



|                                      |                              |                            |                         |                          |                          |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425667.03</b>    | Northing: <b>558327.70</b> | From (m)<br>0.00 - 0.89 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: JMH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.54m AOD</b> | Final Depth: <b>0.89m</b>  | Logger:                 | Grid System: <b>OSGB</b> |                          | Approved: PH           |
| Client: <b>SLIV</b>                  | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                         |                          |                          | Start Date: 11/04/2018 |
|                                      |                              |                            |                         |                          |                          | End Date: 11/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.89 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 0 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-24A**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425667.03</b>    | Northing: <b>558327.70</b> | Inspection Pit      |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>28.54m AOD</b> | Final Depth: <b>0.89m</b>  | Hand Tools          |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger:                      | Grid System: <b>OSGB</b>   |                     |  | Start Date: 11/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 11/04/2018 |

| Strata Description                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |     |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|----------------------------|-------------------|-----|--------------|
|                                                                                                                                               |        |                                  |                         |                 |                            | Depth (m)         | Ref | Test Results |
| TOPSOIL with rootlets.                                                                                                                        |        | (0.40)                           |                         |                 |                            |                   |     |              |
| Dark brown and grey gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse coal, sandstone and mudstone. Sand is fine to coarse. |        | 0.40                             | 28.14                   |                 |                            |                   |     |              |
|                                                                                                                                               |        | (0.49)                           |                         |                 |                            |                   |     |              |
| EOH at 0.89m - Refusal                                                                                                                        |        | 0.89                             | 27.65                   |                 |                            |                   |     |              |

|                        |                            |         |                                              |                                                                                                                |
|------------------------|----------------------------|---------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                         | Pit Dimensions                                                                                                 |
|                        | From (m)                   | Remarks |                                              |                                                                                                                |
|                        |                            |         | Shoring:<br>Stability:<br>Backfill: Arisings | <div style="border: 1px solid black; width: 50px; height: 20px; margin: 0 auto;"></div> m<br>m<br>Orientation: |





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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**CPT17-25**

FINAL



CENTRAL ALLIANCE  
GEO

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425698.64</b>    | Northing: <b>558296.56</b> | Inspection Pit      |  | Checked By: JMH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>27.38m AOD</b> | Final Depth: <b>1.20m</b>  | Hand Tools          |  | Approved By: PH         |
| Client: <b>SLV</b>                   | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                     |  | Start Date: 12/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |  | Finish Date: 12/04/2018 |

| Strata Description                                                                                                                                                                                                                                                                         | Legend | Depth (m)<br>(Stratum<br>Thickness) | Reduced Level<br>(mAOD) | Water<br>Level (m) | Installation /<br>Backfill | Samples & Testing |      |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------|-------------------------|--------------------|----------------------------|-------------------|------|--------------|
|                                                                                                                                                                                                                                                                                            |        |                                     |                         |                    |                            | Depth (m)         | Ref  | Test Results |
| TOPSOIL with rootlets.                                                                                                                                                                                                                                                                     |        | (0.40)                              |                         |                    |                            |                   |      |              |
| Hand excavated inspection pit.                                                                                                                                                                                                                                                             |        | 0.40                                | 26.98                   |                    |                            | 0.30              | 1 ES |              |
|                                                                                                                                                                                                                                                                                            |        | (1.20)                              |                         |                    |                            |                   |      |              |
|                                                                                                                                                                                                                                                                                            |        | (0.80)                              |                         |                    |                            | 0.80              | 2 ES |              |
| Dark brown and grey slightly sandy clayey angular to rounded fine to coarse coal, sandstone and mudstone with medium cobble content and low boulder content. Cobbles are subangular to subrounded mudstone. Boulders are rounded mudstone and sandstone.<br>EOH at 1.20m - Scheduled depth |        | 1.20                                | 26.18                   |                    |                            |                   |      |              |
|                                                                                                                                                                                                                                                                                            |        | 1.20                                | 26.18                   |                    |                            |                   |      |              |

|                        |                            |         |                                                          |                                |
|------------------------|----------------------------|---------|----------------------------------------------------------|--------------------------------|
| Observations / Remarks | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                 |
|                        | From (m)                   | Remarks |                                                          |                                |
|                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation:<br>° |



CENTRAL ALLIANCE

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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**TH01**

**FINAL**



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425536.16</b>    | Northing: <b>558409.76</b> | Trial Pit           |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.73m AOD</b> | Final Depth: <b>0.60m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>ALB</b>           | Grid System: <b>OSGB</b>   |                     |  | Start Date: 21/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 21/02/2018 |

| Strata Description                                                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |     |              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|----------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                                                     |        |                                  |                         |                 |                            | Depth (m)         | Ref | Test Results |
| MADE GROUND: Dark brown and grey slightly gravelly slightly sandy CLAY with roots. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and brick.                                                 |        | (0.30)                           |                         |                 |                            |                   |     |              |
| MADE GROUND: Light brown and orange sandy silty angular to subangular fine to coarse sandstone limestone and siltstone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular sandstone. |        | 0.30<br>(0.30)                   | 20.43                   | 0.30<br>0.30    |                            |                   |     |              |
| EOH at 0.60m - Abandoned due to water ingress                                                                                                                                                                       |        | 0.60                             | 20.13                   |                 |                            |                   |     |              |

|                                                                                                                             |                            |         |                                                          |                              |
|-----------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|----------------------------------------------------------|------------------------------|
| Observations / Remarks<br>Water strike at 0.30m. Hole abandoned at 0.60m due to water ingress not allowing safe excavation. | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions               |
|                                                                                                                             | From (m)                   | Remarks |                                                          |                              |
|                                                                                                                             |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation: 0° |



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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**TH02**

**FINAL**



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                     |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425544.66</b>    | Northing: <b>558408.35</b> | Trial Pit           |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.24m AOD</b> | Final Depth: <b>0.65m</b>  | Hand Tools          |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>ALB</b>           | Grid System: <b>OSGB</b>   |                     |  | Start Date: 21/02/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>N/A</b>    |                     |  | Finish Date: 21/02/2018 |

| Strata Description                                                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |     |              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|----------------------------|-------------------|-----|--------------|
|                                                                                                                                                                                                                     |        |                                  |                         |                 |                            | Depth (m)         | Ref | Test Results |
| MADE GROUND: Dark brown and grey slightly gravelly slightly sandy CLAY with roots. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and brick.                                                 |        | (0.40)                           |                         |                 |                            |                   |     |              |
| MADE GROUND: Light brown and orange sandy silty angular to subangular fine to coarse sandstone limestone and siltstone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular sandstone. |        | 0.40<br>(0.25)                   | 21.84                   | 0.40<br>0.40    |                            |                   |     |              |
| EOH at 0.65m - Abandoned due to water ingress                                                                                                                                                                       |        | 0.65                             | 21.59                   |                 |                            |                   |     |              |

|                                                                                                                             |                            |         |                                                          |                              |
|-----------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|----------------------------------------------------------|------------------------------|
| Observations / Remarks<br>Water strike at 0.40m. Hole abandoned at 0.60m due to water ingress not allowing safe excavation. | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions               |
|                                                                                                                             | From (m)                   | Remarks |                                                          |                              |
|                                                                                                                             |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 0.40m<br><br>Orientation: 0° |



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Log Type

Trial Pit

Sheet 1 of 1

Exploratory Hole Number

TP17-01

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, etc.), Methodology & Plant (Trial Pit, Wheeled Backhoe Excavator), Scale: 1:30, Checked By: RPH, Approved By: BH, Start Date: 19/02/2018, Finish Date: 19/02/2018

Main log table with columns: Strata Description, Legend, Depth (m), Reduced Level (mAOD), Water Level (m), Installation / Backfill, Samples & Testing (Depth, Ref, Test Results). Includes strata descriptions like 'MADE GROUND: Firm dark brown and black gravelly CLAY' and 'Firm to stiff light orangish brown mottled grey CLAY'.

Observations / Remarks: Hand dug inspection pit undertaken to 1.20m prior to excavation. Breaking Out / Hard Strata: From (m), Remarks. Stability & Backfill: Shoring: None, Stability: Stable, Backfill: Arisings. Pit Dimensions: 2.50m x 1.20m, Orientation: 94°





CENTRAL ALLIANCE

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Log Type

Trial Pit

Sheet 1 of 1

Exploratory Hole Number

TP17-02

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, Final Depth, Logger, Grid System, Orientation, Inclination), Methodology & Plant (Trial Pit, Wheeled Backhoe Excavator), Scale: 1:30, Checked By: RPH, Approved By: BH, Start Date: 06/02/2018, Finish Date: 19/02/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m), Reduced Level (mAOD), Water Level (m), Installation / Backfill, Samples & Testing (Depth, Ref, Test Results). Includes soil descriptions like 'MADE GROUND: TOPSOIL' and 'Blueish grey laminated slightly silty CLAY'.

Summary table with columns: Observations / Remarks, Breaking Out / Hard Strata, Stability & Backfill, Pit Dimensions. Includes notes on hand dug inspection and pit stability.



CENTRAL ALLIANCE

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Log Type

Trial Pit

Sheet 1 of 1

Exploratory Hole Number

TP17-03

FINAL



CENTRAL ALLIANCE GEO

Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, etc.), Methodology & Plant (Trial Pit, Wheeled Backhoe Excavator), Scale: 1:30, Checked By: RPH, Approved By: BH, Start Date: 20/02/2018, Finish Date: 20/02/2018

Main data table with columns: Strata Description, Legend, Depth (m), Reduced Level (mAOD), Water Level (m), Installation/Backfill, Samples & Testing (Depth, Ref, Test Results). Includes soil descriptions like 'MADE GROUND: Firm dark brown and grey and orangish brown slightly gravelly sandy CLAY' and test results like 'HV 1.00m, (p)=117 kPa (r)=35 kPa'.

Observations / Remarks: Multiple hand pit locations were attempted prior to the trial pit being carried out but obstructions were encountered at shallow depth. Includes Pit Dimensions: 3.00m x 1.30m, Orientation: 96°.



# CENTRAL ALLIANCE

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Log Type

**Trial  
Pit**

Sheet 1 of 1

Exploratory Hole Number

**TP17-04**

**FINAL**



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                           |  |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------------|--|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant       |  | Scale: 1:30             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425304.09</b>    | Northing: <b>558444.33</b> | Trial Pit                 |  | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.71m AOD</b> | Final Depth: <b>2.00m</b>  | Wheeled Backhoe Excavator |  | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                           |  | Start Date: 19/02/2018  |
|                                      | Orientation: <b>1°</b>       | Inclination: <b>N/A</b>    |                           |  | Finish Date: 19/02/2018 |

| Strata Description                                                                                                                                                               | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Water Level (m) | Installation / Backfill | Samples & Testing |       |                                 |                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-----------------|-------------------------|-------------------|-------|---------------------------------|--------------------------------------------------------|
|                                                                                                                                                                                  |        |                                  |                         |                 |                         | Depth (m)         | Ref   | Test Results                    |                                                        |
| MADE GROUND: Grass over dark brown and black gravelly CLAY. Gravel is angular to subrounded fine to coarse sandstone coal and pottery.                                           |        | (0.50)                           | 15.21                   |                 |                         | 0.00 - 0.50       | 1 B   | PID 0.30m = 14.7ppm             |                                                        |
|                                                                                                                                                                                  |        | 0.50                             |                         |                 |                         | 0.30              | 2 ES  |                                 |                                                        |
|                                                                                                                                                                                  |        |                                  |                         |                 |                         | 0.50 - 1.00       | 3 B   |                                 |                                                        |
|                                                                                                                                                                                  |        |                                  |                         |                 |                         | 0.60              | 4 ES  |                                 | HV 0.60m, (p)=87 kPa (r)=23 kPa<br>PID 0.60m = 13.9ppm |
|                                                                                                                                                                                  |        |                                  |                         |                 |                         | 0.80              | 5 D   |                                 |                                                        |
| MADE GROUND: Firm dark brown slightly gravelly CLAY. Gravel is angular to subangular fine sandstone.                                                                             |        | (1.25)                           | 13.96                   |                 |                         | 1.00 - 1.50       | 6 B   | HV 1.00m, (p)=89 kPa (r)=23 kPa |                                                        |
|                                                                                                                                                                                  |        |                                  |                         |                 |                         | 1.40              | 7 D   | HV 1.50m, (p)=81 kPa (r)=21 kPa |                                                        |
| MADE GROUND: Light yellowish brown sandy silty angular to subangular fine to coarse limestone GRAVEL. Sand is fine to coarse.<br><i>From 1.75m to 2.00m strong diesel odour.</i> |        | (0.25)                           | 13.71                   |                 |                         | 1.60              | 8 ES  | PID 1.60m = 13.4ppm             |                                                        |
|                                                                                                                                                                                  |        |                                  |                         |                 |                         | 1.75 - 2.00       | 9 B   | PID 1.90m = 15.0ppm             |                                                        |
| EOH at 2.00m - Abandoned upon discovery of service marker tape                                                                                                                   |        | 2.00                             |                         |                 |                         | 1.90              | 10 ES |                                 |                                                        |

|                                                                                                                                                                                                                                        |                            |         |                                                          |                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|----------------------------------------------------------|------------------------------------------|
| Observations / Remarks<br>Hand dug inspection pit undertaken to 1.20m prior to excavation.<br>Trial pit was extended as TP4A and TP4B to avoid trace of apparent buried service: the ground conditions in 4A/B were the same as in 04. | Breaking Out / Hard Strata |         | Stability & Backfill                                     | Pit Dimensions                           |
|                                                                                                                                                                                                                                        | From (m)                   | Remarks |                                                          |                                          |
|                                                                                                                                                                                                                                        |                            |         | Shoring: None<br>Stability: Stable<br>Backfill: Arisings | 3.40m<br><br>2.50m<br>Orientation:<br>1° |



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425348.79</b>   | Northing: <b>558487.04</b> | From (m)<br>0.00 - 1.20<br>1.20 - 5.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.91mAOD</b> | Final Depth: <b>5.45m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 20/12/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 20/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
| 2.50                | -          | 2.00       | 20         | 2.30        |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 5.45 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 3 | Large Bulk       | 0 |
| Disturbed                  | 8 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                   |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result   | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 2             | 9          | 450                    | 9 | N=9 (1,1/2,1,3,3) | MOD 01     |
| Split Spoon                       | 2.00      | 2.00       | -         | 1             | 5          | 450                    | 5 | N=5 (1,0/1,1,2,1) | MOD 01     |
| Split Spoon                       | 3.00      | 2.00       | -         | 0             | 0          | 450                    | 0 | N=0 (0,0/0,0,0)   | MOD 01     |
| Split Spoon                       | 4.00      | 2.00       | -         | 0             | 3          | 450                    | 3 | N=3 (0,0/0,1,1)   | MOD 01     |
| Split Spoon                       | 5.00      | 2.00       | -         | 2             | 4          | 450                    | 4 | N=4 (1,1/1,1,1)   | MOD 01     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 2 |
| Hand Vane*                 | 3 |
| Standard Penetration Tests | 5 |

(NR) Indicates sample undertaken but with 0% Recovery

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 75         | 141 Blows |
| 2.00 - 3.00                         | 86        | 80         | 30 Blows  |
| 3.00 - 4.00                         | 86        | 50         | 19 Blows  |
| 4.00 - 5.00                         | 86        | 70         | 12 Blows  |



|                                      |                             |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425348.79</b>   | Northing: <b>558487.04</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 5.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.91mAOD</b> | Final Depth: <b>5.45m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>JH</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 20/12/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 20/12/2017 |

| Strata Description                                                                                                                                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |      |                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-------------------|------|---------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                               |        |                                  |                         |                               |                 |                         | Depth (m)         | Ref  | Test Results                                                        |
| MADE GROUND: Light yellow silty subangular to subrounded fine to coarse limestone GRAVEL.                                                                                                                                                                                     |        | (0.10)                           | 16.81                   |                               |                 |                         | 0.10              | 1 D  | PID 0.30m = 0.3ppm                                                  |
| MADE GROUND: Firm dark greyish brown sandy very gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse sandstone, mudstone, coal and glass. Cobbles are angular to subangular mudstone.<br><i>At 0.10m geotextile.</i> |        | 0.10                             |                         |                               |                 |                         | 2 ES              |      |                                                                     |
| Firm dark brown mottled dark grey slightly gravelly silty CLAY. Gravel is subrounded to rounded fine to medium coal and mudstone.                                                                                                                                             |        | (1.70)                           | 15.11                   | 116<br>2.00                   | 2.30<br>2.50    |                         | 0.50 - 1.20       | 3 B  | PID 0.80m = 0.2ppm                                                  |
|                                                                                                                                                                                                                                                                               |        | 0.60                             |                         |                               |                 |                         | 4 D               |      |                                                                     |
|                                                                                                                                                                                                                                                                               |        | 0.80                             |                         |                               |                 |                         | 5 ES              |      |                                                                     |
|                                                                                                                                                                                                                                                                               |        | 1.00                             |                         |                               |                 |                         | 6 D               |      |                                                                     |
| At 2.95m and 3.25m sand band. Sand is fine to coarse.<br>Soft to firm dark grey silty CLAY.                                                                                                                                                                                   |        | 1.80                             | 13.91                   |                               |                 |                         | 1.20 - 1.65       | 7 D  | SPT(S) 1.20m, N=9 (1,1/2,1,3,3)<br>HV 1.20m, (p)=104 kPa (r)=24 kPa |
|                                                                                                                                                                                                                                                                               |        | 1.20 - 2.00                      |                         |                               |                 |                         | 8 B               |      |                                                                     |
|                                                                                                                                                                                                                                                                               |        | (1.20)                           | 11.46                   |                               |                 |                         | 2.00 - 2.45       | 10 D | SPT(S) 2.00m, N=5 (1,0/1,1,2,1)<br>HV 2.00m, (p)=60 kPa (r)= kPa    |
|                                                                                                                                                                                                                                                                               |        | 2.00 - 3.00                      |                         |                               |                 |                         | 11 B              |      |                                                                     |
|                                                                                                                                                                                                                                                                               |        | 2.90                             |                         |                               |                 |                         | 12 D              |      |                                                                     |
|                                                                                                                                                                                                                                                                               |        | 3.00                             |                         |                               |                 |                         | 3.00 - 3.45       | 13 D | SPT(S) 3.00m, N=0 (0,0/0,0,0,0)<br>HV 3.00m, (p)=48 kPa (r)=20 kPa  |
|                                                                                                                                                                                                                                                                               |        |                                  |                         |                               |                 |                         |                   |      |                                                                     |
|                                                                                                                                                                                                                                                                               |        | (2.45)                           |                         |                               |                 |                         |                   |      | SPT(S) 4.00m, N=3 (0,0/0,1,1,1)                                     |
|                                                                                                                                                                                                                                                                               |        |                                  |                         |                               |                 |                         |                   |      |                                                                     |
|                                                                                                                                                                                                                                                                               |        |                                  |                         |                               |                 |                         |                   |      | SPT(S) 5.00m, N=4 (1,1/1,1,1,1)                                     |
|                                                                                                                                                                                                                                                                               |        |                                  |                         |                               |                 |                         |                   |      |                                                                     |
| EOH at 5.45m - Scheduled Depth                                                                                                                                                                                                                                                |        | 5.45                             |                         |                               |                 |                         |                   |      |                                                                     |

|                        |       |                               |           |                       |        |           |              |                     |                    |            |              |            |         |
|------------------------|-------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------------|--------------------|------------|--------------|------------|---------|
| Observations / Remarks | Misc. | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations       |                    |            |              |            |         |
|                        |       | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks             | Instrument Details |            | Resp. Zone   | Depth (m)  | Diam    |
|                        |       | 0.00 - 5.45                   | Bentonite | 1.20                  | 2.00   | 101       | 75           | 141 Blows           |                    |            |              |            |         |
|                        |       |                               |           | 2.00                  | 3.00   | 86        | 80           | 30 Blows            |                    |            |              |            |         |
|                        |       |                               | 3.00      | 4.00                  | 86     | 50        | 19 Blows     |                     |                    |            |              |            |         |
|                        |       |                               | 4.00      | 5.00                  | 86     | 70        | 12 Blows     |                     |                    |            |              |            |         |
|                        |       | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              | Groundwater Strikes |                    |            |              |            |         |
|                        |       | MOD 01 (67%)                  |           |                       |        |           |              | Strike (m)          | Casing (m)         | Sealed (m) | Rises To (m) | Time (min) | Remarks |
|                        |       |                               |           |                       |        |           |              | 2.50                |                    | 2.00       | 2.30         | 20         |         |

