A1 Birtley to Coal House

Scheme Number: TR010031

Applicant's Responses to ExA's Second Written Questions - Appendix 2.0L - Structure Options Report 9 - ADS Gantries

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Birtley to Coal House Improvement Scheme

Structure Options Report 9

ADS Gantries

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Highways England Company Limited registered in England and Wales number 09346363

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A1 BIRTLEY TO COAL HOUSE IMPROVEMENT SCHEME

STRUCTURE OPTION REPORT 9

ADS GANTRIES

Highways England

Date: April 2020

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APPENDICES

EXECUTIVE SUMMARY

WSP have been commissioned under the CDF contract to progress the Stage 3 Preliminary design works to increase the capacity of the route between A1 Junction 65 (Birtley) to Junction 67 (Coalhouse). The scheme involves upgrading from the existing Dual 2-Lane All-Purpose provision to a Dual 3-Lane All-Purpose Provision for this section of the road.

Part of the highway upgrade shall involve installation of new advanced direction signage (ADS) along the route. This Structures Option Report has been prepared for the provision and location of 14 gantry mounted direction signs proposed for the A1 Birtley to Coal House Scheme.

The form of gantries proposed are based on the assumptions/constraints listed below;

- Gantries shall comprise simple, cost effective structural forms
- Gantries shall comprise light weight steel type construction that can be prefabricated and readily transported/assembled and lifted into position
- All gantries shall be non-access type
- The gantries will support no equipment other than fixed text ADS signs
- Due to additional land take restrictions, the VRS shall be tied into the gantry foundation plinths which shall be designed to sustain vehicle impact loads
- The Location of gantry support legs in the central reservation will be avoided

The gantries shall comprise one of the following types, commonly used on the Highways England network;

- 7 Number Long Span Truss Type Cantilever Gantries – for span up to 19m
- 7 Number Super Span Truss Portal Gantries – with supports positioned either side of the A1 verges

It is recommended the following be undertaken to further verify the findings of this report:

- Due to the scheme being located in an environmentally sensitive zone (i.e. adjacent to Angel of the North, built up residential areas etc.), following environmental review, the proposed location of the signage should be reviewed/altered with respect to visual intrusion.
- Further site investigation be undertaken to determine the location of services, to confirm apparatus does not impact the proposed location of gantries/signs.
- Review of the communication infrastructure required on the scheme to determine the need for any Variable Message Sign type gantries etc, that need to be incorporated as part of the scheme improvement works.

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 WSP has been commissioned by Highways England to develop a scheme proposal for the A1 Birtley to Coal House Improvement Scheme.

1.1.2 The scheme development forms the part of Newcastle/Gateshead Western Bypass (NGWB) is located on the A1 between Junction 65 (Birtley) to Junction 80 (Seaton Burn). The scheme is part of Highway England's strategic road network serving the metropolitan area of Tyne and Wear.

1.1.3 The project is located between the Junction 65 and Junction 67 on the NGWB having a stretch of 4.2km in length. The existing carriageway layout is:

- Southbound: Two lanes between Junction 67 (Coal House) and Junction 66 (Eighton Lodge) with an additional approaching lane between North Side Overbridge and Junction 66. Three Lanes between Junction 66 (Eighton Lodge) and Junction 65 (Birtley). The existing speed limit is 50mph between Junction 67 (Coal House) and North Side Overbridge and 70 mph thereafter.
- Northbound: Two lanes with a lane gain/drop between Junction 65 (Birtley) and Junction 66 (Eighton Lodge) and two lanes between Junction 66 (Eighton Lodge) and Junction 67 (Coal House). The existing speed limit is 50mph throughout.

1.1.4 The A1 NGWB is one of the most congested highway links in the North-East region with more than 110,000 vehicles using the route every day on the busiest section. Therefore, the junction has been identified as requiring the improvement to its existing layout in order to achieve the scheme objective.

1.1.5 At present, the junction has a significant adverse impact on; journey time reliability at peak time, route resilience, safety and environmental impacts.