Groundwater Encountered  
Casing Used  
No Monitoring Points Installed



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425339.92</b>   | Northing: <b>558515.08</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.43 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>21.29mAOD</b> | Final Depth: <b>1.43m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 18/12/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 18/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.43 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 3 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                                |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|--------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result                | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 25            | 50         | 225                    |   | 50 (25 for 125mm/50 for 100mm) | MOD 01     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 2 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 1 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.30                         | 101       | 100        | Refusal |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-02**  
FINAL



|                                      |                              |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425339.92</b>    | Northing: <b>558515.08</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 1.43 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>21.29m AOD</b> | Final Depth: <b>1.43m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>JH</b>         | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 18/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 18/12/2017 |

| Strata Description                                                                                                                                                                                                                                       | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing   |             |                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|---------------------|-------------|----------------------------------------------|
|                                                                                                                                                                                                                                                          |        |                                  |                         |                               |                 |                            | Depth (m)           | Ref         | Test Results                                 |
| MADE GROUND: Dark brown and grey gravelly sandy CLAY with frequent rootlets and low cobble content. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse mudstone, clinker and sandstone. Cobbles are subrounded to rounded sandstone. |        | (0.50)                           |                         |                               |                 |                            | 0.30<br>0.40        | 1 ES<br>2 D | PID 0.30m = 0.4ppm                           |
| Dark grey sandy silty subangular to subrounded fine to coarse sandstone GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular to subrounded fine to coarse sandstone.                                                           |        | 0.50<br>(0.20)<br>0.70           | 20.79<br>20.59          |                               |                 |                            | 0.80<br>0.80 - 1.20 | 3 ES<br>4 B | PID 0.80m = 0.5ppm                           |
| Dark grey slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse mudstone, siltstone and sandstone.                                                                                                     |        | (0.73)                           |                         |                               |                 |                            | 1.20 - 1.65<br>1.30 | 5 D<br>6 D  | SPT(S) 1.20m, 50 (25 for 125mm/50 for 100mm) |
| EOH at 1.43m - Refusal                                                                                                                                                                                                                                   |        | 1.43                             | 19.86                   |                               |                 |                            |                     |             |                                              |

|                        |                                                                                |                               |            |                       |              |                     |              |               |                    |  |            |           |      |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|------------|-----------------------|--------------|---------------------|--------------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |            | Dynamic Sampling Runs |              |                     |              | Installations |                    |  |            |           |      |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)                     | Material   | From (m)              | To (m)       | Diam (mm)           | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |                                                                                | 0.00 - 1.43                   | Bentonite  | 1.20                  | 1.30         | 101                 | 100          | Refusal       |                    |  |            |           |      |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) |            | MOD 01 (67%)          |              | Groundwater Strikes |              |               |                    |  |            |           |      |
|                        |                                                                                | Strike (m)                    | Casing (m) | Sealed (m)            | Rises To (m) | Time (min)          | Remarks      |               |                    |  |            |           |      |



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425340.17</b>   | Northing: <b>558516.09</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.40 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.17mAOD</b> | Final Depth: <b>1.40m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 18/12/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 18/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.40 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 3 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                               |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result               | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 25            | 50         | 200                    |   | 50 (25 for 105mm/50 for 95mm) | MOD 01     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 1 |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.30                         | 101       | 100        | Refusal |





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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-02a**  
**FINAL**



|                                      |                              |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425340.17</b>    | Northing: <b>558516.09</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 1.40 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.17m AOD</b> | Final Depth: <b>1.40m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>JH</b>         | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 18/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 18/12/2017 |

| Strata Description                                                                                                                                                                   | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |     |                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|-----|---------------------------------------------|
|                                                                                                                                                                                      |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref | Test Results                                |
| MADE GROUND: Dark brown and grey gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse mudstone, clinker and sandstone. |        | (0.50)                           |                         |                               |                 |                            | 0.30              | 1 D |                                             |
| MADE GROUND: Dark grey slightly gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse siltstone. Sand is fine to coarse.                                            |        | 0.50                             | 21.67                   |                               |                 |                            | 0.90              | 2 D |                                             |
|                                                                                                                                                                                      |        | (0.90)                           |                         |                               |                 |                            | 1.20 - 1.65       | 3 D | SPT(S) 1.20m, 50 (25 for 105mm/50 for 95mm) |
| EOH at 1.40m - Refusal                                                                                                                                                               |        | 1.40                             | 20.77                   |                               |                 |                            |                   |     |                                             |

|                        |       |                               |            |                       |              |                     |              |               |                    |  |            |           |      |
|------------------------|-------|-------------------------------|------------|-----------------------|--------------|---------------------|--------------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc. | Backfill                      |            | Dynamic Sampling Runs |              |                     |              | Installations |                    |  |            |           |      |
|                        |       | Depth (m)                     | Material   | From (m)              | To (m)       | Diam (mm)           | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |       | 0.00 - 1.40                   | Bentonite  | 1.20                  | 1.30         | 101                 | 100          | Refusal       |                    |  |            |           |      |
|                        |       | Hammer Ref & Energy Ratio (%) |            | MOD 01 (67%)          |              | Groundwater Strikes |              |               |                    |  |            |           |      |
|                        |       | Strike (m)                    | Casing (m) | Sealed (m)            | Rises To (m) | Time (min)          | Remarks      |               |                    |  |            |           |      |

No Groundwater Encountered  
Hole Not Cased  
No Monitoring Points Installed



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           | Scale: 1:50                                        |                        |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425338.42</b>   | Northing: <b>558514.44</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.97mAOD</b> | Final Depth: <b>1.45m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 18/12/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 18/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.45 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 0 | Large Bulk       | 0 |
| Disturbed                  | 3 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                                |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|--------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result                | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 25            | 50         | 250                    |   | 50 (25 for 135mm/50 for 115mm) | MOD 01     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 1 |

(NR) Indicates sample undertaken but with 0% Recovery

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.20                         | 101       |            | Refusal |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-02b**  
FINAL



|                                      |                              |                            |                            |                                                 |                                      |                         |
|--------------------------------------|------------------------------|----------------------------|----------------------------|-------------------------------------------------|--------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant        |                                                 |                                      | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425338.42</b>    | Northing: <b>558514.44</b> | Depth (m)                  | Method                                          | Plant Used                           | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.97m AOD</b> | Final Depth: <b>1.45m</b>  | 0.00 - 1.20<br>1.20 - 1.45 | Inspection Pit<br>Dynamic Sampling (Windowless) | Hand Tools<br>Modular Window Sampler | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>JH</b>         | Grid System: <b>OSGB</b>   |                            |                                                 |                                      | Start Date: 18/12/2017  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                            |                                                 |                                      | Finish Date: 18/12/2017 |

| Strata Description                                                                                                                                                                   | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation/<br>Backfill | Samples & Testing |     |                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|---------------------------|-------------------|-----|----------------------------------------------|
|                                                                                                                                                                                      |        |                                  |                         |                               |                 |                           | Depth (m)         | Ref | Test Results                                 |
| MADE GROUND: Dark brown and grey gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse mudstone, clinker and sandstone. |        | (0.50)                           |                         |                               |                 |                           | 0.30              | 1 D |                                              |
| MADE GROUND: Dark grey slightly gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse siltstone. Sand is fine to coarse.                                            |        | 0.50                             | 20.47                   |                               |                 |                           | 1.00              | 2 D |                                              |
|                                                                                                                                                                                      |        | (0.95)                           |                         |                               |                 |                           | 1.20 - 1.65       | 3 D | SPT(S) 1.20m, 50 (25 for 135mm/50 for 115mm) |
| EOH at 1.45m - Refusal                                                                                                                                                               |        | 1.45                             | 19.52                   |                               |                 |                           |                   |     |                                              |

|                        |                                                                                |                               |           |                       |        |            |              |               |                    |              |            |           |      |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|-----------|-----------------------|--------|------------|--------------|---------------|--------------------|--------------|------------|-----------|------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |           | Dynamic Sampling Runs |        |            |              | Installations |                    |              |            |           |      |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details |              | Resp. Zone | Depth (m) | Diam |
|                        |                                                                                | 0.00 - 1.45                   | Bentonite | 1.20                  | 1.20   | 101        |              | Refusal       |                    |              |            |           |      |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) |           | MOD 01 (67%)          |        | Strike (m) |              | Casing (m)    | Sealed (m)         | Rises To (m) | Time (min) | Remarks   |      |



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425397.94</b>   | Northing: <b>558502.51</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.60 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>23.21mAOD</b> | Final Depth: <b>1.60m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 19/12/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 19/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.60 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 2 | Large Bulk       | 0 |
| Disturbed                  | 6 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                         |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result         | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 8             | 50         | 390                    |   | N=50 (3,5/50 for 240mm) | MOD 01     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.60                         | 101       | 75         | Refusal |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-03**  
FINAL



|                                      |                             |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425397.94</b>   | Northing: <b>558502.51</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 1.60 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>23.21mAOD</b> | Final Depth: <b>1.60m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>JH</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 19/12/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 19/12/2017 |

| Strata Description                                                                                                                                                                                      | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |      |                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|------|---------------------------------------|
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref  | Test Results                          |
| MADE GROUND: Grass over dark greyish brown slightly gravelly sandy CLAY with frequent rootlets. Gravel is subrounded to rounded fine to coarse sandstone mudstone and siltstone. Sand is fine to coarse |        | (0.80)                           |                         |                               |                 |                            | 0.00 - 0.30       | 1 B  |                                       |
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | 0.30              | 2 ES | PID 0.30m = 0.1ppm                    |
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | 0.40              | 3 D  |                                       |
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | 0.70              | 4 D  |                                       |
| MADE GROUND: Dark grey slightly gravelly very sandy SILT. Gravel is subangular to subrounded fine to coarse siltstone. Sand is fine to coarse.                                                          |        | 0.80                             | 22.41                   |                               |                 |                            | 0.80              | 5 ES | PID 0.80m = 0.0ppm                    |
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | 0.80 - 1.20       | 6 B  |                                       |
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | 1.10              | 7 D  |                                       |
|                                                                                                                                                                                                         |        | (0.80)                           |                         |                               |                 |                            | 1.20 - 1.65       | 8 D  | SPT(S) 1.20m, N=50 (3,5/50 for 240mm) |
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | 1.40              | 9 D  |                                       |
| EOH at 1.60m - Refusal                                                                                                                                                                                  |        | 1.60                             | 21.61                   |                               |                 |                            | 1.60              | 10 D |                                       |

|                        |                                                                                |                               |           |                       |        |           |              |               |                    |                     |              |            |         |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------|--------------------|---------------------|--------------|------------|---------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations |                    |                     |              |            |         |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |                     | Resp. Zone   | Depth (m)  | Diam    |
|                        |                                                                                | 0.00 - 1.60                   | Bentonite | 1.20                  | 1.60   | 101       | 75           | Refusal       |                    |                     |              |            |         |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              |               |                    | Groundwater Strikes |              |            |         |
| MOD 01 (67%)           |                                                                                |                               |           |                       |        |           |              | Strike (m)    | Casing (m)         | Sealed (m)          | Rises To (m) | Time (min) | Remarks |



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425397.52</b>   | Northing: <b>558501.95</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.53 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.72mAOD</b> | Final Depth: <b>1.53m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 19/12/2017 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 19/12/2017   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.53 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 4 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                       |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result       | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 8             | 50         | 325                    |   | 50 (3,5/50 for 175mm) | MOD 01     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 01          | 67               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.20                         | 101       |            | Refusal |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-03a**  
FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                             |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425397.52</b>   | Northing: <b>558501.95</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 1.53 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>22.72mAOD</b> | Final Depth: <b>1.53m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>JH</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 19/12/2017  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 19/12/2017 |

| Strata Description                                                                                                                                                                                      | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing   |            |                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|---------------------|------------|-------------------------------------|
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | Depth (m)           | Ref        | Test Results                        |
| MADE GROUND: Grass over dark greyish brown slightly gravelly sandy CLAY with frequent rootlets. Gravel is subrounded to rounded fine to coarse sandstone mudstone and siltstone. Sand is fine to coarse |        | (0.80)                           |                         |                               |                 |                            | 0.30                | 1 D        |                                     |
|                                                                                                                                                                                                         |        | 0.80                             | 21.92                   |                               |                 |                            | 0.50                | 2 D        |                                     |
| MADE GROUND: Dark grey slightly gravelly very sandy SILT. Gravel is subangular to subrounded fine to coarse mudstone and siltstone. Sand is fine.                                                       |        | (0.73)                           |                         |                               |                 |                            | 0.80<br>0.80 - 1.20 | 3 D<br>4 B |                                     |
|                                                                                                                                                                                                         |        | 1.53                             | 21.19                   |                               |                 |                            | 1.20 - 1.65         | 5 D        | SPT(S) 1.20m, 50 (3,5/50 for 175mm) |
| EOH at 1.53m - Refusal                                                                                                                                                                                  |        |                                  |                         |                               |                 |                            |                     |            |                                     |

|                                                                                                                        |                                                      |                       |                  |                       |                  |              |                    |                    |  |            |           |      |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------|------------------|-----------------------|------------------|--------------|--------------------|--------------------|--|------------|-----------|------|
| Observations / Remarks<br><br><i>No Groundwater Encountered<br/>Hole Not Cased<br/>No Monitoring Point/s Installed</i> | Misc.                                                | Backfill              |                  | Dynamic Sampling Runs |                  |              |                    | Installations      |  |            |           |      |
|                                                                                                                        | Depth (m)<br>0.00 - 1.53                             | Material<br>Bentonite | From (m)<br>1.20 | To (m)<br>1.20        | Diam (mm)<br>101 | Recovery (%) | Remarks<br>Refusal | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                                                                                                                        | Groundwater Strikes                                  |                       |                  |                       |                  |              |                    |                    |  |            |           |      |
|                                                                                                                        | Hammer Ref & Energy Ratio (%)<br><b>MOD 01 (67%)</b> | Strike (m)            | Casing (m)       | Sealed (m)            | Rises To (m)     | Time (min)   | Remarks            |                    |  |            |           |      |



|                                      |                             |                            |                                           |                                                                    |                                                                |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                       |                                                                    |                                                                | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426216.79</b>   | Northing: <b>557809.87</b> | From (m)                                  | Method                                                             | Plant Used                                                     | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>65.93mAOD</b> | Final Depth: <b>2.88m</b>  | 0.00 - 1.20<br>1.20 - 2.40<br>2.40 - 2.88 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Hand Tools<br>Modular Window Sampler<br>Modular Window Sampler | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                           |                                                                    |                                                                | Start Date: 20/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                           |                                                                    |                                                                | End Date: 20/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 2.40 | Bentonite   |
| 2.40 - 2.88 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 4 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 3 | Large Bulk       | 0 |
| Disturbed                    | 6 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 0 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                         |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result         | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 0             | 0          | 0                      |   | 0 (0 for 0mm/0 for 0mm) | MOD 02     |
| Split Spoon                       | 2.00      | -          | -         | 17            | 50         | 395                    |   | N=50 (8,9/50 for 245mm) | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 88         | 107 Blows |
| 2.00 - 3.00                         | 86        | 40         | 150 Blows |





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Log Type
Dynamic Sampling & Probe
Sheet 1 of 1

Exploratory Hole Number
WS17-04
FINAL



CENTRAL ALLIANCE
GEO

Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 426216.79, Northing: 557809.87, Elevation: 65.93mAOD, Final Depth: 2.88m, Logger: GS, Grid System: OSG, Orientation: N/A, Inclination: 90°
Methodology & Plant: Depth (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 20/04/2018
Finish Date: 20/04/2018

Main log table with columns: Blows / 100mm, Strata Description, Legend, Depth (m), Reduced Level (mAOD), Casing Ø (mm), Water Level (m), Installation / Backfill, Depth (m), Ref, Test Results. Includes detailed strata descriptions and blow counts.

Observations / Remarks, Misc., Equipment Information, Dynamic Sampling Runs, Installations. Includes details on probe type (DPSH-B), hammer weight (23.5kg), and dynamic sampling data.



|                                      |                             |                            |                         |                          |                          |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------|--------------------------|--------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant     |                          |                          | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426377.00</b>   | Northing: <b>557718.00</b> | From (m)<br>0.00 - 0.70 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>79.12mAOD</b> | Final Depth: <b>0.70m</b>  | Logger: <b>GS</b>       | Grid System: <b>OSGB</b> |                          | Approved: BH           |
| Client: <b>SLIV</b>                  | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                         |                          |                          | Start Date: 20/04/2018 |
|                                      |                             |                            |                         |                          |                          | End Date: 20/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.70 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 2 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 2 | Large Bulk       | 0 |
| Disturbed                  | 2 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

|                 |                  |
|-----------------|------------------|
| SPT Hammer Ref. | Energy Ratio (%) |
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-06**  
FINAL



|                                      |                              |                            |                          |                          |                          |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |                          |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>426377.00</b>    | Northing: <b>557718.00</b> | Depth (m)<br>0.00 - 0.70 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>79.12m AOD</b> | Final Depth: <b>0.70m</b>  |                          |                          |                          | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                          |                          |                          | Start Date: 20/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |                          |                          | Finish Date: 20/04/2018 |

| Strata Description                                                                                                                                                                        | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|------|
|                                                                                                                                                                                           |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref  |
| MADE GROUND: Black sandy clayey subangular to subrounded fine to coarse sandstone and coal GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular sandstone.      |        | (0.50)                           |                         |                               |                 |                            | 0.00 - 0.50       | 3 B  |
| MADE GROUND: Orangish yellow gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and rare coal.<br>EOH at 0.70m - Refusal |        | 0.50                             | 78.62                   |                               |                 |                            | 0.20              | 1 D  |
|                                                                                                                                                                                           |        | (0.20)                           | 78.42                   |                               |                 |                            | 0.30              | 2 ES |
|                                                                                                                                                                                           |        | 0.70                             |                         |                               |                 |                            | 0.50 - 0.70       | 6 B  |
|                                                                                                                                                                                           |        |                                  |                         |                               |                 |                            | 0.60              | 4 D  |
|                                                                                                                                                                                           |        |                                  |                         |                               |                 |                            | 0.70              | 5 ES |

|                        |       |                               |            |                       |              |            |              |               |                    |                     |            |           |      |
|------------------------|-------|-------------------------------|------------|-----------------------|--------------|------------|--------------|---------------|--------------------|---------------------|------------|-----------|------|
| Observations / Remarks | Misc. | Backfill                      |            | Dynamic Sampling Runs |              |            |              | Installations |                    |                     |            |           |      |
|                        |       | Depth (m)                     | Material   | From (m)              | To (m)       | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details |                     | Resp. Zone | Depth (m) | Diam |
|                        |       | 0.00 - 0.70                   | Bentonite  |                       |              |            |              |               |                    |                     |            |           |      |
|                        |       | Hammer Ref & Energy Ratio (%) |            |                       |              |            |              |               |                    | Groundwater Strikes |            |           |      |
|                        |       | Strike (m)                    | Casing (m) | Sealed (m)            | Rises To (m) | Time (min) | Remarks      |               |                    |                     |            |           |      |

No Groundwater Encountered  
Hole Not Cased  
No Monitoring Point/s Installed



|                                      |                              |                            |                                           |                                                                    |                                                                |                        |
|--------------------------------------|------------------------------|----------------------------|-------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                       |                                                                    |                                                                | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427749.71</b>    | Northing: <b>556992.90</b> | From (m)                                  | Method                                                             | Plant Used                                                     | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>93.49m AOD</b> | Final Depth: <b>2.37m</b>  | 0.00 - 1.20<br>1.20 - 2.10<br>2.10 - 2.37 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Hand Tools<br>Modular Window Sampler<br>Modular Window Sampler | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                           |                                                                    |                                                                | Start Date: 20/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                           |                                                                    |                                                                | End Date: 20/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
|                     |            |            |            |             |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 2.37 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 4 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 3 | Large Bulk       | 0 |
| Disturbed                    | 7 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 0 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                                      |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                                      | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 9             | 21         | 450                    | 21 | N=21 (4,5/4,6,4,7)<br>50 (25 for 105mm/50 for 135mm) | MOD 02     |
| Split Spoon                       | 1.90      | -          | -         | 25            | 50         | 240                    |    |                                                      | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 1.90                         | 101       | 100        | 150 Blows |



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Log Type  
**Dynamic Sampling & Probe**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-07**  
FINAL



|                                      |                             |                            |                                                        |                                                                              |                                                                              |                         |
|--------------------------------------|-----------------------------|----------------------------|--------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                                    |                                                                              |                                                                              | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427749.71</b>   | Northing: <b>556992.90</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 2.10<br>2.10 - 2.37 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Plant Used<br>Hand Tools<br>Modular Window Sampler<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>93.49mAOD</b> | Final Depth: <b>2.37m</b>  |                                                        |                                                                              |                                                                              | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   | Orientation: <b>N/A</b>                                | Inclination: <b>90°</b>                                                      | Start Date: 20/04/2018                                                       |                         |
|                                      |                             |                            |                                                        |                                                                              |                                                                              | Finish Date: 20/04/2018 |

| Blows / 100mm | Strata Description                                                                                                                                                                                                  | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------------|-----------------|-------------------------|-------------------|-------|
|               |                                                                                                                                                                                                                     |        |                               |                      |                         |                 |                         | Depth (m)         | Ref   |
|               | TOPSOIL.                                                                                                                                                                                                            |        | (0.10)                        | 93.39                |                         |                 |                         | 0.10 - 0.50       | 4 B   |
|               | MADE GROUND: Soft dark brown slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and brick. Cobbles are subangular sandstone. |        | 0.10                          |                      |                         |                 |                         | 0.20              | 1 D   |
|               |                                                                                                                                                                                                                     |        | (0.80)                        |                      |                         |                 |                         | 0.30              | 2 ES  |
|               |                                                                                                                                                                                                                     |        | 0.50                          |                      |                         |                 |                         | 0.70              | 3 D   |
|               | MADE GROUND: Firm to stiff orangish grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, coal and rare brick.                                                                  |        | 0.90                          | 92.59                |                         |                 |                         | 0.70 - 1.10       | 5 ES  |
|               |                                                                                                                                                                                                                     |        | (1.00)                        |                      |                         |                 |                         | 1.00              | 6 D   |
|               |                                                                                                                                                                                                                     |        | 1.00                          |                      |                         |                 |                         | 1.00              | 7 ES  |
|               |                                                                                                                                                                                                                     |        | 1.10                          |                      |                         |                 |                         | 1.10 - 1.90       | 13 B  |
|               |                                                                                                                                                                                                                     |        | 1.20                          |                      |                         |                 |                         | 1.20 - 1.65       | 9 D   |
|               |                                                                                                                                                                                                                     |        | 1.50                          |                      |                         |                 |                         | 1.70              | 11 ES |
|               |                                                                                                                                                                                                                     |        | 1.90                          | 91.59                |                         |                 |                         | 1.80              | 12 D  |
|               | MADE GROUND: Yellow sandy subangular fine to coarse sandstone GRAVEL. Sand is fine to coarse.                                                                                                                       |        | (0.24)                        |                      |                         |                 |                         | 1.90 - 2.14       | 14 D  |
|               | Dynamic Probing.                                                                                                                                                                                                    |        | 2.14                          | 91.35                |                         |                 |                         |                   |       |
|               | EOH at 2.37m - Refusal                                                                                                                                                                                              |        | (0.23)                        |                      |                         |                 |                         |                   |       |
|               |                                                                                                                                                                                                                     |        | 2.37                          | 91.12                |                         |                 |                         |                   |       |

|                                     |            |                       |                             |            |            |           |               |           |                 |            |           |      |
|-------------------------------------|------------|-----------------------|-----------------------------|------------|------------|-----------|---------------|-----------|-----------------|------------|-----------|------|
| Observations / Remarks              | Misc.      | Equipment Information | Dynamic Sampling Runs       |            |            |           | Installations |           |                 |            |           |      |
|                                     |            |                       | Dynamic Probe Type:         | From (m)   | Depth Base | Diam (mm) | Recovery (%)  | Remarks   | Instrument Type | Resp. Zone | Depth (m) | Diam |
|                                     |            |                       | DPSH-B                      | 1.20       | 1.90       | 101       | 100           | 150 Blows |                 |            |           |      |
|                                     |            |                       | Fall Height: Hammer Weight: |            |            |           |               |           |                 |            |           |      |
| 750mm 64.0kg                        |            |                       |                             |            |            |           |               |           |                 |            |           |      |
| Cone Base Diam. Rod Diam.           |            |                       |                             |            |            |           |               |           |                 |            |           |      |
| 50mm 35mm                           |            |                       |                             |            |            |           |               |           |                 |            |           |      |
| Hammer Reference & Energy Ratio (%) |            |                       |                             |            |            |           |               |           |                 |            |           |      |
| MOD 02 (65%)                        |            |                       |                             |            |            |           |               |           |                 |            |           |      |
| Groundwater Strikes                 |            |                       |                             |            |            |           |               |           |                 |            |           |      |
| Strike (m)                          | Casing (m) | Sealed (m)            | Rises To (m)                | Time (min) | Remarks    |           |               |           |                 |            |           |      |
|                                     |            |                       |                             |            |            |           |               |           |                 |            |           |      |

No Groundwater Encountered  
Hole Not Cased  
No Monitoring Point Installed



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Log Type

**Header Sheet**

Exploratory Hole Number

**WS17-08**

**FINAL**



**CENTRAL ALLIANCE  
GEO**

|                                      |                              |                            |                                        |                                                           |                          |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|--------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           | Scale: 1:50              |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427843.46</b>    | Northing: <b>556944.85</b> | From (m)<br>0.00 - 1.20<br>1.20 - 2.27 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>96.89m AOD</b> | Final Depth: <b>2.27m</b>  | Logger: <b>RJ</b>                      | Grid System: <b>OSGB</b>                                  | Checked: RPH             |
| Client: <b>SLIV</b>                  | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           | Approved: BH             |
|                                      |                              |                            |                                        |                                                           | Start Date: 21/04/2018   |
|                                      |                              |                            |                                        |                                                           | End Date: 21/04/2018     |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 2.27 | Bentonite   |

| Sample Summary             |       |                  |       |
|----------------------------|-------|------------------|-------|
| Environmental Samples      |       |                  |       |
| Soil                       | Count | Water            | Count |
|                            | 1     |                  | 0     |
| Geotechnical Samples       |       |                  |       |
| Bulk                       | Count | Large Bulk       | Count |
|                            | 2     |                  | 0     |
| Disturbed                  | Count | Disturbed (NR)   | Count |
|                            | 3     |                  | 0     |
| Piston                     | Count | Piston (NR)      | Count |
|                            | 0     |                  | 0     |
| Undisturbed                | Count | Undisturbed (NR) | Count |
|                            | 0     |                  | 0     |
| Undisturbed Thin Wall      | Count |                  | 0     |
|                            | 0     |                  | 0     |
| Undisturbed Thin Wall (NR) | Count |                  | 0     |
|                            | 0     |                  | 0     |
| Core Sample                | Count |                  | 0     |
|                            | 0     |                  | 0     |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-08**  
FINAL



|                                      |                              |                            |                            |                                                 |            |                         |
|--------------------------------------|------------------------------|----------------------------|----------------------------|-------------------------------------------------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant        |                                                 |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427843.46</b>    | Northing: <b>556944.85</b> | Depth (m)                  | Method                                          | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>96.89m AOD</b> | Final Depth: <b>2.27m</b>  | 0.00 - 1.20<br>1.20 - 2.27 | Inspection Pit<br>Dynamic Sampling (Windowless) | Hand Tools | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                            |                                                 |            | Start Date: 21/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                            |                                                 |            | Finish Date: 21/04/2018 |

| Strata Description                                                                                                                         | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing   |             |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|---------------------|-------------|
|                                                                                                                                            |        |                                  |                         |                               |                 |                            | Depth (m)           | Ref         |
| MADE GROUND: Brown very sandy slightly clayey angular to subangular fine to coarse sandstone and roadstone GRAVEL. Sand is fine to coarse. |        | (0.50)                           |                         |                               |                 |                            | 0.00 - 0.50         | 1 B         |
| MADE GROUND: Stiff medium strength brown gravelly CLAY. Gravel is angular to subrounded fine to coarse sandstone.                          |        | 0.50                             | 96.39                   |                               |                 |                            | 0.80 - 1.20<br>0.90 | 2 B<br>3 ES |
|                                                                                                                                            |        | (1.20)                           |                         |                               |                 |                            | 1.20 - 1.65         | 4 D         |
|                                                                                                                                            |        | 1.70                             | 95.19                   |                               |                 |                            | 1.40                | 5 D         |
| Weathered brown SANDSTONE bedrock.                                                                                                         |        | (0.57)                           |                         |                               |                 |                            | 1.70 - 2.20         | 6 D         |
| EOH at 2.27m - Refusal                                                                                                                     |        | 2.27                             | 94.62                   |                               |                 |                            |                     |             |

|                        |                                                                                |                               |            |                       |            |           |              |               |                    |  |            |           |      |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|------------|-----------------------|------------|-----------|--------------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |            | Dynamic Sampling Runs |            |           |              | Installations |                    |  |            |           |      |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)                     | Material   | From (m)              | To (m)     | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |                                                                                | 0.00 - 2.27                   | Bentonite  |                       |            |           |              |               |                    |  |            |           |      |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) |            |                       |            |           |              |               |                    |  |            |           |      |
| Groundwater Strikes    |                                                                                |                               |            |                       |            |           |              |               |                    |  |            |           |      |
|                        | Strike (m)                                                                     | Casing (m)                    | Sealed (m) | Rises To (m)          | Time (min) | Remarks   |              |               |                    |  |            |           |      |
|                        |                                                                                |                               |            |                       |            |           |              |               |                    |  |            |           |      |



|                                      |                             |                            |                                           |                                                                    |                                                                |                        |
|--------------------------------------|-----------------------------|----------------------------|-------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                       |                                                                    |                                                                | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427901.34</b>   | Northing: <b>556916.64</b> | From (m)                                  | Method                                                             | Plant Used                                                     | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>99.52mAOD</b> | Final Depth: <b>3.28m</b>  | 0.00 - 1.20<br>1.20 - 2.90<br>2.90 - 3.28 | Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Hand Tools<br>Modular Window Sampler<br>Modular Window Sampler | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   |                                           |                                                                    |                                                                | Start Date: 24/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                           |                                                                    |                                                                | End Date: 24/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 3.28 | Bentonite   |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 2 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 2 | Large Bulk       | 0 |
| Disturbed                    | 8 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 0 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                                                |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|------------------------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result                                | Hammer Ref |
| Split Spoon                       | 2.00      | 2.00       | DRY       | 9             | 27         | 450                    | 27 | N=27 (4,5/7,7,6,7)<br>N=50 (6,10/50 for 270mm) | MOD 02     |
| Split Spoon                       | 2.60      | 2.00       | DRY       | 16            | 50         | 420                    |    |                                                | MOD 02     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 2 |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 88         | 113 Blows |
| 2.00 - 2.60                         | 86        | 92         | 150 Blows |





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Log Type  
**Dynamic Sampling & Probe**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-09**  
FINAL



|                                      |                              |                            |                                                        |                                                                              |                                                                              |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                                    |                                                                              |                                                                              | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427901.34</b>    | Northing: <b>556916.64</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 2.90<br>2.90 - 3.28 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless)<br>Dynamic Probing | Plant Used<br>Hand Tools<br>Modular Window Sampler<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>99.52m AOD</b> | Final Depth: <b>3.28m</b>  |                                                        |                                                                              |                                                                              | Approved By: BH         |
| Client: <b>SLV</b>                   | Logger: <b>RJ</b>            | Grid System: <b>OSGB</b>   |                                                        |                                                                              |                                                                              | Start Date: 24/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                                        |                                                                              |                                                                              | Finish Date: 24/04/2018 |

| Blows / 100mm | Strata Description                                                                                                              | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |      |
|---------------|---------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-------------------|------|
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | Depth (m)         | Ref  |
|               | MADE GROUND: Dark greyish brown clayey subangular to subrounded fine to coarse brick, concrete and sandstone GRAVEL.            |        | 0.60                             | 98.92                   |                               |                 |                         | 0.00 - 0.60       | 1 B  |
|               | MADE GROUND: Soft to stiff dark grey very gravelly CLAY. Gravel is subangular to subrounded fine to coarse brick and sandstone. |        | 0.60                             | 98.92                   |                               |                 |                         | 0.40              | 2 ES |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 0.70 - 1.20       | 3 B  |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 0.80              | 4 ES |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.20 - 1.65       | 5 D  |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.40              | 6 D  |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.60              | 7 D  |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 1.80              | 8 D  |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 2.00 - 2.45       | 9 D  |
|               |                                                                                                                                 |        |                                  |                         |                               | 116<br>2.00     |                         | 2.20              | 10 D |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 2.40              | 11 D |
|               |                                                                                                                                 |        |                                  |                         |                               |                 |                         | 2.60 - 2.98       | 12 D |
|               | SANDSTONE bedrock.                                                                                                              |        | 2.60                             | 96.92                   |                               |                 |                         |                   |      |
|               | Dynamic Probing.                                                                                                                |        | 2.90                             | 96.62                   |                               |                 |                         |                   |      |
|               |                                                                                                                                 |        | 0.38                             |                         |                               |                 |                         |                   |      |
|               | EOH at 3.28m - Refusal                                                                                                          |        | 3.28                             | 96.24                   |                               |                 |                         |                   |      |

|                                                            |                                                                            |                                                    |                       |            |            |                     |               |                 |            |           |      |
|------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------|-----------------------|------------|------------|---------------------|---------------|-----------------|------------|-----------|------|
| Observations / Remarks                                     | Misc.                                                                      | Equipment Information                              | Dynamic Sampling Runs |            |            |                     | Installations |                 |            |           |      |
|                                                            | No Groundwater Encountered<br>Casing Used<br>No Monitoring Point Installed | Dynamic Probe Type:<br><b>DPSH-B</b>               | From (m)              | Depth Base | Diam (mm)  | Recovery (%)        | Remarks       | Instrument Type | Resp. Zone | Depth (m) | Diam |
|                                                            |                                                                            | Fall Height: Hammer Weight:<br><b>750mm 64.0kg</b> | 1.20                  | 2.00       | 101        | 88                  | 113 Blows     |                 |            |           |      |
|                                                            |                                                                            | Cone Base Diam. Rod Diam.<br><b>50mm 35mm</b>      | 2.00                  | 2.60       | 86         | 92                  | 150 Blows     |                 |            |           |      |
| Hammer Reference & Energy Ratio (%)<br><b>MOD 02 (65%)</b> |                                                                            |                                                    |                       |            |            | Groundwater Strikes |               |                 |            |           |      |
|                                                            |                                                                            |                                                    | Strike (m)            | Casing (m) | Sealed (m) | Rises To (m)        | Time (min)    | Remarks         |            |           |      |



|                                      |                              |                            |                       |                          |                        |                        |
|--------------------------------------|------------------------------|----------------------------|-----------------------|--------------------------|------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant   |                          |                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427995.56</b>    | Northing: <b>556852.92</b> | From (m): 0.00 - 1.00 | Method: Inspection Pit   | Plant Used: Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>102.67mAOD</b> | Final Depth: <b>1.00m</b>  | Logger: <b>RJ</b>     | Grid System: <b>OSGB</b> |                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                       |                          |                        | Start Date: 24/04/2018 |
|                                      |                              |                            |                       |                          |                        | End Date: 24/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.00 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 1 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 2 | Large Bulk       | 0 |
| Disturbed                    | 1 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   |                  | 0 |
| Undisturbed Thin Wall (NR)   |   |                  | 0 |
| Core Sample                  |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

|                 |                  |
|-----------------|------------------|
| SPT Hammer Ref. | Energy Ratio (%) |
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 0 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**

Sheet 1 of 1

Exploratory Hole Number

**WS17-12**

FINAL



CENTRAL ALLIANCE  
**GEO**

|                                      |                              |                            |                          |                          |                          |                         |
|--------------------------------------|------------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant      |                          |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>427995.56</b>    | Northing: <b>556852.92</b> | Depth (m)<br>0.00 - 1.00 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>102.67mAOD</b> | Final Depth: <b>1.00m</b>  |                          |                          |                          | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                          |                          |                          | Start Date: 24/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                          |                          |                          | Finish Date: 24/04/2018 |

| Strata Description                                                                                                | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |      |
|-------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|------|
|                                                                                                                   |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref  |
| MADE GROUND: Dark brown very clayey subangular to subrounded fine to coarse sandstone, mudstone and brick GRAVEL. |        | (0.90)                           |                         |                               |                 |                            | 0.00 - 0.60       | 1 B  |
|                                                                                                                   |        |                                  |                         |                               |                 |                            | 0.50              | 2 ES |
|                                                                                                                   |        |                                  |                         |                               |                 |                            | 0.70 - 1.20       | 3 B  |
|                                                                                                                   |        |                                  |                         |                               |                 |                            | 0.90 - 1.00       | 4 D  |
| 1 Strong grey SANDSTONE bedrock.<br>EOH at 1.00m - Refusal                                                        |        | 0.90<br>(0.10)<br>1.00           | 101.77<br>101.67        |                               |                 |                            |                   |      |
| 2                                                                                                                 |        |                                  |                         |                               |                 |                            |                   |      |
| 3                                                                                                                 |        |                                  |                         |                               |                 |                            |                   |      |
| 4                                                                                                                 |        |                                  |                         |                               |                 |                            |                   |      |
| 5                                                                                                                 |        |                                  |                         |                               |                 |                            |                   |      |
| 6                                                                                                                 |        |                                  |                         |                               |                 |                            |                   |      |
| 7                                                                                                                 |        |                                  |                         |                               |                 |                            |                   |      |
| 8                                                                                                                 |        |                                  |                         |                               |                 |                            |                   |      |
| 9                                                                                                                 |        |                                  |                         |                               |                 |                            |                   |      |
| 10                                                                                                                |        |                                  |                         |                               |                 |                            |                   |      |

| Observations / Remarks | Misc. | Backfill                      |          | Dynamic Sampling Runs |            |            |              | Installations       |                    |  |            |           |      |  |
|------------------------|-------|-------------------------------|----------|-----------------------|------------|------------|--------------|---------------------|--------------------|--|------------|-----------|------|--|
|                        |       | Depth (m)                     | Material | From (m)              | To (m)     | Diam (mm)  | Recovery (%) | Remarks             | Instrument Details |  | Resp. Zone | Depth (m) | Diam |  |
|                        |       | 0.00 - 1.00                   | Arisings |                       |            |            |              |                     |                    |  |            |           |      |  |
|                        |       |                               |          |                       |            |            |              |                     |                    |  |            |           |      |  |
|                        |       | Hammer Ref & Energy Ratio (%) |          |                       |            |            |              | Groundwater Strikes |                    |  |            |           |      |  |
|                        |       |                               |          | Strike (m)            | Casing (m) | Sealed (m) | Rises To (m) | Time (min)          | Remarks            |  |            |           |      |  |
|                        |       |                               |          |                       |            |            |              |                     |                    |  |            |           |      |  |