1.1.6 The scheme objectives for the Junction improvement are structured around the Government's main objectives for transport, being:

- To increase the capacity of the A1 between Junction 65 (Birtley) to Junction 67 (Coalhouse) from existing two lanes to three full standard lanes – to improve the safety for all road users and contribute to the Government's current safety strategy targets,
- Lanes gain/drop between the Junctions,
- Replacement of the Allerdene Bridge to achieve optimum whole life costs taking in account future maintenance and operation, and disruption to users,
- New Junction layout at Coalhouse.

1.1.7 The existing Allerdene Railway Bridge has a number of inherent design/construction deficiencies which cannot be easily resolved due to the complex structural form (half joints) and site constraints. The intention is for the existing Allerdene Bridge to be replaced as part of the A1 Birtley to Coalhouse Improvement Scheme.

1.1.8 Two alignment options were assessed for the replacement of Allerdene Bridge. These are:

- Option 1A - Replacement of Allerdene Railway Bridge as close as possible to the existing structure to enable the retention of Coal House interchange,
- Option 1B - Widening/Replacement of Allerdene Railway Bridge with a wider structure in its existing location and retention of Coal House Interchange and the existing alignment as far as is possible.

1.1.9 Works undertaken during PCF Stage 2 – Route Selection, confirmed Option 1A was the preferred option to be progressed onto the next stage and beyond. Refer to Appendix A for schematic plans of the preferred route.

1.1.10 The scheme is currently progressing within PCF Stage 3: Preliminary Design and works to date has identified the requirement for 20No. new advanced direction signage (ADS) gantries.

1.2 REPORT OBJECTIVES

1.2.1 This Structures Options Report has been prepared to assess the constraints/challenges associated with the installation of new ADS gantries for the scheme.

1.2.2 Upon confirmation and sign off, this report shall provide Highways England with sufficient information/justification for seeking approval/funding to progress the scheme within the next stage of development.

2. GANTRY DESIGN PARAMETERS

2.1 ADVANCED DIRECTION SIGNAGE REQUIREMENTS

2.1.1 Preliminary design works to date has identified the highway upgrade shall require the installation of new advanced direction signage (ADS) along the route. A total of 14 gantry mounted direction signs proposed for the A1 Birtley to Coal House Scheme.

2.1.2 It is anticipated the design of the post mounted signs shall be in accordance with BD94/17 Design of Minor Structures, the foundations to which shall be either planted or spread footing type depending on the size of the signage. The proposals for the post mounted signs shall be reviewed at detailed design stage together with confirmation of precise locations.

2.1.3 The design and review for communication infrastructure (variable message signs etc.) is currently on going. Requirements for communication infrastructure including structural impact shall be confirmed/reviewed at a later date.

2.1.4 The proceeding information provided in this report assesses the structural requirements associated with the 14No. gantry mounted signs (referenced SG001 to SG020) identified to date.

2.2 STATUTORY UNDERTAKERS INFORMATION

2.2.1 Details of existing services within the scheme boundary are shown on the following service information plans provided in Appendix B:

- HE551462-WSP-VUT-BCH-DR-D-00001-P02
- HE551462-WSP-VUT-BCH-DR-D-00002-P02
- HE551462-WSP-VUT-BCH-DR-D-00003-P02

2.2.2 The services information available to date indicate that apart from one location, Ref SG007, there are no existing services shown to be in the direct vicinity of the proposed gantry locations.

2.2.3 Gantry SG007, was found to cross Northern Gas Intermediate Pressure & Northern Gas Regional High Pressure services. It is anticipated that this gantry will be adjusted locally to avoid causing any disturbance to the current services.

2.2.4 Further investigation/surveys are required to confirm the line and level of existing services and ensure they do not impact potential gantry structures as currently anticipated.