No Groundwater Encountered  
Hole Not Cased  
No Monitoring Points Installed



|                                      |                             |                            |                                        |                                                           |                                         |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                         | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425150.06</b>   | Northing: <b>558440.02</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.16mAOD</b> | Final Depth: <b>4.45m</b>  |                                        |                                                           |                                         | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                         | Start Date: 22/01/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                         | End Date: 22/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 4.45          | 101       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 3.00            | 101       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 22/01/2018                        | Standpipe          | 4.00   | 0.40 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.20 | Concrete    |
| 0.20 - 0.40 | Bentonite   |
| 0.40 - 4.45 | Gravel      |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 3  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 2  | Large Bulk       | 0 |
| Disturbed                    | 10 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 2             | 4          | 450                    | 4  | N=4 (1,1/1,1,1,1)  | 110.92     |
| Split Spoon                       | 2.00      | 2.00       | -         | 5             | 10         | 450                    | 10 | N=10 (2,3/3,2,2,3) | 110.92     |
| Split Spoon                       | 3.00      | 2.00       | -         | 2             | 10         | 450                    | 10 | N=10 (1,1/1,3,3,3) | 110.92     |
| Split Spoon                       | 4.00      | 3.00       | -         | 2             | 12         | 450                    | 12 | N=12 (1,1/2,3,3,4) | 110.92     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| 110.92          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 100        | 50 Blows  |
| 2.00 - 3.00                         | 101       | 100        | 140 Blows |
| 3.00 - 4.00                         | 101       | 100        | 67 Blows  |



|                                      |                             |                            |                                         |                                                           |                                         |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425150.06</b>   | Northing: <b>558440.02</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.16mAOD</b> | Final Depth: <b>4.45m</b>  |                                         |                                                           |                                         | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>JH</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                         | Start Date: 22/01/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                         | Finish Date: 22/01/2018 |

| Strata Description                                                                                                                                                             | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                   |                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-------------------------------------|----------------------------|
|                                                                                                                                                                                |        |                                  |                         |                               |                 |                         | Depth (m)                           | Ref                        |
| TOPSOIL.<br>Firm dark brown gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse sandstone coal and mudstone. Sand is fine to coarse.                           |        | (0.10)<br>0.10                   | 15.06                   |                               |                 |                         | 0.30<br>0.30 - 0.80<br>0.40<br>0.50 | 1 ES<br>2 B<br>3 D<br>4 ES |
| Light brown fine to coarse SAND.                                                                                                                                               |        | 0.80                             | 14.36                   |                               |                 |                         | 0.80 - 1.20<br>1.00                 | 5 B<br>6 ES                |
| Firm dark greyish brown gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse sandstone coal and mudstone. Sand is fine to coarse.                               |        | 1.40<br>(0.20)                   | 13.76                   |                               |                 |                         | 1.20 - 1.65                         | 7 D                        |
| Light orangish brown gravelly silty fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone.                                                          |        | 1.60<br>(0.20)                   | 13.56                   |                               |                 |                         | 1.80                                | 8 D                        |
| Dark grey gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone coal and limestone. Cobbles are rounded limestone. |        | 1.80<br>(0.40)                   | 13.36                   |                               |                 |                         | 2.00<br>2.00 - 2.45<br>2.00 - 2.90  | 10 D<br>9 D<br>11 D        |
| Firm to stiff thinly laminated slightly gravelly CLAY with occasional dark grey fine sandy partings. Gravel is rounded fine mudstone.                                          |        | 2.20                             | 12.96                   |                               |                 |                         |                                     |                            |
| EOH at 4.45m - Scheduled depth                                                                                                                                                 |        | 4.45                             | 10.71                   | 101<br>3.00                   |                 |                         | 3.00 - 3.45                         | 12 D                       |
|                                                                                                                                                                                |        | (2.25)                           |                         |                               |                 |                         | 3.60                                | 13 D                       |
|                                                                                                                                                                                |        |                                  |                         |                               |                 |                         | 3.90<br>4.00 - 4.45                 | 14 D<br>15 D               |

| Observations / Remarks                                                    | Misc. | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations       |                    |             |              |            |         |
|---------------------------------------------------------------------------|-------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------------|--------------------|-------------|--------------|------------|---------|
|                                                                           |       | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks             | Instrument Details | Resp. Zone  | Depth (m)    | Diam       |         |
| No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |       | 0.00 - 0.20                   | Concrete  | 1.20                  | 2.00   | 101       | 100          | 50 Blows            | Standpipe          | 0.40 - 4.00 | 4.00         |            |         |
|                                                                           |       | 0.20 - 0.40                   | Bentonite | 2.00                  | 3.00   | 101       | 100          | 140 Blows           |                    |             |              |            |         |
|                                                                           |       | 0.40 - 4.45                   | Gravel    | 3.00                  | 4.00   | 101       | 100          | 67 Blows            |                    |             |              |            |         |
|                                                                           |       | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              | Groundwater Strikes |                    |             |              |            |         |
|                                                                           |       | 110.92 (65%)                  |           |                       |        |           |              | Strike (m)          | Casing (m)         | Sealed (m)  | Rises To (m) | Time (min) | Remarks |



|                                      |                              |                            |                                        |                                                           |                                         |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           |                                         | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425185.94</b>    | Northing: <b>558420.97</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.24m AOD</b> | Final Depth: <b>4.45m</b>  |                                        |                                                           |                                         | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           |                                         | Start Date: 22/01/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           |                                         | End Date: 22/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 4.45          | 101       |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 3.00            | 101       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 22/01/2018                        | Standpipe          | 4.00   | 0.40 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.20 | Concrete    |
| 0.20 - 0.40 | Bentonite   |
| 0.40 - 4.45 | Gravel      |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 3  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 2  | Large Bulk       | 0 |
| Disturbed                    | 10 | Disturbed (NR)   | 1 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                   |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result   | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 2             | 7          | 450                    | 7 | N=7 (1,1/1,2,2,2) | 110.92     |
| Split Spoon                       | 2.00      | 2.00       | -         | 2             | 4          | 450                    | 4 | N=4 (1,1/1,1,1,1) | 110.92     |
| Split Spoon                       | 3.00      | 3.00       | -         | 2             | 7          | 450                    | 7 | N=7 (1,1/1,2,2,2) | 110.92     |
| Split Spoon                       | 4.00      | 3.00       | -         | 2             | 9          | 450                    | 9 | N=9 (1,1/2,2,2,3) | 110.92     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| 110.92          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |          |
|-------------------------------------|-----------|------------|----------|
| Dynamic Sampling Runs               |           |            |          |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks  |
| 1.20 - 2.00                         | 101       | 100        | 55 Blows |
| 2.00 - 3.00                         | 101       | 80         | 64 Blows |
| 3.00 - 4.00                         | 101       | 90         | 68 Blows |



|                                      |                             |                            |                                         |                                                           |                                         |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425185.94</b>   | Northing: <b>558420.97</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.24mAOD</b> | Final Depth: <b>4.45m</b>  |                                         |                                                           |                                         | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>JH</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                         | Start Date: 22/01/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                         | Finish Date: 22/01/2018 |

| Strata Description                                                                                                                                                      | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                   |                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-----------------------------------------------------|----------------------------------------------|
|                                                                                                                                                                         |        |                                  |                         |                               |                 |                         | Depth (m)                                           | Ref                                          |
| Grass over TOPSOIL.<br>Soft to firm dark brown gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse sandstone coal and mudstone. Sand is fine to coarse. |        | (0.10)<br>0.10                   | 15.14                   |                               |                 |                         |                                                     |                                              |
| Light brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone.                                                                  |        | (0.80)<br>0.90                   | 14.34                   |                               |                 |                         | 0.30<br>0.40<br>0.40 - 0.90<br>0.50<br>0.60         | 1 ES<br>2 D<br>3 B<br>4 ES<br>5 D            |
| Dark grey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone coal and limestone.                                                 |        | (1.60)<br>2.50                   | 12.74                   |                               |                 |                         | 1.00<br>1.20 - 1.65<br>1.20 - 2.00                  | 6 ES<br>7 D<br>8 B                           |
| Stiff dark grey mottled orangish brown slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse coal sandstone and mudstone.                              |        | (2.70)<br>3.00                   | 12.54                   |                               |                 |                         | 1.70<br>2.00 - 2.45                                 | 9 D<br>10 D-NR                               |
| Stiff thinly laminated dark grey occasionally light brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse coal and sandstone.                 |        | (3.00)<br>(1.45)                 | 12.24                   | 101<br>3.00                   |                 |                         | 2.60<br>2.90<br>3.00<br>3.60<br>3.90<br>4.00 - 4.45 | 11 D<br>12 D<br>13 D<br>14 D<br>15 D<br>16 D |
| EOH at 4.45m - Scheduled depth                                                                                                                                          |        | 4.45                             | 10.79                   |                               |                 |                         |                                                     |                                              |

| Observations / Remarks                                                    | Misc. | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations       |                    |             |              |            |         |
|---------------------------------------------------------------------------|-------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------------|--------------------|-------------|--------------|------------|---------|
|                                                                           |       | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks             | Instrument Details | Resp. Zone  | Depth (m)    | Diam       |         |
| No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |       | 0.00 - 0.20                   | Concrete  | 1.20                  | 2.00   | 101       | 100          | 55 Blows            | Standpipe          | 0.40 - 4.00 | 4.00         |            |         |
|                                                                           |       | 0.20 - 0.40                   | Bentonite | 2.00                  | 3.00   | 101       | 80           | 64 Blows            |                    |             |              |            |         |
|                                                                           |       | 0.40 - 4.45                   | Gravel    | 3.00                  | 4.00   | 101       | 90           | 68 Blows            |                    |             |              |            |         |
|                                                                           |       | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              | Groundwater Strikes |                    |             |              |            |         |
|                                                                           |       | <b>110.92 (65%)</b>           |           |                       |        |           |              | Strike (m)          | Casing (m)         | Sealed (m)  | Rises To (m) | Time (min) | Remarks |



|                                      |                              |                            |                                        |                                                           |                                         |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           |                                         | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425224.05</b>    | Northing: <b>558454.03</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.16m AOD</b> | Final Depth: <b>4.45m</b>  |                                        |                                                           |                                         | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           |                                         | Start Date: 23/01/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           |                                         | End Date: 23/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 4.45          | 86        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 86        |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 23/01/2018                        | Standpipe          | 4.00   | 0.40 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.20 | Concrete    |
| 0.20 - 0.40 | Bentonite   |
| 0.40 - 4.00 | Gravel      |
| 4.00 - 4.45 | Arisings    |

| Sample Summary               |    |                  |   |
|------------------------------|----|------------------|---|
| <i>Environmental Samples</i> |    |                  |   |
| Soil                         | 3  | Water            | 0 |
| <i>Geotechnical Samples</i>  |    |                  |   |
| Bulk                         | 1  | Large Bulk       | 0 |
| Disturbed                    | 10 | Disturbed (NR)   | 0 |
| Piston                       | 0  | Piston (NR)      | 0 |
| Undisturbed                  | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |    | 0                |   |
| Undisturbed Thin Wall (NR)   |    | 0                |   |
| Core Sample                  |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 2             | 8          | 450                    | 8  | N=8 (1,1/2,2,2,2)  | 110.92     |
| Split Spoon                       | 2.00      | 2.00       | -         | 2             | 10         | 450                    | 10 | N=10 (1,1/2,3,3,2) | 110.92     |
| Split Spoon                       | 3.00      | 2.00       | -         | 4             | 6          | 450                    | 6  | N=6 (2,2/1,1,2,2)  | 110.92     |
| Split Spoon                       | 4.00      | 2.00       | -         | 2             | 7          | 450                    | 7  | N=7 (1,1/1,2,2,2)  | 110.92     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| 110.92          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |          |
|-------------------------------------|-----------|------------|----------|
| Dynamic Sampling Runs               |           |            |          |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks  |
| 1.20 - 2.00                         | 101       | 100        | 56 Blows |
| 2.00 - 3.00                         | 101       | 100        | 84 Blows |
| 3.00 - 4.00                         | 86        | 100        | 84 Blows |





|                                      |                             |                            |                                         |                                                           |                                         |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425224.05</b>   | Northing: <b>558454.03</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>16.16mAOD</b> | Final Depth: <b>4.45m</b>  |                                         |                                                           |                                         | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>JH</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                         | Start Date: 23/01/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                         | Finish Date: 23/01/2018 |

| Strata Description                                                                                                                                                                    | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                           |                                   |                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|---------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                       |        |                                  |                         |                               |                 |                         | Depth (m)                                   | Ref                               | Test Results                                                                                         |
| Grass over TOPSOIL.<br>Firm dark brown and black slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone coal and mudstone. Sand is fine to coarse. |        | (0.10)<br>0.10                   | 16.06                   |                               |                 |                         | 0.30<br>0.40<br>0.40 - 0.70<br>0.50<br>0.70 | 1 ES<br>2 D<br>3 B<br>4 ES<br>5 D | HV 0.80m, (p)=60 kPa (r)=10 kPa                                                                      |
| Firm to stiff dark brown mottled grey CLAY.                                                                                                                                           |        | 0.70<br>(0.30)                   | 15.46                   |                               |                 |                         | 1.00                                        | 6 ES                              |                                                                                                      |
| Firm to stiff thinly laminated dark brown mottled grey slightly gravelly CLAY. Gravel is subrounded to rounded fine to medium mudstone.                                               |        | 1.00<br>(1.50)                   | 15.16                   |                               |                 |                         | 1.20 - 1.65<br>1.70                         | 7 D<br>8 D                        | SPT(S) 1.20m, N=8 (1,1/2,2,2)<br>HV 1.70m, (p)=70 kPa (r)=20 kPa                                     |
| Firm thin laminated dark brown occasionally mottled grey slightly sandy SILT. Sand is fine to coarse.                                                                                 |        | 2.50<br>(0.70)                   | 13.66                   | 86<br>2.00                    |                 |                         | 1.90<br>2.00 - 2.45                         | 9 D<br>10 D                       | HV 1.90m, (p)=68 kPa (r)=12 kPa<br>SPT(S) 2.00m, N=10 (1,1/2,3,3,2)                                  |
| From 3.00m to 3.10m band of dark brown fine to coarse sand.                                                                                                                           |        | 3.20<br>(1.25)                   | 12.96                   |                               |                 |                         | 2.90<br>3.00 - 3.45                         | 11 D<br>12 D                      | HV 2.60m, (p)=58 kPa (r)=10 kPa<br>HV 2.90m, (p)=60 kPa (r)=8 kPa<br>SPT(S) 3.00m, N=6 (2,2/1,1,2,2) |
| Firm to stiff thinly laminated dark brownish grey silty CLAY.                                                                                                                         |        | 4.45                             | 11.71                   |                               |                 |                         | 3.90<br>4.00 - 4.45                         | 13 D<br>14 D                      | HV 3.90m, (p)=50 kPa (r)=10 kPa<br>SPT(S) 4.00m, N=7 (1,1/1,2,2,2)                                   |
| EOH at 4.45m - Scheduled depth                                                                                                                                                        |        |                                  |                         |                               |                 |                         |                                             |                                   |                                                                                                      |

| Observations / Remarks                                                    | Misc. | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations       |                    |             |              |            |         |
|---------------------------------------------------------------------------|-------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------------|--------------------|-------------|--------------|------------|---------|
|                                                                           |       | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks             | Instrument Details | Resp. Zone  | Depth (m)    | Diam       |         |
| No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |       | 0.00 - 0.20                   | Concrete  | 1.20                  | 2.00   | 101       | 100          | 56 Blows            | Standpipe          | 0.40 - 4.00 | 4.00         |            |         |
|                                                                           |       | 0.20 - 0.40                   | Bentonite | 2.00                  | 3.00   | 101       | 100          | 84 Blows            |                    |             |              |            |         |
|                                                                           |       | 0.40 - 4.00                   | Gravel    | 3.00                  | 4.00   | 86        | 100          | 84 Blows            |                    |             |              |            |         |
|                                                                           |       | 4.00 - 4.45                   | Arisings  |                       |        |           |              |                     |                    |             |              |            |         |
|                                                                           |       | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              | Groundwater Strikes |                    |             |              |            |         |
|                                                                           |       | 110.92 (65%)                  |           |                       |        |           |              | Strike (m)          | Casing (m)         | Sealed (m)  | Rises To (m) | Time (min) | Remarks |



|                                      |                             |                            |                                        |                                                           |                                         |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                         | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425271.97</b>   | Northing: <b>558439.03</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.64mAOD</b> | Final Depth: <b>4.45m</b>  |                                        |                                                           |                                         | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>JH</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                         | Start Date: 23/01/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                         | End Date: 23/01/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 4.45          | 86        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 86        |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 23/01/2018                        | Standpipe          | 4.00   | 0.40 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**No Groundwater Encountered**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.20 | Concrete    |
| 0.20 - 0.40 | Bentonite   |
| 0.40 - 4.00 | Gravel      |
| 4.00 - 4.45 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 6 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 1 | Large Bulk       | 0 |
| Disturbed                    | 9 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                   |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result   | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 2             | 4          | 450                    | 4 | N=4 (1,1/1,1,1,1) | 110.92     |
| Split Spoon                       | 2.00      | 2.00       | -         | 9             | 7          | 450                    | 7 | N=7 (4,5/4,1,1,1) | 110.92     |
| Split Spoon                       | 3.00      | 2.00       | -         | 2             | 6          | 450                    | 6 | N=6 (1,1/1,2,2,1) | 110.92     |
| Split Spoon                       | 4.00      | 2.00       | -         | 4             | 6          | 450                    | 6 | N=6 (2,2/2,1,2,1) | 110.92     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| 110.92          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 3 |
| Hand Vane*                 | 2 |
| Standard Penetration Tests | 4 |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 100        | 46 Blows  |
| 2.00 - 3.00                         | 101       | 100        | 128 Blows |
| 3.00 - 4.00                         | 86        | 60         | 64 Blows  |



|                                      |                             |                            |                                         |                                                           |                                         |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425271.97</b>   | Northing: <b>558439.03</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Premier 110 | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>15.64mAOD</b> | Final Depth: <b>4.45m</b>  |                                         |                                                           |                                         | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>JH</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                         | Start Date: 23/01/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                         | Finish Date: 23/01/2018 |

| Strata Description                                                                                                                                              | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing           |                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-----------------------------|-----------------------|
|                                                                                                                                                                 |        |                                  |                         |                               |                 |                            | Depth (m)                   | Ref                   |
| MADE GROUND: Grass over TOPSOIL.                                                                                                                                |        | (0.10)                           | 15.54                   |                               |                 |                            |                             |                       |
| MADE GROUND: Firm dark brownish grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse coal sandstone and plastic fragments.      |        | 0.10<br>(0.40)                   |                         |                               |                 |                            | 0.30<br>0.40                | 1 ES<br>2 D           |
| MADE GROUND: Light orangish brown gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse sandstone and mudstone.                          |        | 0.50<br>(0.10)                   | 15.14<br>15.04          |                               |                 |                            | 0.50<br>0.60                | 3 ES<br>4 D           |
| MADE GROUND: Firm dark brown mottled orangish brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium coal and mudstone. |        | (0.80)                           |                         |                               |                 |                            | 0.80                        | 5 D                   |
| MADE GROUND: Light orangish brown sandy angular to subangular fine to medium sandstone coal limestone and brick GRAVEL.                                         |        | 1.40                             | 14.24                   |                               |                 |                            | 1.20 - 1.65<br>1.40 - 2.00  | 7 D<br>8 B            |
|                                                                                                                                                                 |        | (1.10)                           |                         | 86<br>2.00                    |                 |                            | 1.60                        | 9 ES                  |
|                                                                                                                                                                 |        | 2.50                             | 13.14                   |                               |                 |                            | 2.00 - 2.45                 | 10 D                  |
| Firm to stiff thinly laminated dark grey and brown slightly gravelly CLAY. Gravel is subrounded to rounded fine to medium coal and mudstone.                    |        | (1.95)                           |                         |                               |                 |                            | 2.50                        | 11 ES                 |
|                                                                                                                                                                 |        |                                  |                         |                               |                 |                            | 2.90<br>3.00<br>3.00 - 3.45 | 12 D<br>13 ES<br>14 D |
|                                                                                                                                                                 |        |                                  |                         |                               |                 |                            | 3.90                        | 15 D                  |
|                                                                                                                                                                 |        |                                  |                         |                               |                 |                            | 4.00 - 4.45                 | 16 D                  |
| EOH at 4.45m - Scheduled depth                                                                                                                                  |        | 4.45                             | 11.19                   |                               |                 |                            |                             |                       |

| Observations / Remarks                                                    | Misc. | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations       |                    |             |              |            |         |
|---------------------------------------------------------------------------|-------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------------|--------------------|-------------|--------------|------------|---------|
|                                                                           |       | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks             | Instrument Details | Resp. Zone  | Depth (m)    | Diam       |         |
| No Groundwater Encountered<br>Casing Used<br>Monitoring Point/s Installed |       | 0.00 - 0.20                   | Concrete  | 1.20                  | 2.00   | 101       | 100          | 46 Blows            | Standpipe          | 0.40 - 4.00 | 4.00         |            |         |
|                                                                           |       | 0.20 - 0.40                   | Bentonite | 2.00                  | 3.00   | 101       | 100          | 128 Blows           |                    |             |              |            |         |
|                                                                           |       | 0.40 - 4.00                   | Gravel    | 3.00                  | 4.00   | 86        | 60           | 64 Blows            |                    |             |              |            |         |
|                                                                           |       | 4.00 - 4.45                   | Arisings  |                       |        |           |              |                     |                    |             |              |            |         |
|                                                                           |       | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              | Groundwater Strikes |                    |             |              |            |         |
|                                                                           |       | 110.92 (65%)                  |           |                       |        |           |              | Strike (m)          | Casing (m)         | Sealed (m)  | Rises To (m) | Time (min) | Remarks |



|                                      |                              |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424839.46</b>    | Northing: <b>558544.99</b> | From (m)<br>0.00 - 0.80<br>0.80 - 1.27 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.69m AOD</b> | Final Depth: <b>1.27m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 26/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 26/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.27 | Arisings    |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 4 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 3 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

|                 |                  |
|-----------------|------------------|
| SPT Hammer Ref. | Energy Ratio (%) |
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 0.80 - 1.00                         | 101       | 100        | 100 Blows |



CENTRAL ALLIANCE

EXPLORE > IDENTIFY > DELIVER

Alliance House, South Park Way
Wakefield 41 Business Park
Wakefield WF2 0XJ
Tel +44(0)1924 229889
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Log Type
Dynamic Sampling & Probe
Sheet 1 of 1

Exploratory Hole Number

WS17-18

FINAL



CENTRAL ALLIANCE
GEO

Table with project details: Project No: 3043, Name: A1 Birtley to Coalhouse, Location: Tyne and Wear, Client: SLIV, Location Details (Easting, Northing, Elevation, Final Depth, Logger, Grid System, Orientation, Inclination), Methodology & Plant (Depth, Method, Plant Used), Scale: 1:50, Checked By: RPH, Approved By: BH, Start Date: 26/04/2018, Finish Date: 26/04/2018.

Main data table with columns: Blows / 100mm (5-45), Strata Description, Legend, Depth (m) (Stratum Thickness), Reduced Level (mAOD), Casing Ø (mm) Depth (m), Water Level (m), Installation / Backfill, Samples & Testing (Depth (m), Ref, Test Results). Includes blow count data and strata descriptions like 'MADE GROUND: Firm brown slightly gravelly slightly sandy CLAY...'.