2.3 ACCESS PROVISIONS FOR MAINTENANCE

2.3.1 Initial discussions with the HE SES and the Area 14 MAC team show both are in agreement regarding the provision of non-access ADS gantries. Justification for this is access is considered critical only for technology type gantries. Those supporting ADS type signs are generally non access on the basis pertinent maintenance access (to urgently repair VMS type signs and inform traffic) is not anticipated.

2.3.2 Any maintenance for the ADS gantry superstructure would be carried out within traffic management for which the level of risk to both workers and members of the public would be adequately controlled.

2.3.3 The HE SES and Area 14 MAC have also expressed a preference to avoid gantry leg supports being located within the central reserve thereby minimising risk and disruption to traffic associated with access to gantry supports within the central reserve.

2.4 VRS ARRANGEMENTS

2.4.1 The most economic verge arrangement where space allows, is the gantry foundation being set back behind a detached ‘H1’ barrier. Where sufficient space is not available, a ‘H1’ or ‘H2’ system can be attached to the foundation but this is considered to be more costly.

2.4.2 The redline boundary at the majority of the gantry locations limits additional land take, therefore the latter option to attached VRS to the gantry foundation is currently applied at all locations.

2.4.3 Sufficient headroom/clearance shall be provided at the gantries to remove the need to design the superstructure for vehicle impact loading. However it is anticipated that the edge of carriageway at all gantry locations is <4.5m. Therefore the foundation plinth shall be designed for the effects of vehicular collision loading.

2.5 ENVIRONMENTAL CONSIDERATIONS

2.5.1 The scheme is located in an environmentally sensitive zone (i.e. adjacent to Angel of the North, built up residential areas etc.). As such a full environmental review is currently being progressed with respect to visual intrusion created by the proposed signage.

2.5.2 A federated BIM model for the scheme has been proposed and is under development. This will provide a tool to assist with visibility and clash detection.

2.5.3 Following completion of the environmental review, the proposed location of the ADS signs shall be reviewed/altered if required to minimise visual intrusion.

2.6 GANTRY STRUCTURAL FORM

2.6.1 The form of gantries proposed are based on the assumptions/constraints listed below, some of which have been referred to previously in this report.

- Gantries shall comprise simple, cost effective structural forms
- Gantries shall comprise light weight steel type construction that can be prefabricated and readily transported/assembled and lifted into position
- All gantries shall be non-access type
- The gantries will support no equipment other than fixed text ADS signs
- Due to additional land take restrictions, the VRS shall be tied into gantry foundation plinths which shall be designed to sustain vehicle impact loads
- The Location of gantry support legs in the central reservation will be avoided

2.6.2 The gantries shall comprise one of the following type, commonly used on the Highways England network;

- Long Span Truss Type Cantilever Gantries – for span up to 19m
- Super Span Truss Portal Gantries – with supports positioned either side of the A1 verge

2.6.3 Long Span Truss Type Cantilever Gantries: For span lengths between 14m-19m a long span truss cantilever gantry is normally provided. They typically consist of a truss boom structure supporting the signboard over a single carriageway as shown in Figure 2-2:

Figure 2-2

2.6.4 Super span Truss Portal Gantries: For spans greater than 19m, a portal gantry is more likely to be a cost effective option compared to a cantilever gantry. They comprise a truss boom superstructure capable of spanning both carriageways without intermediate supports within the central reserve. Refer to Figure 2-3 and 2-4:

Figure 2-3

Figure 2-4

2.6.5 From previous case study examples, a cantilever gantry is more cost effective if only one carriageway requires signs but a single super span portal gantry is more cost effective compared to the provision of 2 long span cantilever gantries due to the following reasons:

- Long span cantilevers have the advantage where they save works i.e. traffic management (TM), earthworks, service diversions, temporary works, retaining solutions as they would only be required in a single verge compared to a portal,
- The superstructure of a single long span cantilever is approximately 80% of the cost of a portal gantry,
- Due to additional loading, the foundation for a cantilever is roughly twice as big as a single portal foundation.