Summary table with sections: Observations / Remarks, Misc., Equipment Information (Dynamic Probe Type: DPSH-B, Fall Height: 750mm, Hammer Weight: 64.0kg, Cone Base Diam: 50mm, Rod Diam: 35mm), Dynamic Sampling Runs (From, Depth Base, Diam, Recovery, Remarks), Installations (Instrument Type, Resp. Zone, Depth, Diam), Groundwater Strikes (Strike, Casing, Sealed, Rises To, Time, Remarks).







|                                      |                              |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425046.88</b>    | Northing: <b>558534.87</b> | From (m)<br>0.00 - 1.20<br>1.20 - 5.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.39m AOD</b> | Final Depth: <b>5.00m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 26/04/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 26/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |
|               |           |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |
|                 |           |
|                 |           |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
|                     |            |            |            |             |  |         |
|                     |            |            |            |             |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 5.00 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 2  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 2  | Large Bulk       | 0 |
| Disturbed                  | 12 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                     |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|---------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result     | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 16            | 34         | 450                    | 34 | N=34 (7,9/7,10,9,8) | MOD 02     |
| Split Spoon                       | 2.00      | -          | -         | 11            | 24         | 450                    | 24 | N=24 (5,6/4,7,6,7)  | MOD 02     |
| Split Spoon                       | 3.00      | -          | -         | 12            | 29         | 450                    | 29 | N=29 (6,6/8,8,7,6)  | MOD 02     |
| Split Spoon                       | 4.00      | -          | -         | 16            | 32         | 450                    | 32 | N=32 (5,11/8,9,7,8) | MOD 02     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 4 |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |
|                           |            |              |          |
|                           |            |              |          |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         | 101       | 100        |         |
| 2.00 - 3.00                         | 76        | 70         |         |
| 3.00 - 4.00                         | 66        | 100        |         |
| 4.00 - 5.00                         | 66        | 100        |         |





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Log Type
Dynamic Sampling
Sheet 1 of 1

Exploratory Hole Number
WS17-19
FINAL



Project No: 3043
Name: A1 Birtley to Coalhouse
Location: Tyne and Wear
Client: SLIV
Location Details: Easting: 425046.88, Northing: 558534.87, Elevation: 20.39mAOD, Final Depth: 5.00m, Logged By: RJ, Grid System: OSG, Orientation: N/A, Inclination: 90°
Methodology & Plant: Depth (m), Method, Plant Used
Scale: 1:50
Checked By: RPH
Approved By: BH
Start Date: 26/04/2018
Finish Date: 26/04/2018

Main borehole log table with columns: Strata Description, Legend, Depth (m), Reduced Level (mAOD), Casing Ø (mm), Water Level (m), Installation/Backfill, Depth (m), Ref, Test Results. Includes descriptions like 'MADE GROUND: Medium dense brown sandy slightly clayey angular to subrounded fine to coarse brick, concrete, sandstone, siltstone, mudstone and coal GRAVEL.' and 'EOH at 5.00m - Scheduled depth'.

Summary table with columns: Observations / Remarks, Misc., Backfill, Dynamic Sampling Runs, Installations. Includes a note: 'No Groundwater Encountered Hole Not Cased No Monitoring Point/s Installed' and 'MOD 02 (65%)'.



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>425111.65</b>   | Northing: <b>558534.28</b> | From (m)<br>0.00 - 1.20<br>1.20 - 5.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.94mAOD</b> | Final Depth: <b>5.00m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 19/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 19/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |
|               |           |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |
|                 |           |
|                 |           |

| Groundwater Strikes |            |            |            |             |  | Remarks |
|---------------------|------------|------------|------------|-------------|--|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) |  |         |
|                     |            |            |            |             |  |         |
|                     |            |            |            |             |  |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 5.00 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 5  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 2  | Large Bulk       | 0 |
| Disturbed                  | 11 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 10            | 22         | 450                    | 22 | N=22 (4,6/7,5,5,5) | MOD 02     |
| Split Spoon                       | 2.00      | -          | -         | 9             | 20         | 450                    | 20 | N=20 (4,5/4,6,4,6) | MOD 02     |
| Split Spoon                       | 3.00      | -          | -         | 9             | 11         | 450                    | 11 | N=11 (5,4/3,3,2,3) | MOD 02     |
| Split Spoon                       | 4.00      | -          | -         | 6             | 13         | 450                    | 13 | N=13 (3,3/3,4,3,3) | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |
|                           |            |              |          |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 88         | 267 Blows |
| 2.00 - 3.00                         | 86        | 75         | 91 Blows  |
| 3.00 - 4.00                         | 86        | 80         | 78 Blows  |
| 4.00 - 5.00                         | 76        | 80         | 59 Blows  |





|                                      |                              |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424911.09</b>    | Northing: <b>558623.43</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.08m AOD</b> | Final Depth: <b>4.45m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 08/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 08/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 4.45          | 86        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 08/05/2018                        | Standpipe          | 4.00   | 1.00 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.20 | Concrete    |
| 0.20 - 1.00 | Bentonite   |
| 1.00 - 4.00 | Gravel      |
| 4.00 - 4.45 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 5 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 5 | Large Bulk       | 0 |
| Disturbed                    | 9 | Disturbed (NR)   | 1 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                   |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result   | Hammer Ref |
| Split Spoon                       | 1.20      | -          | Dry       | 2             | 5          | 450                    | 5 | N=5 (1,1/1,1,1,2) | MOD 02     |
| Split Spoon                       | 2.00      | -          | Dry       | 0             | 3          | 450                    | 3 | N=3 (0,0/1,0,1,1) | MOD 02     |
| Split Spoon                       | 3.00      | -          | Dry       | 0             | 0          | 450                    | 0 | N=0 (0,0/0,0,0,0) | MOD 02     |
| Split Spoon                       | 4.00      | -          | Dry       | 2             | 2          | 450                    | 2 | N=2 (1,1/0,1,0,1) | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |          |
|-------------------------------------|-----------|------------|----------|
| Dynamic Sampling Runs               |           |            |          |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks  |
| 1.20 - 2.00                         | 101       | 100        | 35 Blows |
| 2.00 - 3.00                         | 86        | 50         | 25 Blows |
| 3.00 - 4.00                         | 86        | 90         | 25 Blows |



|                                      |                              |                            |                     |                               |                        |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424911.09</b>    | Northing: <b>558623.43</b> | Depth (m)           | Method                        | Plant Used             | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.08m AOD</b> | Final Depth: <b>4.45m</b>  | 0.00 - 1.20         | Inspection Pit                | Hand Tools             | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   | 1.20 - 4.45         | Dynamic Sampling (Windowless) | Modular Window Sampler | Start Date: 08/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |                               |                        | Finish Date: 08/05/2018 |

| Strata Description                                                                                                                                                                                                        | Legend | Depth (m) (Stratum Thickness) | Reduced Level (mAOD) | Casing Ø (mm) Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing                                         |                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------|----------------------|-------------------------|-----------------|-------------------------|-----------------------------------------------------------|------------------------------------|
|                                                                                                                                                                                                                           |        |                               |                      |                         |                 |                         | Depth (m)                                                 | Ref                                |
| <b>MADE GROUND: TOPSOIL.</b>                                                                                                                                                                                              |        | (0.10)                        | 11.98                |                         |                 |                         |                                                           |                                    |
| <b>MADE GROUND: Dark brown gravelly slightly clayey fine to coarse SAND with medium cobble content. Gravel is subangular to subrounded fine to coarse sandstone mudstone and brick. Cobbles are subangular sandstone.</b> |        | 0.10<br>(0.30)<br>0.40        | 11.68                |                         |                 |                         | 1 D<br>2 ES<br>7 B<br>3 D                                 |                                    |
| <b>MADE GROUND: Orangish brown slightly gravelly slightly silty clayey fine to medium SAND. Gravel is subangular to subrounded fine to medium sandstone, mudstone coal and brick.</b>                                     |        | (1.40)                        |                      |                         |                 |                         | 0.20<br>0.30<br>0.40 - 1.20<br>0.50<br>0.70               | 4 ES<br>5 D<br>6 ES<br>8 D<br>10 B |
| <b>MADE GROUND: Soft brownish dark grey slightly sandy silty CLAY with rare coal. Sand is fine to coarse.</b>                                                                                                             |        | 1.80                          | 10.28                |                         |                 |                         | 1.00<br>1.00<br>1.20 - 1.65<br>1.20 - 1.80<br>1.50        | 9 D<br>12 ES<br>11 D               |
| <b>SPT - No Recovery</b>                                                                                                                                                                                                  |        | (2.20)                        |                      |                         |                 |                         | 2.00<br>2.00 - 2.45<br>2.50<br>2.50 - 3.00<br>2.60 - 3.00 | 13 D<br>14 B<br>14 B               |
| <b>EOH at 4.45m - Scheduled depth</b>                                                                                                                                                                                     |        | 4.00                          | 8.08                 |                         |                 |                         | 3.00<br>3.00 - 3.45<br>3.50<br>3.60 - 4.00                | 16 ES<br>15 D<br>17 D<br>18 B      |
|                                                                                                                                                                                                                           |        | (0.45)                        | 7.63                 |                         |                 |                         | 4.00 - 4.45                                               | 19 D-NR                            |

|                                                                                                                     |       |                               |                 |                       |        |           |              |               |                    |  |             |           |      |
|---------------------------------------------------------------------------------------------------------------------|-------|-------------------------------|-----------------|-----------------------|--------|-----------|--------------|---------------|--------------------|--|-------------|-----------|------|
| Observations / Remarks<br><br><i>No Groundwater Encountered<br/>Hole Not Cased<br/>Monitoring Point/s Installed</i> | Misc. | Backfill                      |                 | Dynamic Sampling Runs |        |           |              | Installations |                    |  |             |           |      |
|                                                                                                                     |       | Depth (m)                     | Material        | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone  | Depth (m) | Diam |
|                                                                                                                     |       | 0.00 - 0.20                   | Concrete        | 1.20                  | 2.00   | 101       | 100          | 35 Blows      | Standpipe          |  | 1.00 - 4.00 | 4.00      |      |
|                                                                                                                     |       | 0.20 - 1.00                   | Bentonite       | 2.00                  | 3.00   | 86        | 50           | 25 Blows      |                    |  |             |           |      |
|                                                                                                                     |       | 1.00 - 4.00                   | Gravel Arisings | 3.00                  | 4.00   | 86        | 90           | 25 Blows      |                    |  |             |           |      |
|                                                                                                                     |       | 4.00 - 4.45                   |                 |                       |        |           |              |               |                    |  |             |           |      |
|                                                                                                                     |       | Hammer Ref & Energy Ratio (%) |                 |                       |        |           |              |               |                    |  |             |           |      |
|                                                                                                                     |       | <b>MOD 02 (65%)</b>           |                 |                       |        |           |              |               |                    |  |             |           |      |
| Groundwater Strikes<br>Strike (m)   Casing (m)   Sealed (m)   Rises To (m)   Time (min)   Remarks                   |       |                               |                 |                       |        |           |              |               |                    |  |             |           |      |



|                                      |                             |                            |                                        |                                                           |                                                     |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                     | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424920.01</b>   | Northing: <b>558572.01</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Handheld Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.04mAOD</b> | Final Depth: <b>4.00m</b>  |                                        |                                                           |                                                     | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>RJ</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                     | Start Date: 18/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                     | End Date: 18/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 4.00          | 76        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 18/04/2018                        | Standpipe          | 4.00   | 1.00 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 0.20 | Concrete    |
| 0.20 - 1.00 | Bentonite   |
| 1.00 - 4.00 | Gravel      |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 5  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 0  | Large Bulk       | 0 |
| Disturbed                  | 11 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | Dry       | 3             | 8          | 450                    | 8  | N=8 (1,2/2,1,3,2)  | MOD 02     |
| Split Spoon                       | 2.00      | -          | Dry       | 4             | 10         | 450                    | 10 | N=10 (2,2/3,2,3,2) | MOD 02     |
| Split Spoon                       | 3.00      | -          | Dry       | 2             | 4          | 450                    | 4  | N=4 (1,1/1,1,1,1)  | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

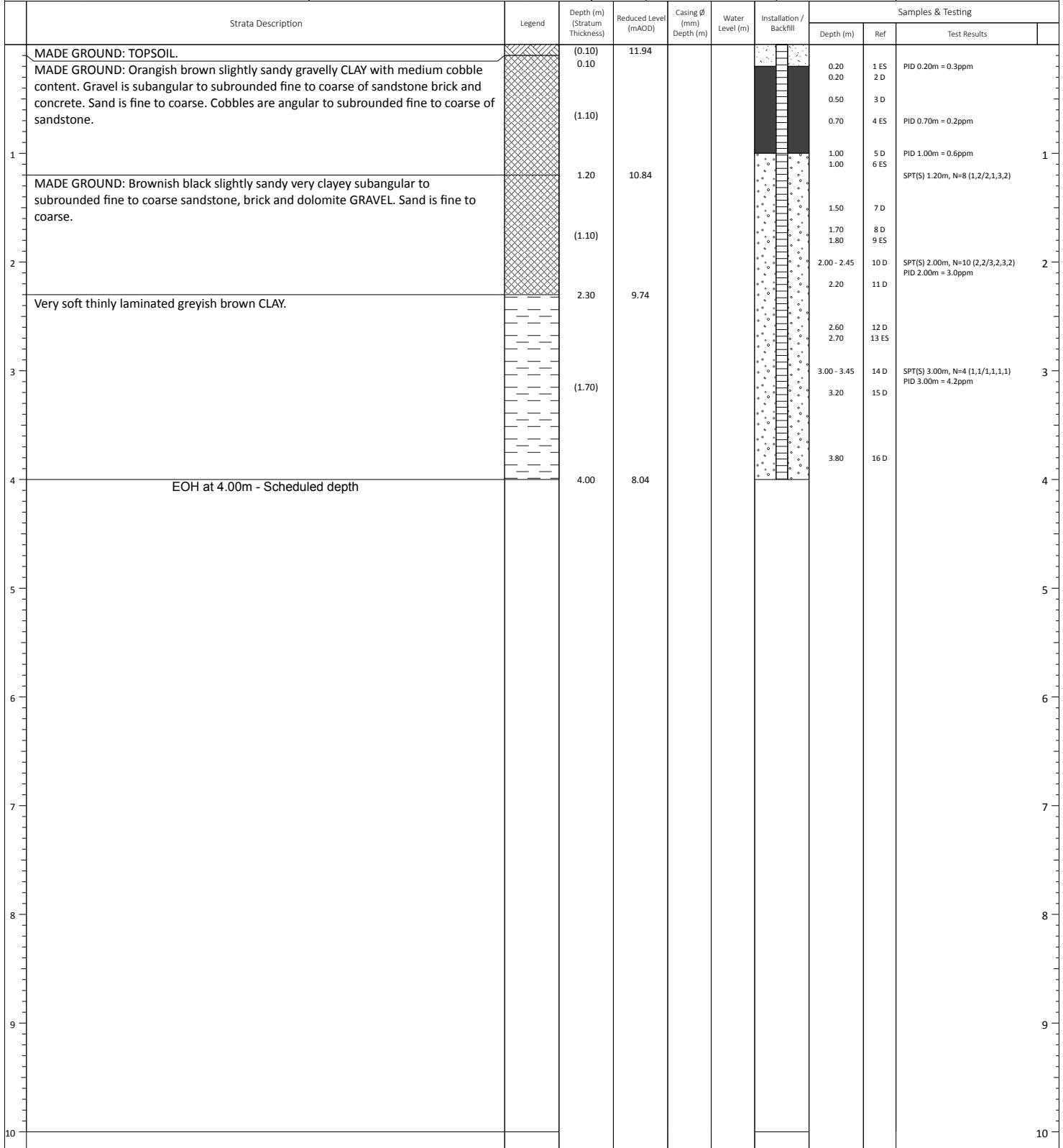
| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 100        | 112 Blows |
| 2.00 - 3.00                         | 86        | 70         | 53 Blows  |
| 3.00 - 4.00                         | 76        | 90         | 30 Blows  |



|                                      |                              |                            |                            |                                                 |                                       |                         |
|--------------------------------------|------------------------------|----------------------------|----------------------------|-------------------------------------------------|---------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant        |                                                 |                                       | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424920.01</b>    | Northing: <b>558572.01</b> | Depth (m)                  | Method                                          | Plant Used                            | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>12.04m AOD</b> | Final Depth: <b>4.00m</b>  | 0.00 - 1.20<br>1.20 - 4.00 | Inspection Pit<br>Dynamic Sampling (Windowless) | Hand Tools<br>Handheld Window Sampler | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>RJ</b>         | Grid System: <b>OSGB</b>   |                            |                                                 |                                       | Start Date: 18/04/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                            |                                                 |                                       | Finish Date: 18/04/2018 |



| Observations / Remarks                                                       | Misc. | Backfill                      |            | Dynamic Sampling Runs |              |            |              | Installations |                    |             |           |      |
|------------------------------------------------------------------------------|-------|-------------------------------|------------|-----------------------|--------------|------------|--------------|---------------|--------------------|-------------|-----------|------|
|                                                                              |       | Depth (m)                     | Material   | From (m)              | To (m)       | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details | Resp. Zone  | Depth (m) | Diam |
| No Groundwater Encountered<br>Hole Not Cased<br>Monitoring Point/s Installed |       | 0.00 - 0.20                   | Concrete   | 1.20                  | 2.00         | 101        | 100          | 112 Blows     | Standpipe          | 1.00 - 4.00 | 4.00      |      |
|                                                                              |       | 0.20 - 1.00                   | Bentonite  | 2.00                  | 3.00         | 86         | 70           | 53 Blows      |                    |             |           |      |
|                                                                              |       | 1.00 - 4.00                   | Gravel     | 3.00                  | 4.00         | 76         | 90           | 30 Blows      |                    |             |           |      |
|                                                                              |       |                               |            |                       |              |            |              |               |                    |             |           |      |
|                                                                              |       | Hammer Ref & Energy Ratio (%) |            |                       |              |            |              |               |                    |             |           |      |
|                                                                              |       | <b>MOD 02 (65%)</b>           |            |                       |              |            |              |               |                    |             |           |      |
|                                                                              |       | Groundwater Strikes           |            |                       |              |            |              |               |                    |             |           |      |
|                                                                              |       | Strike (m)                    | Casing (m) | Sealed (m)            | Rises To (m) | Time (min) | Remarks      |               |                    |             |           |      |
|                                                                              |       |                               |            |                       |              |            |              |               |                    |             |           |      |



|                                      |                             |                            |                       |                          |                        |                        |
|--------------------------------------|-----------------------------|----------------------------|-----------------------|--------------------------|------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant   |                          |                        | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424917.00</b>   | Northing: <b>558535.54</b> | From (m): 0.00 - 1.20 | Method: Inspection Pit   | Plant Used: Hand Tools | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.96mAOD</b> | Final Depth: <b>1.20m</b>  | Logger: <b>GS</b>     | Grid System: <b>OSGB</b> |                        | Approved: BH           |
| Client: <b>SLIV</b>                  | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                       |                          |                        | Start Date: 16/04/2018 |
|                                      |                             |                            |                       |                          |                        | End Date: 16/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased**

**No Groundwater Encountered**

**No Monitoring Point/s Installed**

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.20 | Arisings    |

| Sample Summary               |   |                  |   |
|------------------------------|---|------------------|---|
| <i>Environmental Samples</i> |   |                  |   |
| Soil                         | 3 | Water            | 0 |
| <i>Geotechnical Samples</i>  |   |                  |   |
| Bulk                         | 1 | Large Bulk       | 0 |
| Disturbed                    | 2 | Disturbed (NR)   | 0 |
| Piston                       | 0 | Piston (NR)      | 0 |
| Undisturbed                  | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall        |   | 0                |   |
| Undisturbed Thin Wall (NR)   |   | 0                |   |
| Core Sample                  |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

**No Standard Penetration Tests Undertaken**

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-23**  
FINAL



|                                      |                             |                            |                          |                          |                          |                         |
|--------------------------------------|-----------------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant      |                          |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424917.00</b>   | Northing: <b>558535.54</b> | Depth (m)<br>0.00 - 1.20 | Method<br>Inspection Pit | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.96mAOD</b> | Final Depth: <b>1.20m</b>  |                          |                          |                          | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                          |                          |                          | Start Date: 16/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                          |                          |                          | Finish Date: 16/04/2018 |

| Strata Description                                                                                                                                                   | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|----------------------------|
|                                                                                                                                                                      |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref                        |
| MADE GROUND: TOPSOIL.                                                                                                                                                |        | (0.10)                           | 11.86                   |                               |                 |                            |                   |                            |
| MADE GROUND: Soft dark brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, limestone and brick. |        | 0.10                             |                         |                               |                 |                            | 0.20              | 1 ES<br>PID 0.20m = 0.4ppm |
|                                                                                                                                                                      |        | (0.60)                           |                         |                               |                 |                            | 0.50              | 2 D                        |
|                                                                                                                                                                      |        | 0.70                             | 11.26                   |                               |                 |                            | 0.70              | 3 ES<br>PID 0.70m = 0.2ppm |
| MADE GROUND: Brown slightly sandy slightly clayey subangular to subrounded fine to coarse sandstone and siltstone GRAVEL. Sand is fine to coarse.                    |        | (0.50)                           |                         |                               |                 |                            | 0.70 - 1.20       | 6 B                        |
|                                                                                                                                                                      |        | 1.20                             | 10.76                   |                               |                 |                            | 1.00              | 4 D<br>PID 1.00m = 0.2ppm  |
|                                                                                                                                                                      |        |                                  |                         |                               |                 |                            | 1.00              | 5 ES                       |
| EOH at 1.20m - Service Encountered                                                                                                                                   |        |                                  |                         |                               |                 |                            |                   |                            |

|                        |                                                                                |                               |                      |                       |            |              |              |               |                    |  |            |           |      |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|----------------------|-----------------------|------------|--------------|--------------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |                      | Dynamic Sampling Runs |            |              |              | Installations |                    |  |            |           |      |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)<br>0.00 - 1.20      | Material<br>Arisings | From (m)              | To (m)     | Diam (mm)    | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |                                                                                | Groundwater Strikes           |                      |                       |            |              |              |               |                    |  |            |           |      |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) | Strike (m)           | Casing (m)            | Sealed (m) | Rises To (m) | Time (min)   | Remarks       |                    |  |            |           |      |



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424916.09</b>   | Northing: <b>558535.86</b> | From (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.96mAOD</b> | Final Depth: <b>4.00m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS+RJ</b>        | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 16/04/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 16/04/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
| 16/04/2018                        | Standpipe          | 4.00   | 1.00 - 4.00    |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.00 | Bentonite   |
| 1.00 - 4.00 | Gravel      |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 4 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 9 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 3             | 10         | 450                    | 10 | N=10 (1,2/2,3,3,2) | MOD 02     |
| Split Spoon                       | 2.00      | -          | -         | 3             | 4          | 450                    | 4  | N=4 (2,1/1,1,1,1)  | MOD 02     |
| Split Spoon                       | 3.00      | -          | -         | 2             | 4          | 450                    | 4  | N=4 (1,1/1,1,1,1)  | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |          |
|-------------------------------------|-----------|------------|----------|
| Dynamic Sampling Runs               |           |            |          |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks  |
| 1.20 - 2.00                         | 101       | 75         | 83 Blows |
| 2.00 - 3.00                         | 86        | 95         | 49 Blows |
| 3.00 - 4.00                         | 76        | 80         | 33 Blows |



|                                      |                             |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424916.09</b>   | Northing: <b>558535.86</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 4.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>11.96mAOD</b> | Final Depth: <b>4.00m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLJV</b>                  | Logged By: <b>GS+RJ</b>     | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 16/04/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 16/04/2018 |

| Strata Description                                                                                                                                                                                      | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing                   |                             |                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------------------------|-----------------------------|--------------------------------------------------------|
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | Depth (m)                           | Ref                         | Test Results                                           |
| <b>MADE GROUND: TOPSOIL.</b><br>MADE GROUND: Soft brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and brick.           |        | (0.10)<br>0.10                   | 11.86                   |                               |                 |                            | 0.20<br>0.20                        | 1 D<br>2 ES                 | PID 0.20m = 0.4ppm                                     |
|                                                                                                                                                                                                         |        | (1.10)                           |                         |                               |                 |                            | 0.50<br>0.70<br>0.70 - 1.20         | 3 D<br>4 ES<br>7 B          | PID 0.70m = 0.6ppm                                     |
| <b>MADE GROUND: Brown sandy clayey subangular to rounded fine to coarse sandstone and roadstone GRAVEL. Sand is fine to coarse.</b><br>Soft extremely low strength thinly laminated brownish grey CLAY. |        | 1.20<br>(0.20)<br>1.40           | 10.76<br>10.56          |                               |                 |                            | 1.00<br>1.00<br>1.30                | 5 D<br>6 ES<br>7 D          | PID 1.00m = 0.4ppm<br>SPT(S) 1.20m, N=10 (1,2/2,3,3,2) |
|                                                                                                                                                                                                         |        | (2.60)                           |                         |                               |                 |                            | 1.70<br>1.80<br>2.00 - 2.45<br>2.40 | 8 D<br>14 ES<br>9 D<br>10 D | PID 1.80m = 2.0ppm<br>SPT(S) 2.00m, N=4 (2,1/1,1,1,1)  |
|                                                                                                                                                                                                         |        |                                  |                         |                               |                 |                            | 3.00 - 3.45                         | 11 D                        | SPT(S) 3.00m, N=4 (1,1/1,1,1,1)                        |
| <b>EOH at 4.00m - Scheduled depth</b>                                                                                                                                                                   |        | 4.00                             | 7.96                    |                               |                 |                            | 3.90 - 4.45                         | 13 D                        |                                                        |

|                        |                                                                              |             |           |                       |        |           |              |               |                     |            |             |              |            |         |
|------------------------|------------------------------------------------------------------------------|-------------|-----------|-----------------------|--------|-----------|--------------|---------------|---------------------|------------|-------------|--------------|------------|---------|
| Observations / Remarks | Misc.                                                                        | Backfill    |           | Dynamic Sampling Runs |        |           |              | Installations |                     |            |             |              |            |         |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>Monitoring Point/s Installed | Depth (m)   | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details  |            | Resp. Zone  | Depth (m)    | Diam       |         |
|                        |                                                                              | 0.00 - 1.00 | Bentonite | 1.20                  | 2.00   | 101       | 75           | 83 Blows      | Standpipe           |            | 1.00 - 4.00 | 4.00         |            |         |
|                        |                                                                              | 1.00 - 4.00 | Gravel    | 2.00                  | 3.00   | 86        | 95           | 49 Blows      |                     |            |             |              |            |         |
|                        |                                                                              |             | 3.00      | 4.00                  | 76     | 80        | 33 Blows     |               |                     |            |             |              |            |         |
|                        | Hammer Ref & Energy Ratio (%)                                                |             |           |                       |        |           |              |               | Groundwater Strikes |            |             |              |            |         |
|                        | <b>MOD 02 (65%)</b>                                                          |             |           |                       |        |           |              |               | Strike (m)          | Casing (m) | Sealed (m)  | Rises To (m) | Time (min) | Remarks |



|                                      |                             |                            |                                        |                                                           |                          |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|--------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           | Scale: 1:50              |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424428.22</b>   | Northing: <b>558606.47</b> | From (m)<br>0.00 - 1.20<br>1.20 - 3.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.82mAOD</b> | Final Depth: <b>3.00m</b>  |                                        |                                                           |                          |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                          |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                          |
|                                      |                             |                            |                                        |                                                           | Checked: RPH             |
|                                      |                             |                            |                                        |                                                           | Approved: BH             |
|                                      |                             |                            |                                        |                                                           | Start Date: 18/05/2018   |
|                                      |                             |                            |                                        |                                                           | End Date: 18/05/2018     |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 3.00 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 5 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 2 | Large Bulk       | 0 |
| Disturbed                  | 6 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-24**  
**FINAL**



|                                      |                             |                            |                            |                                                 |            |                         |
|--------------------------------------|-----------------------------|----------------------------|----------------------------|-------------------------------------------------|------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant        |                                                 |            | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424428.22</b>   | Northing: <b>558606.47</b> | Depth (m)                  | Method                                          | Plant Used | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>17.82mAOD</b> | Final Depth: <b>3.00m</b>  | 0.00 - 1.20<br>1.20 - 3.00 | Inspection Pit<br>Dynamic Sampling (Windowless) | Hand Tools | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                            |                                                 |            | Start Date: 18/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                            |                                                 |            | Finish Date: 18/05/2018 |

| Strata Description                                                                                                                                                       | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|-------|
|                                                                                                                                                                          |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref   |
| MADE GROUND: Firm brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone, concrete, siltstone and brick.   |        | 0.35                             | 17.47                   |                               |                 |                            | 0.10 - 1.20       | 7 B   |
|                                                                                                                                                                          |        | 0.20                             |                         |                               |                 |                            | 0.20              | 1 D   |
|                                                                                                                                                                          |        | 0.30                             |                         |                               |                 |                            | 0.30              | 2 ES  |
|                                                                                                                                                                          |        | 0.50                             | 17.32                   |                               |                 |                            | 0.50              | 3 D   |
|                                                                                                                                                                          |        | 0.50                             |                         |                               |                 |                            | 0.70              | 4 ES  |
| MADE GROUND: Brownish yellow sandy slightly clayey subangular to subrounded fine to coarse sandstone GRAVEL and COBBLES. Sand is fine to coarse.                         |        | (1.40)                           |                         |                               |                 |                            | 1.00              | 5 D   |
|                                                                                                                                                                          |        |                                  |                         |                               |                 |                            | 1.00              | 6 ES  |
|                                                                                                                                                                          |        |                                  |                         |                               |                 |                            | 1.20 - 2.00       | 10 B  |
|                                                                                                                                                                          |        |                                  |                         |                               |                 |                            | 1.50              | 8 D   |
| MADE GROUND: Soft to firm reddish brown sandy very gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone, brick and siltstone. |        | 1.90                             | 15.92                   |                               |                 |                            | 1.90              | 9 ES  |
|                                                                                                                                                                          |        | (1.10)                           |                         |                               |                 |                            | 2.00              | 11 D  |
|                                                                                                                                                                          |        |                                  |                         |                               |                 |                            | 2.50              | 12 D  |
|                                                                                                                                                                          |        |                                  |                         |                               |                 |                            | 2.90              | 13 ES |
| EOH at 3.00m - Scheduled Depth                                                                                                                                           |        | 3.00                             | 14.82                   |                               |                 |                            |                   |       |

|                        |                                                                                |                               |              |                       |         |           |              |               |                    |  |            |           |      |
|------------------------|--------------------------------------------------------------------------------|-------------------------------|--------------|-----------------------|---------|-----------|--------------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks | Misc.                                                                          | Backfill                      |              | Dynamic Sampling Runs |         |           |              | Installations |                    |  |            |           |      |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)                     | Material     | From (m)              | To (m)  | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                        |                                                                                | 0.00 - 3.00                   | Bentonite    |                       |         |           |              |               |                    |  |            |           |      |
|                        |                                                                                | Hammer Ref & Energy Ratio (%) |              |                       |         |           |              |               |                    |  |            |           |      |
| Groundwater Strikes    |                                                                                |                               |              |                       |         |           |              |               |                    |  |            |           |      |
| Strike (m)             | Casing (m)                                                                     | Sealed (m)                    | Rises To (m) | Time (min)            | Remarks |           |              |               |                    |  |            |           |      |
|                        |                                                                                |                               |              |                       |         |           |              |               |                    |  |            |           |      |



|                                      |                             |                            |                                        |                                                           |                                                     |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                     | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424411.17</b>   | Northing: <b>558610.86</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.70 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Handheld Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.16mAOD</b> | Final Depth: <b>1.70m</b>  |                                        |                                                           |                                                     | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                     | Start Date: 31/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                     | End Date: 31/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.70 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 3 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 2 | Large Bulk       | 0 |
| Disturbed                  | 4 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.70                         |           | 100        |         |



# CENTRAL ALLIANCE

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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-25**  
FINAL



|                                      |                             |                            |                                         |                                                           |                                                     |                         |
|--------------------------------------|-----------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                     |                                                           |                                                     | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424411.17</b>   | Northing: <b>558610.86</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 1.70 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Handheld Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>18.16mAOD</b> | Final Depth: <b>1.70m</b>  |                                         |                                                           |                                                     | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>        | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                     | Start Date: 31/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                         |                                                           |                                                     | Finish Date: 31/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation/<br>Backfill | Samples & Testing |                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|---------------------------|-------------------|------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                  |                         |                               |                 |                           | Depth (m)         | Ref                                                                          |
| <p>MADE GROUND: Soft brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of sandstone mudstone and brick.</p> <p>MADE GROUND: Brownish yellow gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone.</p> <p>MADE GROUND: Soft yellowish brown gravelly very sandy CLAY with medium cobble content. Gravel is subangular to subrounded fine to coarse of brick mudstone coal and sandstone. Cobbles are subangular to subrounded fine to coarse of sandstone. Sand is fine to coarse.</p> <p>MADE GROUND: Brownish red very sandy clayey subangular fine to coarse brick, sandstone mudstone and coal GRAVEL. Sand is fine to coarse.</p> |        | 0.25                             | 17.91                   |                               |                 | 0.10 - 1.20               | 7 B               | PID 0.30m = 208.0ppm<br><br>PID 0.70m = 112.0ppm<br><br>PID 1.00m = 158.0ppm |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | 0.20                             |                         |                               |                 | 1 D                       |                   |                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | 0.30                             |                         |                               |                 | 2 ES                      |                   |                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | 0.40                             |                         |                               |                 | 3 D                       |                   |                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | 0.70                             |                         |                               |                 | 4 ES                      |                   |                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        | 1.10                             | 17.06                   |                               |                 | 1.00                      | 5 D               |                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                  |                         |                               |                 | 1.00                      | 6 ES              |                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                  |                         |                               |                 | 1.20 - 1.70               | 9 B               |                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |                                  |                         |                               |                 | 1.50                      | 8 D               |                                                                              |
| EOH at 1.70m - Refusal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        | 1.70                             | 16.46                   |                               |                 |                           |                   |                                                                              |

|                                                                                                                                                                                |                                                                                          |                               |              |                       |         |           |              |               |                    |  |            |           |      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------|--------------|-----------------------|---------|-----------|--------------|---------------|--------------------|--|------------|-----------|------|--|
| Observations / Remarks<br>* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon. | Misc.<br>No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Point/s Installed | Backfill                      |              | Dynamic Sampling Runs |         |           |              | Installations |                    |  |            |           |      |  |
|                                                                                                                                                                                |                                                                                          | Depth (m)                     | Material     | From (m)              | To (m)  | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |  |
|                                                                                                                                                                                |                                                                                          | 0.00 - 1.70                   | Bentonite    | 1.20                  | 1.70    |           | 100          |               |                    |  |            |           |      |  |
|                                                                                                                                                                                |                                                                                          | Hammer Ref & Energy Ratio (%) |              |                       |         |           |              |               |                    |  |            |           |      |  |
| Groundwater Strikes                                                                                                                                                            |                                                                                          |                               |              |                       |         |           |              |               |                    |  |            |           |      |  |
| Strike (m)                                                                                                                                                                     | Casing (m)                                                                               | Sealed (m)                    | Rises To (m) | Time (min)            | Remarks |           |              |               |                    |  |            |           |      |  |
|                                                                                                                                                                                |                                                                                          |                               |              |                       |         |           |              |               |                    |  |            |           |      |  |



|                                      |                             |                            |                                        |                                                           |                                                     |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                     | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424381.17</b>   | Northing: <b>558619.13</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.80 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Handheld Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.04mAOD</b> | Final Depth: <b>1.80m</b>  |                                        |                                                           |                                                     | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                     | Start Date: 18/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                     | End Date: 18/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
| 1.80          | 76        |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.80 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 3 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 5 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   |                  | 0 |
| Undisturbed Thin Wall (NR) |   |                  | 0 |
| Core Sample                |   |                  | 0 |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 1.80                         | 76        | 100        |         |





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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-26**  
FINAL



|                                      |                              |                            |                     |                               |                         |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|-------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |                         | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424381.17</b>    | Northing: <b>558619.13</b> | Depth (m)           | Method                        | Plant Used              | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.04m AOD</b> | Final Depth: <b>1.80m</b>  | 0.00 - 1.20         | Inspection Pit                | Hand Tools              | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   | 1.20 - 1.80         | Dynamic Sampling (Windowless) | Handheld Window Sampler | Start Date: 18/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |                               |                         | Finish Date: 18/05/2018 |

| Strata Description                                                                                                                                                                                                                                              | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation/<br>Backfill | Samples & Testing |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|---------------------------|-------------------|------|
|                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                           | Depth (m)         | Ref  |
| MADE GROUND: Soft to firm black brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse of sandstone brick concrete and rare coal.                                                                           |        | 0.25                             | 18.79                   |                               |                 |                           | 0.10 - 1.20       | 7 B  |
| MADE GROUND: Brownish yellow sandy slightly clayey subangular to subrounded fine to coarse sandstone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are angular to rounded sandstone.                                                       |        | 0.25                             |                         |                               |                 |                           | 0.20              | 1 D  |
| MADE GROUND: Soft to firm reddish brown gravelly sandy CLAY with medium cobble content. Gravel is subangular to angular fine to coarse sandstone brick concrete and rare siltstone. Sand is fine to coarse. Cobbles are angular to rounded sandstone and brick. |        | 0.15                             | 18.64                   |                               |                 |                           | 0.30              | 2 ES |
|                                                                                                                                                                                                                                                                 |        | 0.40                             |                         |                               |                 |                           | 0.50              | 3 D  |
|                                                                                                                                                                                                                                                                 |        | (1.40)                           |                         |                               |                 |                           | 0.70              | 4 ES |
|                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                           | 1.00              | 5 D  |
|                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                           | 1.00              | 6 ES |
|                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                           | 1.50              | 8 D  |
|                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                           | 1.70              | 9 D  |
| EOH at 1.80m - Refusal                                                                                                                                                                                                                                          |        | 1.80                             | 17.24                   |                               |                 |                           |                   |      |

|                        |                                                                                 |                               |            |              |            |                       |              |         |                    |               |            |           |      |
|------------------------|---------------------------------------------------------------------------------|-------------------------------|------------|--------------|------------|-----------------------|--------------|---------|--------------------|---------------|------------|-----------|------|
| Observations / Remarks | Misc.                                                                           | Backfill                      |            |              |            | Dynamic Sampling Runs |              |         |                    | Installations |            |           |      |
|                        | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Point/s Installed | Depth (m)                     | Material   | From (m)     | To (m)     | Diam (mm)             | Recovery (%) | Remarks | Instrument Details |               | Resp. Zone | Depth (m) | Diam |
|                        |                                                                                 | 0.00 - 1.80                   | Bentonite  | 1.20         | 1.80       | 76                    | 100          |         |                    |               |            |           |      |
|                        |                                                                                 | Hammer Ref & Energy Ratio (%) |            |              |            |                       |              |         |                    |               |            |           |      |
| Groundwater Strikes    |                                                                                 |                               |            |              |            |                       |              |         |                    |               |            |           |      |
| Strike (m)             |                                                                                 | Casing (m)                    | Sealed (m) | Rises To (m) | Time (min) | Remarks               |              |         |                    |               |            |           |      |





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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-27**  
**FINAL**



|                                      |                              |                            |                                         |                                                           |                          |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|--------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                           |                          | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424356.68</b>    | Northing: <b>558627.04</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 3.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>19.80m AOD</b> | Final Depth: <b>3.00m</b>  |                                         |                                                           |                          | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                                         |                                                           |                          | Start Date: 18/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                           |                          | Finish Date: 18/05/2018 |

| Strata Description                                                                                                                                                                                                                           | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation /<br>Backfill | Samples & Testing |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|----------------------------|-------------------|------|
|                                                                                                                                                                                                                                              |        |                                  |                         |                               |                 |                            | Depth (m)         | Ref  |
| MADE GROUND: Soft to firm brownish black slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone, brick, concrete and rare coal.                                                      |        | (0.30)                           |                         |                               |                 |                            | 0.10 - 1.20       | 7 B  |
| MADE GROUND: Brownish yellow sandy clayey subangular to subrounded fine to coarse sandstone GRAVEL and COBBLES. Sand is fine to coarse.                                                                                                      |        | 0.30                             | 19.50                   |                               |                 |                            | 0.20              | 1 D  |
| MADE GROUND: Soft to firm reddish brown gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone, brick, concrete and rare siltstone. Cobbles are subangular sandstone. |        | (0.15)                           | 19.35                   |                               |                 |                            | 0.30              | 2 ES |
|                                                                                                                                                                                                                                              |        | 0.45                             |                         |                               |                 |                            | 0.50              | 3 D  |
|                                                                                                                                                                                                                                              |        | (1.05)                           |                         |                               |                 |                            | 0.70              | 4 ES |
| MADE GROUND: Firm laminated greyish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone and brick.                                                                 |        | 1.50                             | 18.30                   |                               |                 |                            | 1.00              | 5 D  |
|                                                                                                                                                                                                                                              |        | (0.60)                           |                         |                               |                 |                            | 1.00              | 6 ES |
|                                                                                                                                                                                                                                              |        | 2.10                             | 17.70                   |                               |                 |                            | 1.20 - 2.00       | 10 B |
| Firm to stiff laminated orangish grey CLAY.                                                                                                                                                                                                  |        | (0.90)                           |                         |                               |                 |                            | 1.50              | 8 D  |
|                                                                                                                                                                                                                                              |        | 3.00                             | 16.80                   |                               |                 |                            | 1.90              | 9 ES |
|                                                                                                                                                                                                                                              |        |                                  |                         |                               |                 |                            | 2.00              | 11 D |
|                                                                                                                                                                                                                                              |        |                                  |                         |                               |                 |                            | 2.00 - 3.00       | 14 B |
|                                                                                                                                                                                                                                              |        |                                  |                         |                               |                 |                            | 2.50              | 12 D |
|                                                                                                                                                                                                                                              |        |                                  |                         |                               |                 |                            | 2.90              | 13 D |
| EOH at 3.00m - Scheduled Depth                                                                                                                                                                                                               |        |                                  |                         |                               |                 |                            |                   |      |

|                        |       |                               |            |                       |              |            |              |               |                    |                     |            |           |      |
|------------------------|-------|-------------------------------|------------|-----------------------|--------------|------------|--------------|---------------|--------------------|---------------------|------------|-----------|------|
| Observations / Remarks | Misc. | Backfill                      |            | Dynamic Sampling Runs |              |            |              | Installations |                    |                     |            |           |      |
|                        |       | Depth (m)                     | Material   | From (m)              | To (m)       | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details |                     | Resp. Zone | Depth (m) | Diam |
|                        |       | 0.00 - 3.00                   | Bentonite  |                       |              |            |              |               |                    |                     |            |           |      |
|                        |       | Hammer Ref & Energy Ratio (%) |            |                       |              |            |              |               |                    | Groundwater Strikes |            |           |      |
|                        |       | Strike (m)                    | Casing (m) | Sealed (m)            | Rises To (m) | Time (min) | Remarks      |               |                    |                     |            |           |      |
|                        |       |                               |            |                       |              |            |              |               |                    |                     |            |           |      |