3. GANTRY PROPOSALS

3.1 GENERAL

3.1.1 Based on the information available to date, it is anticipated that the 14No. ADS gantries shall be grouped to comprise the following structural forms;

- 7 No. Truss Cantilever type gantries
- 7 No. Portal Frame type gantries

3.1.2 Table 3-1 provides an overview of the rationale applied to determine the proposed form of gantry to be installed at each discrete location. Refer to the outline general arrangement drawings in Appendix C-2 for details of the proposed gantry form at each location.

3.1.3 The indicative construction cost information (exclude preliminaries/temporary works cost) within the table is based on previous similar type schemes and shall be verified subject to detailed design. The Highway England Cost estimating team has not been consulted for any cost information.

3.1.4 Given the anticipated ground conditions and the constrained nature of each location, piled foundations are currently proposed for all gantries Refer to Section 4 for full details of the geotechnical appraisal.

Gantry	Description	Chainage	Type	Span (m)	Sign		Foundation	Services Impacted by New Gantry	Structural Commentary
					Width (m)	Height (m)	(refer to section 4 of the report for further details)		
~~SG001~~	Upon further development of design, this gantry is no longer required and has been removed from the scheme	~~-1460~~	~~Tubular Cantilever~~	~~12.40~~	~~10.440~~	~~4.177~~	~~Piled~~	~~Information not available~~	~~Relatively narrow sign facilitates the use of a simple tubular cantilever~~
~~SG002~~		~~-480~~	~~Tubular Cantilever~~	~~12.50~~	~~10.573~~	~~4.177~~	~~Piled~~	~~Information not available~~	~~Relatively narrow sign facilitates the use of a simple tubular cantilever~~
~~SG003~~		~~325~~	~~Tubular Cantilever~~	~~11.00~~	~~10.502~~	~~4.177~~	~~Piled~~	~~NONE~~	~~Relatively narrow sign facilitates the use of a simple tubular cantilever~~
~~SG004~~		~~430~~	~~Truss Cantilever~~	~~17.55~~	~~13.394~~	~~4.802~~	~~Piled~~	~~NONE~~	~~The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective and would potentially obscure the sign on gantry SG003. A lighter weight portal could be used with a central reserve leg/foundation.~~
~~SG005~~		~~580~~	~~Portal~~	~~38.85~~	~~18.818~~	~~2.739~~	~~Piled~~	~~NONE~~	~~The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageways, but it may be more cost effective to consider a central reserve leg/foundation.~~
SG006	J66 (Eighton Lodge) Southbound Diverge –	1090	Truss Cantilever	14.37	12.839	5.200	Piled	NONE	Relatively narrow sign facilitates the use of a simple tubular cantilever

Gantry	Description	Chainage	Type	Span (m)	Sign		Foundation	Services Impacted by New Gantry	Structural Commentary
					Width (m)	Height (m)	(refer to section 4 of the report for further details)		
	1 Mile (2/3) Advanced Direction Sign								
SG007	J67 (Coal House) Northbound Diverge - Confirmatory Direction Sign	1150	Portal	56.00	20.870	3.162	Piled	Northern Gas Intermediate Pressure & Northern Gas Regional High Pressure	The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway, but it may be more cost effective to consider a central reserve leg/foundation.
SG008	J67 (Coal House) Northbound Diverge - Final Direction Sign	1350	Truss Cantilever	16.89	15.642	3.162	Piled	NONE	The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective. A lighter weight portal could be used with a central reserve leg/foundation.
SG009	J66 (Eighton Lodge) Southbound Diverge – 1/2 Mile (1/3) Advanced Direction Sign	1550	Truss Cantilever	16.10	12.731	5.200	Piled	NONE	Relatively narrow sign facilitates the use of a simple tubular cantilever
SG010	J67 (Coal House) Northbound Diverge - 1/2 Mile (1/3) Advanced Direction Sign	1920	Truss Cantilever	17.55	16.885	3.162	Piled	NONE	The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective and would potentially obscure the sign on gantry SG003. A lighter weight portal could be used with a central reserve leg/foundation.
SG011	J66 (Eighton Lodge) Southbound Diverge – Final Direction Sign	2140	Truss Cantilever	17.55	12.602	5.200	Piled	NONE	Relatively narrow sign facilitates the use of a simple tubular cantilever
~~SG012~~	Upon further development of design, this gantry is no longer required and has been removed from the scheme	~~2425~~	~~Truss Cantilever~~	~~17.55~~	~~16.975~~	~~3.162~~	~~Piled~~	~~NONE~~	~~The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective and would obscure SG013. A lighter weight portal could be used with a central reserve leg/foundation.~~
SG013	J66 (Eighton Lodge) Southbound Diverge – Confirmatory Direction Sign	2440	Portal	45.15	24.532	4.075	Piled	NONE	The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG012, it may therefore be

Gantry	Description	Chainage	Type	Span (m)	Sign		Foundation	Services Impacted by New Gantry	Structural Commentary
					Width (m)	Height (m)	(refer to section 4 of the report for further details)		
									more appropriate to consider a central reserve leg/foundation.
SG014	J65 (Birtley) Southbound Diverge -1 Mile (2/3) Advanced Direction Sign	2955	Portal	33.80	17.414	5.537	Piled	NONE	The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but it may be more cost effective to consider a central reserve leg/foundation.
SG015	J66 (Eighton Lodge) Northbound Diverge - Confirmatory Direction Sign	3400	Portal	50.65	20.850	4.318	Piled	NONE	The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG016, it may therefore be more appropriate to consider a central reserve leg/foundation.
SG016	J65 (Birtley) Southbound Diverge - 1/2 Mile (1/3) Advanced Direction Sign	3490	Portal	43.70	20.956	5.537	Piled	NONE	The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG015, it may therefore be more appropriate to consider a central reserve leg/foundation.
SG017	J66 (Eighton Lodge) Northbound Diverge - Final Direction Sign	3630	Truss Cantilever	17.55	16.096	4.318	Piled	NONE	The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective. A lighter weight portal could be used with a central reserve leg/foundation.
SG018	J65 (Birtley) Southbound Diverge - Final Direction Sign	4025	Truss Cantilever	18.07	14.932	5.537	Piled	NONE	The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective. A lighter weight portal could be used with a central reserve leg/foundation.
SG019	J66 (Eighton Lodge) Northbound Diverge - 1/2 Mile (1/3) Advanced Direction Sign	4215	Portal	41.55	17.382	4.318	Piled	NONE	The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG020, it may therefore be more appropriate to consider a central reserve leg/foundation.

Gantry	Description	Chainage	Type	Span (m)	Sign		Foundation	Services Impacted by New Gantry	Structural Commentary
					Width (m)	Height (m)	(refer to section 4 of the report for further details)		
SG020	J65 (Birtley) Southbound Diverge - Confirmatory Direction Sign	4280	Portal	43.70	20.550	4.387	Piled	NONE	The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG019, it may therefore be more appropriate to consider a central reserve leg/foundation.

Table 3-1: Gantries Option Schedule

4. GROUND INVESTIGATION

4.1 EXISTING GROUND CONDITIONS

4.1.1 A Geotechnical Design Report is not yet available for the project. However following completion of a ground investigation a report will be prepared, defining suitable parameters for the design and acceptable foundations. The preliminary choice of foundation solution for each gantry has been considered appropriate based on the records and findings at each specific location, including information from the Preliminary Sources Study Report (PSSR) for the wider Birtley to Coalhouse Scheme (HA544664-WSP-HGT-S01-RP-GE-0600-P-01).

4.1.2 It should be noted that no specific ground investigation is proposed for the proposed gantry locations during Stage 3 of the project. Given the likelihood of gantry locations changing as the scheme design develops, a decision was made (between the design team and Highways England) that the ground investigation for gantries would be conducted using a '*just-in-time*' philosophy during construction. However, once the ground investigation results for the scheme are available, these will be used to inform the foundation designs for the gantries. Any foundation design will be subject to confirmation following the '*just-in-time*' investigation during construction.