No Groundwater Encountered  
Hole Not Cased  
No Monitoring Points Installed



|                                      |                              |                            |                                        |                                                           |                                                     |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           | Scale: 1:50                                         |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424339.89</b>    | Northing: <b>558633.29</b> | From (m)<br>0.00 - 1.20<br>1.20 - 2.00 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Handheld Window Sampler |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.28m AOD</b> | Final Depth: <b>2.00m</b>  |                                        |                                                           | Checked: RPH                                        |
| Client: <b>SLIV</b>                  | Logger: <b>GS</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           | Approved: BH                                        |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           | Start Date: 31/05/2018                              |
|                                      |                              |                            |                                        |                                                           | End Date: 31/05/2018                                |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 2.00 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 3 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 2 | Large Bulk       | 0 |
| Disturbed                  | 5 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                 |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result | Hammer Ref |
|                                   |           |            |           |               |            |                        |   |                 |            |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
|                 |                  |

No Standard Penetration Tests Undertaken

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
| 1.20 - 2.00                         |           | 100        |         |



|                                      |                              |                            |                            |                                                 |                                       |                         |
|--------------------------------------|------------------------------|----------------------------|----------------------------|-------------------------------------------------|---------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant        |                                                 |                                       | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424339.89</b>    | Northing: <b>558633.29</b> | Depth (m)                  | Method                                          | Plant Used                            | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.28m AOD</b> | Final Depth: <b>2.00m</b>  | 0.00 - 1.20<br>1.20 - 2.00 | Inspection Pit<br>Dynamic Sampling (Windowless) | Hand Tools<br>Handheld Window Sampler | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>GS</b>         | Grid System: <b>OSGB</b>   |                            |                                                 |                                       | Start Date: 31/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                            |                                                 |                                       | Finish Date: 31/05/2018 |

| Strata Description                                                                                                                                                                                                                                                       | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation/<br>Backfill | Samples & Testing           |                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|---------------------------|-----------------------------|--------------------|
|                                                                                                                                                                                                                                                                          |        |                                  |                         |                               |                 |                           | Depth (m)                   | Ref                |
| MADE GROUND: Soft brown gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of sandstone mudstone and brick. Sand is fine to coarse.                                                                                                                  |        | (0.15)<br>0.15<br>(0.30)         | 20.13                   |                               |                 |                           | 0.10 - 1.20<br>0.20<br>0.30 | 7 B<br>1 D<br>2 ES |
| MADE GROUND: Brownish yellow slightly gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone.                                                                                                                      |        | 0.45<br>(0.55)                   | 19.83                   |                               |                 |                           | 0.50<br>0.70                | 3 D<br>4 ES        |
| MADE GROUND: Soft yellowish brown gravelly very sandy CLAY with medium cobble content. Gravel is subangular to subrounded fine to coarse of brick mudstone coal and sandstone. Cobbles are subangular to subrounded fine to coarse of sandstone. Sand is fine to coarse. |        | 1.00<br>(0.50)                   | 19.28                   |                               |                 |                           | 1.00<br>1.00                | 5 D<br>6 ES        |
| MADE GROUND: Brownish red very sandy clayey subangular fine to coarse brick sandstone mudstone and coal GRAVEL. Sand is fine to coarse.                                                                                                                                  |        | 1.50<br>(0.50)                   | 18.78                   |                               |                 |                           | 1.50<br>1.60 - 2.00         | 9 D<br>10 B        |
| MADE GROUND: Firm grey laminated slightly silty gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone mudstone coal and brick.                                                                                                                   |        | 2.00                             | 18.28                   |                               |                 |                           |                             |                    |
| EOH at 2.00m - Refusal                                                                                                                                                                                                                                                   |        |                                  |                         |                               |                 |                           |                             |                    |

|                                                                                                                                                                                |                                                                                 |                               |           |                       |        |           |              |               |                    |                     |              |            |         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------|--------------------|---------------------|--------------|------------|---------|
| Observations / Remarks<br>* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon. | Misc.                                                                           | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations |                    |                     |              |            |         |
|                                                                                                                                                                                | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Point/s Installed | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks       | Instrument Details |                     | Resp. Zone   | Depth (m)  | Diam    |
|                                                                                                                                                                                |                                                                                 | 0.00 - 2.00                   | Bentonite | 1.20                  | 2.00   |           |              | 100           |                    |                     |              |            |         |
|                                                                                                                                                                                |                                                                                 | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              |               |                    | Groundwater Strikes |              |            |         |
|                                                                                                                                                                                |                                                                                 |                               |           |                       |        |           |              | Strike (m)    | Casing (m)         | Sealed (m)          | Rises To (m) | Time (min) | Remarks |



|                                      |                              |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|------------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                    |                                                           | Scale: 1:50                                        |                        |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424325.21</b>    | Northing: <b>558639.45</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.46 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.56m AOD</b> | Final Depth: <b>1.46m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>TC</b>            | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 18/05/2018 |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 18/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.46 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 4 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                                |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|--------------------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result                | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 25            | 50         | 255                    |   | 50 (25 for 140mm/50 for 115mm) | MOD 02     |

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |



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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-29**  
FINAL



|                                      |                             |                            |                            |                                                 |                                      |                         |
|--------------------------------------|-----------------------------|----------------------------|----------------------------|-------------------------------------------------|--------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant        |                                                 |                                      | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424325.21</b>   | Northing: <b>558639.45</b> | Depth (m)                  | Method                                          | Plant Used                           | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>20.56mAOD</b> | Final Depth: <b>1.46m</b>  | 0.00 - 1.20<br>1.20 - 1.46 | Inspection Pit<br>Dynamic Sampling (Windowless) | Hand Tools<br>Modular Window Sampler | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>TC</b>        | Grid System: <b>OSGB</b>   |                            |                                                 |                                      | Start Date: 18/05/2018  |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                            |                                                 |                                      | Finish Date: 18/05/2018 |

| Strata Description                                                                                                                                                    | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation/<br>Backfill | Samples & Testing                            |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|---------------------------|----------------------------------------------|-----|
|                                                                                                                                                                       |        |                                  |                         |                               |                 |                           | Depth (m)                                    | Ref |
| MADE GROUND: Soft brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone, brick and rare coal. |        | 0.30                             | 20.26                   |                               |                 |                           | 0.00 - 1.20                                  | 4 B |
|                                                                                                                                                                       |        | 0.30                             |                         |                               |                 |                           | 0.20                                         | 1 D |
| MADE GROUND: Firm yellowish brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone and rare brick and coal.      |        | 1.16                             |                         |                               |                 |                           | 0.50                                         | 2 D |
|                                                                                                                                                                       |        |                                  |                         |                               |                 |                           | 1.00                                         | 3 D |
|                                                                                                                                                                       |        |                                  |                         |                               |                 |                           | 1.20 - 1.46                                  | 5 D |
| EOH at 1.46m - Refusal                                                                                                                                                |        | 1.46                             | 19.10                   |                               |                 |                           | SPT(S) 1.20m, 50 (25 for 140mm/50 for 115mm) |     |

|                                                      |                                                                                |                     |            |                       |              |            |              |               |                    |  |            |           |      |
|------------------------------------------------------|--------------------------------------------------------------------------------|---------------------|------------|-----------------------|--------------|------------|--------------|---------------|--------------------|--|------------|-----------|------|
| Observations / Remarks                               | Misc.                                                                          | Backfill            |            | Dynamic Sampling Runs |              |            |              | Installations |                    |  |            |           |      |
|                                                      | No Groundwater Encountered<br>Hole Not Cased<br>No Monitoring Points Installed | Depth (m)           | Material   | From (m)              | To (m)       | Diam (mm)  | Recovery (%) | Remarks       | Instrument Details |  | Resp. Zone | Depth (m) | Diam |
|                                                      |                                                                                | 0.00 - 1.46         | Bentonite  |                       |              |            |              |               |                    |  |            |           |      |
|                                                      |                                                                                | Groundwater Strikes |            |                       |              |            |              |               |                    |  |            |           |      |
|                                                      |                                                                                | Strike (m)          | Casing (m) | Sealed (m)            | Rises To (m) | Time (min) | Remarks      |               |                    |  |            |           |      |
| Hammer Ref & Energy Ratio (%)<br><b>MOD 02 (65%)</b> |                                                                                |                     |            |                       |              |            |              |               |                    |  |            |           |      |



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424319.93</b>   | Northing: <b>558637.30</b> | From (m)<br>0.00 - 1.20<br>1.20 - 1.55 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>14.48mAOD</b> | Final Depth: <b>1.55m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>TC</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 18/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 18/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
|                 |           |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 1.55 | Bentonite   |

| Sample Summary             |   |                  |   |
|----------------------------|---|------------------|---|
| Environmental Samples      |   |                  |   |
| Soil                       | 0 | Water            | 0 |
| Geotechnical Samples       |   |                  |   |
| Bulk                       | 1 | Large Bulk       | 0 |
| Disturbed                  | 4 | Disturbed (NR)   | 0 |
| Piston                     | 0 | Piston (NR)      | 0 |
| Undisturbed                | 0 | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |   | 0                |   |
| Undisturbed Thin Wall (NR) |   | 0                |   |
| Core Sample                |   | 0                |   |

(NR) Indicates sample undertaken but with 0% Recovery

| Standard Penetration Test Summary |           |            |           |               |            |                        |   |                       |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|---|-----------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N | Reported Result       | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 10            | 50         | 345                    |   | 50 (4,6/50 for 195mm) | MOD 02     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 1 |

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |         |
|-------------------------------------|-----------|------------|---------|
| Dynamic Sampling Runs               |           |            |         |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks |
|                                     |           |            |         |





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Log Type  
**Dynamic Sampling**  
Sheet 1 of 1

Exploratory Hole Number  
**WS17-29A**  
FINAL



|                                      |                              |                            |                     |                               |                        |                         |
|--------------------------------------|------------------------------|----------------------------|---------------------|-------------------------------|------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant |                               |                        | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424319.93</b>    | Northing: <b>558637.30</b> | Depth (m)           | Method                        | Plant Used             | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>14.48m AOD</b> | Final Depth: <b>1.55m</b>  | 0.00 - 1.20         | Inspection Pit                | Hand Tools             | Approved By: BH         |
| Client: <b>SLIV</b>                  | Logged By: <b>TC</b>         | Grid System: <b>OSGB</b>   | 1.20 - 1.55         | Dynamic Sampling (Windowless) | Modular Window Sampler | Start Date: 18/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                     |                               |                        | Finish Date: 18/05/2018 |

| Strata Description                                                                                                                                                                                                                                                                                                                                                                                  | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation/<br>Backfill | Samples & Testing |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|---------------------------|-------------------|-----|
|                                                                                                                                                                                                                                                                                                                                                                                                     |        |                                  |                         |                               |                 |                           | Depth (m)         | Ref |
| MADE GROUND: Soft brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone, brick and rare coal.<br>MADE GROUND: Firm yellowish brown gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone and rare brick and coal. Cobbles are subangular sandstone. |        | (0.35)                           | 14.14                   |                               |                 |                           | 0.10 - 1.20       | 4 B |
|                                                                                                                                                                                                                                                                                                                                                                                                     |        | 0.35                             |                         |                               |                 |                           | 0.20              | 1 D |
|                                                                                                                                                                                                                                                                                                                                                                                                     |        | (1.20)                           |                         |                               |                 |                           | 0.50              | 2 D |
|                                                                                                                                                                                                                                                                                                                                                                                                     |        | 1.55                             |                         |                               |                 |                           | 1.00              | 3 D |
| EOH at 1.55m - Refusal                                                                                                                                                                                                                                                                                                                                                                              |        | 1.55                             | 12.94                   |                               |                 |                           | 1.20 - 1.55       | 5 D |
| SPT(S) 1.20m, 50 (4,6/50 for 195mm)                                                                                                                                                                                                                                                                                                                                                                 |        |                                  |                         |                               |                 |                           |                   |     |

|                        |                                                                                         |                               |           |                       |        |              |              |               |                    |         |            |           |      |
|------------------------|-----------------------------------------------------------------------------------------|-------------------------------|-----------|-----------------------|--------|--------------|--------------|---------------|--------------------|---------|------------|-----------|------|
| Observations / Remarks | Misc.                                                                                   | Backfill                      |           | Dynamic Sampling Runs |        |              |              | Installations |                    |         |            |           |      |
|                        | <i>No Groundwater Encountered<br/>Hole Not Cased<br/>No Monitoring Points Installed</i> | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm)    | Recovery (%) | Remarks       | Instrument Details |         | Resp. Zone | Depth (m) | Diam |
|                        |                                                                                         | 0.00 - 1.55                   | Bentonite |                       |        |              |              |               |                    |         |            |           |      |
|                        |                                                                                         | Hammer Ref & Energy Ratio (%) |           |                       |        |              |              |               |                    |         |            |           |      |
|                        |                                                                                         | <b>MOD 02 (65%)</b>           |           |                       |        |              |              |               |                    |         |            |           |      |
| Groundwater Strikes    |                                                                                         |                               |           |                       |        |              |              |               |                    |         |            |           |      |
| Strike (m)             |                                                                                         | Casing (m)                    |           | Sealed (m)            |        | Rises To (m) |              | Time (min)    |                    | Remarks |            |           |      |
|                        |                                                                                         |                               |           |                       |        |              |              |               |                    |         |            |           |      |



|                                      |                             |                            |                                        |                                                           |                                                    |                        |
|--------------------------------------|-----------------------------|----------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|------------------------|
| Project No: <b>3043</b>              | Location Details            |                            | Methodology & Plant                    |                                                           |                                                    | Scale: 1:50            |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424321.30</b>   | Northing: <b>558639.87</b> | From (m)<br>0.00 - 1.20<br>1.20 - 5.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked: RPH           |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>21.24mAOD</b> | Final Depth: <b>5.45m</b>  |                                        |                                                           |                                                    | Approved: BH           |
| Client: <b>SLIV</b>                  | Logger: <b>TC</b>           | Grid System: <b>OSGB</b>   |                                        |                                                           |                                                    | Start Date: 18/05/2018 |
|                                      | Orientation: <b>N/A</b>     | Inclination: <b>90°</b>    |                                        |                                                           |                                                    | End Date: 18/05/2018   |

| Hole Diameter |           |
|---------------|-----------|
| Depth (m)     | Diam (mm) |
|               |           |

| Casing Diameter |           |
|-----------------|-----------|
| Depth (m)       | Diam (mm) |
| 2.00            | 116       |

| Groundwater Strikes |            |            |            |             |         |
|---------------------|------------|------------|------------|-------------|---------|
| Strike (m)          | Casing (m) | Sealed (m) | Time (min) | Rose To (m) | Remarks |
|                     |            |            |            |             |         |

| Installation / Instrument Details |                    |        |                |           |
|-----------------------------------|--------------------|--------|----------------|-----------|
| Date                              | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |
|                                   |                    |        |                |           |

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

| Backfill    |             |
|-------------|-------------|
| Depth (m)   | Legend Code |
| 0.00 - 5.45 | Bentonite   |

| Sample Summary             |    |                  |   |
|----------------------------|----|------------------|---|
| Environmental Samples      |    |                  |   |
| Soil                       | 5  | Water            | 0 |
| Geotechnical Samples       |    |                  |   |
| Bulk                       | 5  | Large Bulk       | 0 |
| Disturbed                  | 12 | Disturbed (NR)   | 0 |
| Piston                     | 0  | Piston (NR)      | 0 |
| Undisturbed                | 0  | Undisturbed (NR) | 0 |
| Undisturbed Thin Wall      |    | 0                |   |
| Undisturbed Thin Wall (NR) |    | 0                |   |
| Core Sample                |    | 0                |   |

| Standard Penetration Test Summary |           |            |           |               |            |                        |    |                    |            |
|-----------------------------------|-----------|------------|-----------|---------------|------------|------------------------|----|--------------------|------------|
| Test Type                         | Depth (m) | Casing (m) | Water (m) | Seating Blows | Main Blows | Penetration Total (mm) | N  | Reported Result    | Hammer Ref |
| Split Spoon                       | 1.20      | -          | -         | 8             | 17         | 450                    | 17 | N=17 (4,4/4,5,4,4) | MOD 02     |
| Split Spoon                       | 2.00      | 2.00       | -         | 6             | 14         | 450                    | 14 | N=14 (3,3/2,3,4,5) | MOD 02     |
| Split Spoon                       | 3.00      | 2.00       | -         | 4             | 13         | 450                    | 13 | N=13 (2,2/3,3,4)   | MOD 02     |
| Split Spoon                       | 4.00      | 2.00       | -         | 4             | 10         | 450                    | 10 | N=10 (2,2/2,2,3,3) | MOD 02     |
| Split Spoon                       | 5.00      | 2.00       | -         | 3             | 9          | 450                    | 9  | N=9 (2,1/2,2,2,3)  | MOD 02     |

| In-Situ Tests              |   |
|----------------------------|---|
| PID                        | 0 |
| Hand Vane*                 | 0 |
| Standard Penetration Tests | 5 |