4.1.3 Historical ground investigation data from the British Geological Survey (BGS) and Highways Agency Geotechnical Data Management System (HA GDMS) is available within the vicinity of the proposed gantry locations. Table 4-1 provides a summary of the anticipated ground conditions at each of the gantry locations:

GANTRY NUMBER / CHAINAGE	GANTRY TYPE	ANTICIPATED GROUND CONDITIONS BASED ON HISTORICAL LOGS
SG006 Ch 1+090	Truss Cantilever	· Embankment fill: up to 10 m thick. · Glaciolacustrine deposits: between 1.5 m to 33 m thick comprising soft to firm grey brown laminated clay locally silty laminated clay. · Glacial Till: between 3.5 m and 13 m thick comprising stiff to very stiff orange brown mottled grey brown sandy slightly gravelly clay, gravel is sandstone and coal. · Pennine Middle Coal Measures bedrock: interbedded mudstone, siltstone, sandstone and coal encountered at a depths between 14 and 55 m below ground level.
SG007 Ch 1+150	Portal	
SG008 Ch 1+350	Truss Cantilever	
SG009 Ch 1+550	Truss Cantilever	
SG010 Ch 1+920	Truss Cantilever	· Glacial Till: between 5.5 m and 13 m thick comprising stiff to very stiff orange brown mottled grey brown sandy slightly gravelly clay, gravel is sandstone and coal. · Pennine Middle Coal Measures bedrock: interbedded mudstone, siltstone, sandstone and coal encountered at a depths between 5.5 and 13 m below ground level.
SG011 Ch 2+140	Truss Cantilever	
SG013 Ch 2+440	Portal	
SG014 Ch 2+955	Portal	· Embankment fill: up to 9 m thick. · Glacial Till: between 6 m and 7 m thick comprising stiff to very stiff orange brown mottled grey brown sandy slightly gravelly clay, gravel is sandstone and coal. · Pennine Middle Coal Measures bedrock: interbedded mudstone, siltstone, sandstone and coal encountered at a depths between 9 and 16 m below ground level.
SG015 Ch 3+400	Portal	

Gantry number / chainage	Gantry Type	Anticipated Ground Conditions Based on Historical Logs
SG016 Ch 3+490	Portal	· Glacial Till: between 2 m and 7.5 m thick comprising stiff to very stiff orange brown mottled grey brown sandy slightly gravelly clay, gravel is sandstone and coal. · Pennine Middle Coal Measures bedrock: interbedded mudstone, siltstone, sandstone and coal encountered at a depths between 2 and 7.5 m below ground level.
SG017 Ch 3+630	Truss Cantilever	
SG018 Ch 4+025	Truss Cantilever	
SG019 Ch 4+215	Portal	
SG020 Ch 4+280	Portal	

Table 4-1: Ground conditions summary at the proposed gantry locations

4.1.4 Coal seams recorded as being worked are present within the Pennine Middle Coal Measures beneath the majority of the gantry locations. The site is within the likely zone of influence from workings in thirteen seams, with past and probable shallow mining below the majority of the site east of Junction 67 (Coal House junction). Abandonment plans indicate shallow workings in the Five Quarter, Maudlin, and Yard (Main) seams at shallow depth beneath the area.

4.1.5 Table 4-2 provides a summary of the proposed gantry locations in relation to the Coal Authority's High Risk Development Areas:

Gantries indicated to be within a High Risk Development Area		Gantries indicated to be close to a High Risk Development Area	Gantries indicated to be out with High Risk Development Areas
SG007	**SG015**	**SG009**	**SG006** However, these locations are indicated as being underlain by former worked coal seams, at a greater depth.
SG008	**SG016**		
SG010	**SG017**		
SG011	**SG018**		
SG013	**SG019**		
SG014	**SG020**		

Table 4-2: Proposed Gantry locations in relation to Coal Authority High Risk Development Areas

4.1.6 Shallow groundwater (less than 10 m bgl) is recorded in a number of historical boreholes beneath, and in the vicinity of, the gantry locations (particularly in the vicinity of the River Team valley). Groundwater strikes are recorded within the superficial deposits. Limited records are available of groundwater strikes within the solid geology.

4.1.7 Areas of perched / shallow groundwater should also be anticipated within the Made Ground.

4.1.8 No groundwater monitoring results are available from the historical ground investigations. Groundwater monitoring is to be undertaken a part of the proposed ground investigation and should be conducted as part of the gantry-specific ground investigation during construction.

4.2 RISKS ASSOCIATED WITH FOUNDATION WORKS

4.2.1 The geotechnical risks for the wider site are presented within the PSSR. These risks have been reviewed and further assessed in the 'Live' Project Risk Registers. Pertinent geotechnical risks in relation to the proposed gantry foundations are summarised in Table 4-3. During the design of the gantries, individual risk registers should be prepared as the majority of these risks are location-specific and do not affect every gantry.

Risk Cause	Risk Event	Primary Risk Impact	Risk Rating
Engineering Properties of the Ground	There is a risk that the ground model, and the behaviour of the ground, is different (worse) from that assumed at this stage.	**Construction** delays and remedial design requirements, and potential cost and programme implications.	**Medium**
Instability of Existing Earthworks	There is a risk that the existing earthworks at the site are not as stable as assumed at this stage.		**Medium**
Instability caused by shallow mine workings	There is a risk that the gantry foundations will be adversely impacted by collapse of shallow coal mine workings, which may require grouting during construction.		**Medium**
Groundwater	There is a risk that the groundwater is different (worse) from the groundwater model assumed at this stage.		**Medium**
Contaminated Soils	There is a risk that the assessment of contaminated soils undertaken at this stage is not accurate.		**Medium**
Unexploded Ordnance (UXO)	The site is located within an area of low bomb risk, there is a risk that UXO might be encountered beneath the site.	**Construction** delays and requirement for safe deactivation / disposal.	**Low**
Buried Services	There is a risk that buried services might be encountered during excavation of proposed foundations.	**Construction** delays and potential cost and programme implications.	**Medium**

Table 3-3: Geotechnical Risks of proposed gantry foundations

4.3 DETAILS OF ADDITIONAL GROUND INVESTIGATION REQUIRED TO INFORM THE DETAILED DESIGN PROCESS

4.3.1 A scheme specific ground investigation has been scoped and is currently being undertaken. However, boreholes for the proposed gantry locations are not currently included within the scope of this ground investigation. The ground investigation at the gantry locations is to be carried out during construction using the "*just in time*" philosophy. There are a number of the proposed scheme specific boreholes holes which coincide with the proposed gantry locations that could be used to further refine the foundation designs.

4.3.2 Drawings HE551462-WSP-HGT-BCH-DR-GE-00023 to HE551462-WSP-HGT-BCH-DR-GE-00033 show the exploratory hole locations of the ground investigation proposed to inform the detailed design. Refer to Appendix D for further details.

4.3.3 The ground investigation shall be reported in a Ground Investigation Report (in line with HD 22/08) once completed.

4.4 ANTICIPATED FOUNDATION REQUIREMENTS FOR SIGN GANTRIES

4.4.1 The final gantry foundations shall be determined through assessment of the bearing capacity of the founding materials (influenced by the ultimate limit state), settlement analysis of the foundations (influenced by serviceability limit state) and interaction with the existing earthworks.

4.4.2 Given the anticipated ground conditions and the constrained nature of each location, piled foundations are currently proposed for all gantries (for further details, refer to the gantry schedule in Appendix C-1). The detailed design of any piled solution is likely to be the responsibility of a specialist piling contractor (and reported within a Geotechnical Design report in line with HA 22/08).