(NR) Indicates sample undertaken but with 0% Recovery

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

| SPT Hammer Ref. | Energy Ratio (%) |
|-----------------|------------------|
| MOD 02          | 65               |

| Applicable to Cable Percussion Only |                 |             |        |
|-------------------------------------|-----------------|-------------|--------|
| Chiselling                          |                 | Water Added |        |
| Depth (m)                           | Duration (mins) | Depth (m)   | Litres |
|                                     |                 |             |        |

| Applicable to Rotary Only |            |              |          |
|---------------------------|------------|--------------|----------|
| Drilling Flush            |            |              |          |
| Depth (m)                 | Flush Type | Flush Colour | Return % |
|                           |            |              |          |

| Applicable to Dynamic Sampling Only |           |            |           |
|-------------------------------------|-----------|------------|-----------|
| Dynamic Sampling Runs               |           |            |           |
| Depth (m)                           | Diam (mm) | Recovery % | Remarks   |
| 1.20 - 2.00                         | 101       | 50         | 260 Blows |
| 2.00 - 3.00                         | 101       | 90         | 157 Blows |
| 3.00 - 4.00                         | 86        | 95         | 91 Blows  |
| 4.00 - 5.00                         | 76        | 80         | 38 Blows  |



|                                      |                              |                            |                                         |                                                           |                                                    |                         |
|--------------------------------------|------------------------------|----------------------------|-----------------------------------------|-----------------------------------------------------------|----------------------------------------------------|-------------------------|
| Project No: <b>3043</b>              | Location Details             |                            | Methodology & Plant                     |                                                           |                                                    | Scale: 1:50             |
| Name: <b>A1 Birtley to Coalhouse</b> | Easting: <b>424321.30</b>    | Northing: <b>558639.87</b> | Depth (m)<br>0.00 - 1.20<br>1.20 - 5.45 | Method<br>Inspection Pit<br>Dynamic Sampling (Windowless) | Plant Used<br>Hand Tools<br>Modular Window Sampler | Checked By: RPH         |
| Location: <b>Tyne and Wear</b>       | Elevation: <b>21.24m AOD</b> | Final Depth: <b>5.45m</b>  |                                         |                                                           |                                                    | Approved By: BH         |
| Client: <b>SLV</b>                   | Logged By: <b>TC</b>         | Grid System: <b>OSGB</b>   |                                         |                                                           |                                                    | Start Date: 18/05/2018  |
|                                      | Orientation: <b>N/A</b>      | Inclination: <b>90°</b>    |                                         |                                                           |                                                    | Finish Date: 18/05/2018 |

| Strata Description                                                                                                                                            | Legend | Depth (m)<br>(Stratum Thickness) | Reduced Level<br>(mAOD) | Casing Ø<br>(mm)<br>Depth (m) | Water Level (m) | Installation / Backfill | Samples & Testing |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------|-------------------------|-------------------------------|-----------------|-------------------------|-------------------|-------|
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | Depth (m)         | Ref   |
| MADE GROUND: Soft to firm brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and brick. |        | (1.90)                           | 19.34                   | 116<br>2.00                   |                 |                         | 0.00 - 1.20       | 7 B   |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 0.20              | 1 D   |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 0.30              | 2 ES  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 0.50              | 3 D   |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 0.70              | 4 ES  |
| MADE GROUND: Firm to stiff laminated brownish grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and brick.   |        | (1.10)                           | 18.24                   |                               |                 |                         | 1.00              | 5 D   |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 1.00              | 6 ES  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 1.20 - 1.65       | 8 D   |
| Stiff laminated grey slightly silty CLAY.                                                                                                                     |        | (2.45)                           | 15.79                   |                               |                 |                         | 1.20 - 2.00       | 10 B  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 1.50              | 9 D   |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 2.00              | 12 ES |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 2.00 - 2.45       | 11 D  |
| Stiff laminated grey slightly silty CLAY.                                                                                                                     |        | (2.45)                           | 15.79                   |                               |                 |                         | 2.00 - 3.00       | 14 B  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 2.50              | 13 D  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 3.00              | 16 ES |
| Stiff laminated grey slightly silty CLAY.                                                                                                                     |        | (2.45)                           | 15.79                   |                               |                 |                         | 3.00 - 3.45       | 15 D  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 3.00 - 4.00       | 18 B  |
| Stiff laminated grey slightly silty CLAY.                                                                                                                     |        | (2.45)                           | 15.79                   |                               |                 |                         | 3.50              | 17 D  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 4.00 - 4.45       | 19 D  |
| Stiff laminated grey slightly silty CLAY.                                                                                                                     |        | (2.45)                           | 15.79                   |                               |                 |                         | 4.00 - 5.00       | 21 B  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         | 4.50              | 20 D  |
| Stiff laminated grey slightly silty CLAY.                                                                                                                     |        | (2.45)                           | 15.79                   |                               |                 |                         | 5.00 - 5.45       | 22 D  |
|                                                                                                                                                               |        |                                  |                         |                               |                 |                         |                   |       |
| EOH at 5.45m - Scheduled Depth                                                                                                                                |        | 5.45                             | 15.79                   |                               |                 |                         |                   |       |

|                        |       |                               |           |                       |        |           |              |                     |                    |            |              |            |         |
|------------------------|-------|-------------------------------|-----------|-----------------------|--------|-----------|--------------|---------------------|--------------------|------------|--------------|------------|---------|
| Observations / Remarks | Misc. | Backfill                      |           | Dynamic Sampling Runs |        |           |              | Installations       |                    |            |              |            |         |
|                        |       | Depth (m)                     | Material  | From (m)              | To (m) | Diam (mm) | Recovery (%) | Remarks             | Instrument Details |            | Resp. Zone   | Depth (m)  | Diam    |
|                        |       | 0.00 - 5.45                   | Bentonite | 1.20                  | 2.00   | 101       | 50           | 260 Blows           |                    |            |              |            |         |
|                        |       |                               |           | 2.00                  | 3.00   | 101       | 90           | 157 Blows           |                    |            |              |            |         |
|                        |       |                               |           | 3.00                  | 4.00   | 86        | 95           | 91 Blows            |                    |            |              |            |         |
|                        |       |                               | 4.00      | 5.00                  | 76     | 80        | 38 Blows     |                     |                    |            |              |            |         |
|                        |       | Hammer Ref & Energy Ratio (%) |           |                       |        |           |              | Groundwater Strikes |                    |            |              |            |         |
|                        |       | <b>MOD 02 (65%)</b>           |           |                       |        |           |              | Strike (m)          | Casing (m)         | Sealed (m) | Rises To (m) | Time (min) | Remarks |
|                        |       |                               |           |                       |        |           |              |                     |                    |            |              |            |         |

No Groundwater Encountered  
Casing Used  
No Monitoring Point/s Installed



# Hammer Energy Test Report

In accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd  
5-8 victory parkway  
victory road  
Derby  
DE24 8ZF

Hammer Ref: AR1134  
Test Date: 24/07/2018  
Report Date: 24/07/2018  
File Name: AR1134.spt  
Test Operator: A.PARKER.

## Instrumented Rod Data

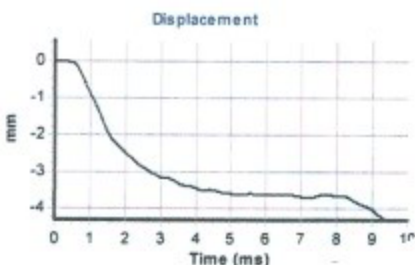
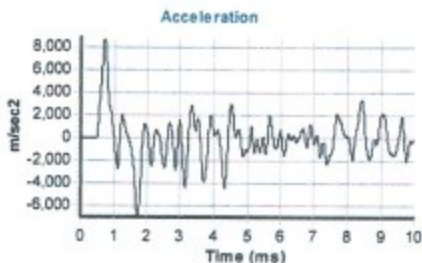
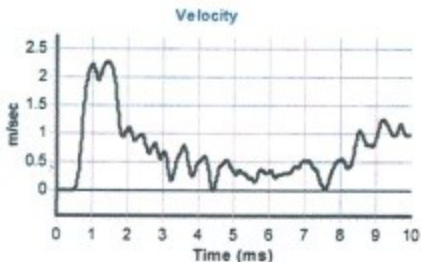
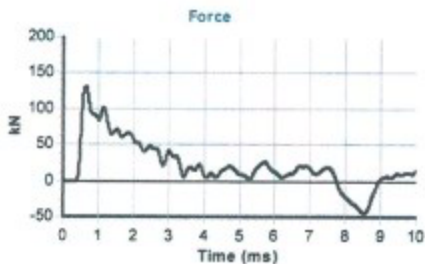
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.9  
Assumed Modulus  $E_a$  (GPa): 208  
Accelerometer No.1: 6455  
Accelerometer No.2: 6457

## Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
String Length  $L$  (m): 15.0

## Comments / Location

Central alliance hammer tested at  
Dynamic samplings yard.



## Calculations

Area of Rod A ( $\text{mm}^2$ ): 1021  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 263

Energy Ratio  $E_r$  (%): **56**

The recommended calibration interval is 12 months



# Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd  
5-8 victory parkway  
victory road  
Derby  
DE24 8ZF

Hammer Ref: D001  
Test Date: 10/07/2018  
Report Date: 11/07/2018  
File Name: D001.spt  
Test Operator: A.PARKER.

## Instrumented Rod Data

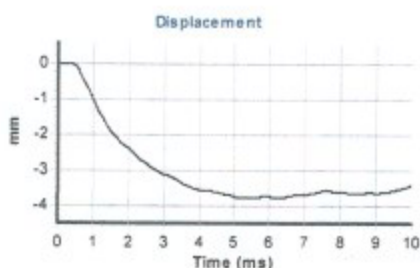
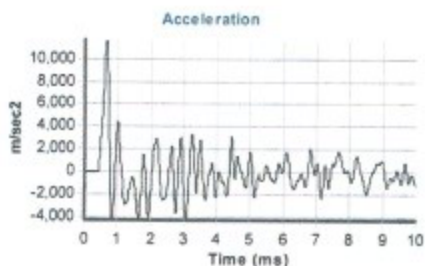
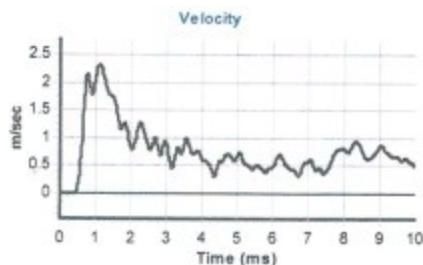
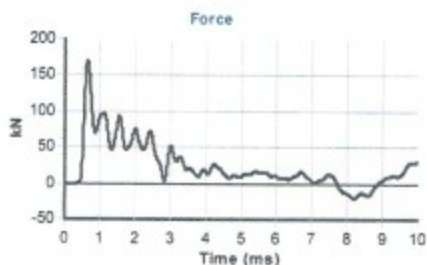
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.9  
Assumed Modulus  $E_a$  (GPa): 208  
Accelerometer No.1: 6455  
Accelerometer No.2: 6457

## Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
String Length  $L$  (m): 15.0

## Comments / Location

Central alliance hammer tested at dynamic samplings yard.



## Calculations

Area of Rod A (mm<sup>2</sup>): 1021  
Theoretical Energy  $E_{theor}$  (J): 473  
Measured Energy  $E_{meas}$  (J): 287

Energy Ratio  $E_r$  (%): **61**

The recommended calibration interval is 12 months



# Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd  
5-8 victory parkway  
victory road  
Derby  
DE24 8ZF

Hammer Ref: AR1175  
Test Date: 24/07/2018  
Report Date: 24/07/2018  
File Name: AR1175.spt  
Test Operator: A.PARKER.

## Instrumented Rod Data

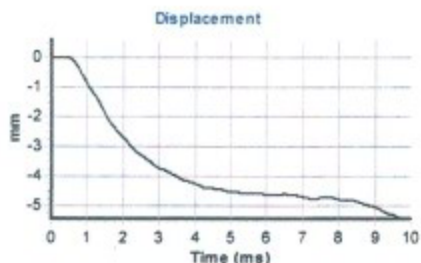
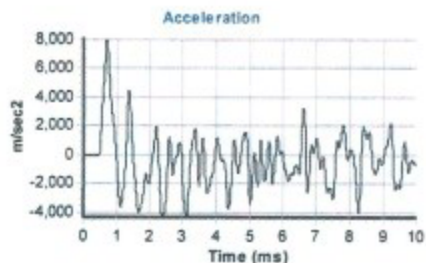
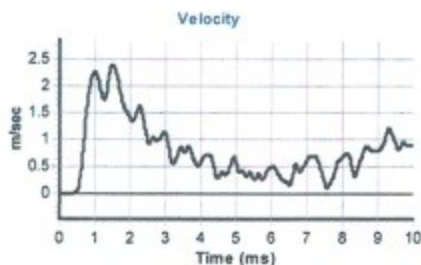
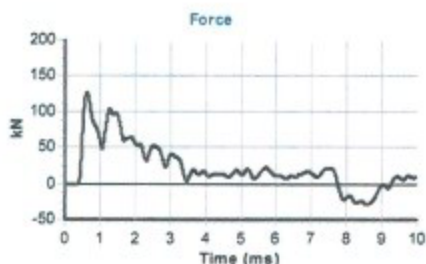
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.9  
Assumed Modulus  $E_a$  (GPa): 208  
Accelerometer No.1: 6455  
Accelerometer No.2: 6457

## Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
String Length  $L$  (m): 15.0

## Comments / Location

Central alliance hammer tested at  
Dynamic samplings yard.



## Calculations

Area of Rod  $A$  (mm<sup>2</sup>): 1021  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 267

Energy Ratio  $E_r$  (%): **56**

The recommended calibration interval is 12 months



# Hammer Energy Test Report

In accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd  
6-8 victory parkway  
victory road  
Derby  
DE24 8ZF

Hammer Ref: AR1710  
Test Date: 17/08/2017  
Report Date: 21/08/2017  
File Name: AR1710.spt  
Test Operator: TP

## Instrumented Rod Data

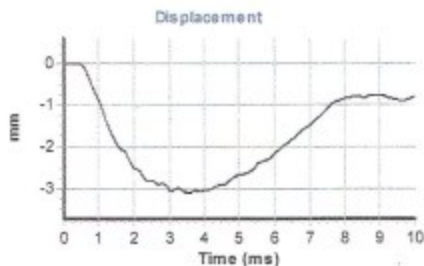
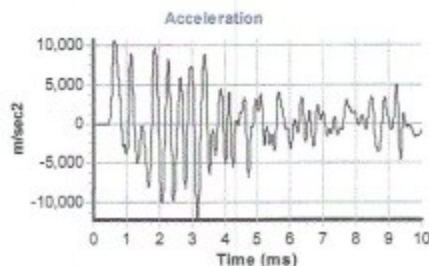
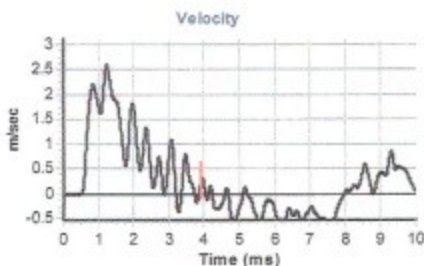
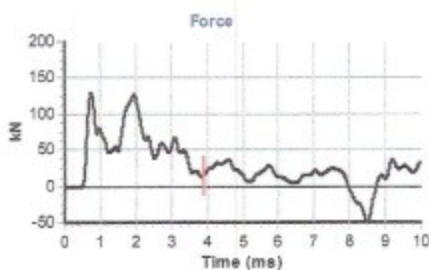
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.9  
Assumed Modulus  $E_a$  (GPa): 208  
Accelerometer No.1: 6455  
Accelerometer No.2: 6457

## Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
String Length  $L$  (m): 15.0

## Comments / Location

Boreholes solutions hammer tested at  
Dynamic samplings yard.



## Calculations

Area of Rod A (mm<sup>2</sup>): 1021  
Theoretical Energy  $E_{theor}$  (J): 473  
Measured Energy  $E_{meas}$  (J): 290

Energy Ratio  $E_r$  (%): **61**

The recommended calibration interval is 12 months





# Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

**Dynamic sampling uk ltd**  
**6-8 victory parkway**  
**victory road**  
**Derby**  
**DE24 8ZF**

Hammer Ref: BS07  
Test Date: 17/08/2017  
Report Date: 21/08/2017  
File Name: BS07.spt  
Test Operator: TP

## Instrumented Rod Data

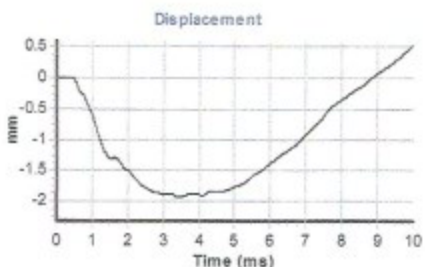
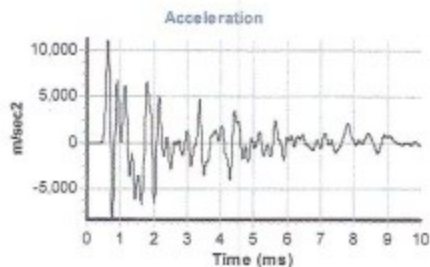
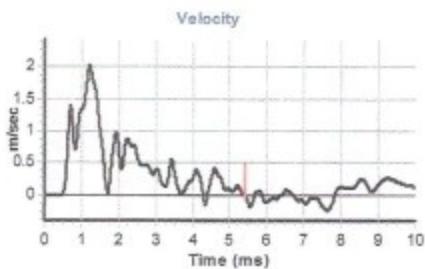
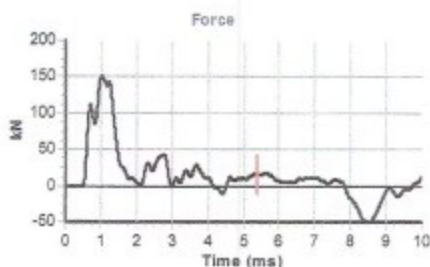
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.9  
Assumed Modulus  $E_a$  (GPa): 208  
Accelerometer No.1: 6455  
Accelerometer No.2: 6457

## Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
String Length  $L$  (m): 15.0

## Comments / Location

Borehole solutions hammer tested at  
Dynamic samplings yard.



## Calculations

Area of Rod A (mm<sup>2</sup>): 1021  
Theoretical Energy  $E_{theor}$  (J): 473  
Measured Energy  $E_{meas}$  (J): 303

**Energy Ratio  $E_r$  (%):** **64**

The recommended calibration interval is 12 months





# Hammer Energy Test Report

In accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd  
5-8 victory parkway  
victory road  
Derby  
DE24 8ZF

Hammer Ref: MOD.01  
Test Date: 31/05/2018  
Report Date: 31/05/2018  
File Name: MOD.01.spt  
Test Operator: A.PARKER.

## Instrumented Rod Data

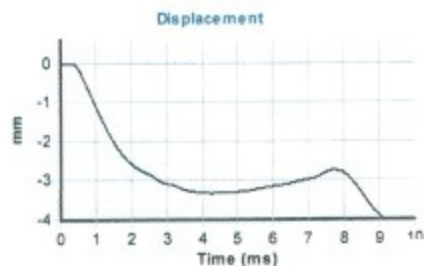
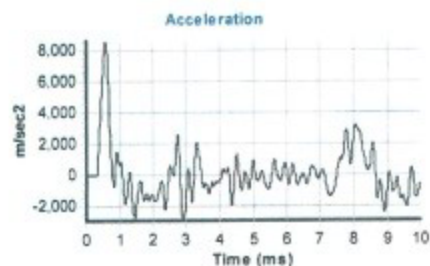
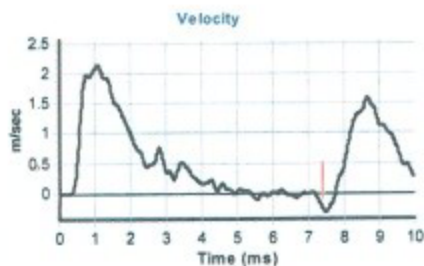
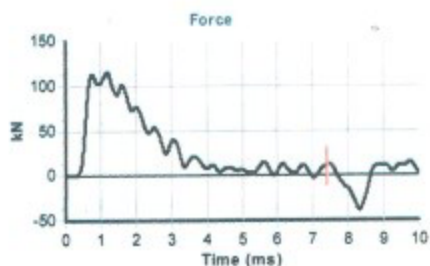
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.9  
Assumed Modulus  $E_B$  (GPa): 208  
Accelerometer No.1: 6455  
Accelerometer No.2: 6457

## Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
String Length  $L$  (m): 15.0

## Comments / Location

Central alliance modular rig tested at  
Dynamic samplings yard.



## Calculations

Area of Rod A ( $\text{mm}^2$ ): 1021  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 315

Energy Ratio  $E_r$  (%): **67**

The recommended calibration interval is 12 months



# Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd  
5-8 victory parkway  
victory road  
Derby  
DE24 8ZF

Hammer Ref: MOD.02  
Test Date: 11/05/2018  
Report Date: 11/05/2018  
File Name: MOD.02.spt  
Test Operator: TP

## Instrumented Rod Data

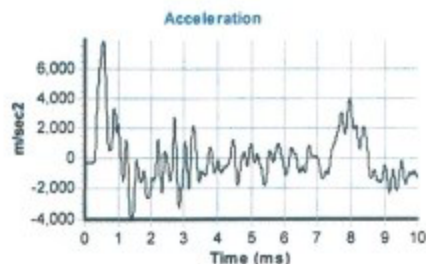
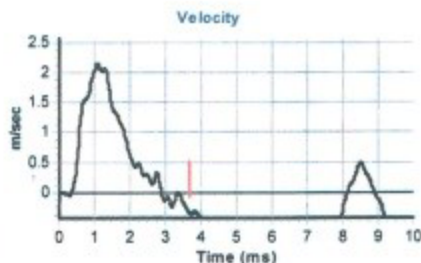
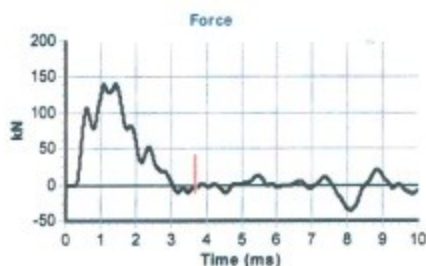
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.9  
Assumed Modulus  $E_a$  (GPa): 208  
Accelerometer No.1: 6455  
Accelerometer No.2: 6457

## Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
String Length  $L$  (m): 15.0

## Comments / Location

Central Alliance rig tested at Dynamic samplings yard.



## Calculations

Area of Rod A ( $\text{mm}^2$ ): 1021  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 308

Energy Ratio  $E_r$  (%): **65**

The recommended calibration interval is 12 months

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