4.4.3 Given the potential for shallow coal mine workings beneath the site, it is considered that grouting of these workings may be required during construction. No records have been obtained to suggest that the workings were treated as part of the original construction of the A1. The extent of such workings (and possibly previous grouting works) will need to be assessed as part of the proposed ground investigation.

5. CONCLUSION & RECOMMENDATIONS

5.1 CONCLUSION

5.1.1 The study has shown the highway upgrade shall require the installation of new advanced direction signage (ADS) along the route. A total of 14 gantry mounted direction signs are proposed to be installed. Proposals for the post mounted signs shall be reviewed at detailed design stage together with confirmation of precise locations.

5.1.2 The form of gantries proposed are based on the assumptions/constraints listed below:

- Gantries shall comprise simple, cost effective structural forms
- Gantries shall comprise light weight steel type construction that can be prefabricated and readily transported/assembled and lifted into position
- All gantries shall be non-access type
- The gantries will support no equipment other than fixed text ADS signs
- Due to additional land take restrictions, the VRS shall be tied into gantry foundation plinths which shall be designed to sustain vehicle impact loads
- The Location of gantry support legs in the central reservation will be avoided

5.1.3 It is anticipated that the gantries shall comprise either of the following type, commonly used on the Highways England network;

- 7 Number Long Span Truss Type Cantilever Gantries – for span up to 19m
- 7 Number Super Span Truss Portal Gantries – with supports positioned either side of the A1 verge

5.1.4 The review of anticipated ground conditions and the constrained nature at each location suggest piled foundations would be required at all the gantry locations.

5.2 RECOMMENDATION

5.2.1 It is recommended that the gantry designs for the A1 be further developed based on the following provision.

- 7No. Long Span Truss Type Cantilever Gantries – for span up to 19m
- 7No. Super Span Truss Portal Gantries – with supports positioned either side of the A1 verge

5.2.2 The following should be undertaken to further validate the findings of this report:

- Due to the scheme being located in an environmentally sensitive zone (i.e. adjacent to Angel of the North, built up residential areas etc.), following environmental review, the proposed location of the signage should be reviewed/altered with respect to visual intrusion.

- Further site investigation be undertaken to determine the location of services, to confirm apparatus does not impact the proposed location of gantries/signs.

- Review of the communication infrastructure required on the scheme to determine the need for any Variable Message Sign type gantries etc that need to be incorporated as part of the scheme improvement works.

Appendix A

INDICATIVE SCHEMATIC PLANS OF THE PREFERRED ROUTE

APPENDIX A-1

PREFERRED ROUTE PLANS

DO NOT SCALE

Millimetres 0 10 100

A1

Retaining wall 1
AIP - Reinforced Concrete Wall
STKEY TBC
Ref SOR10

Kingsway Viaduct Underbridge
OS Grid Ref: 424900E, 558550N
STKEY 16271
Structure No. A1/433.30
AIP - Kingsway Viaduct
Ref SOR01

JUNCTION 67 - COALHOUSE
(424955,558553)

Retaining wall 5
AIP - Continuous Bored Piles
Retaining Wall
STKEY TBC
Ref SOR10

Gantry SG006
AIP - Long Span Truss
Type Cantilever Gantry
STKEY TBC
Ref SOR09

Retaining wall 2
AIP - Sheet Piles Retaining Wall
STKEY TBC
Ref SOR10

CR Retaining wall 1
STKEY TBC
Ref SOR10

Retaining wall 3
AIP - Reinforced Earth Retaining Wall
STKEY TBC
Ref SOR10

Retaining wall 4
AIP - Reinforced Earth Retaining Wall
STKEY TBC
Ref SOR10

Allerdene Culvert
OS Grid Ref: 425370E, 558520N
STKEY 8879
Structure No. A1/443.30
AIP - Allerdene Culvert
Ref SOR02

Allerdene Railway Underbridge
OS Grid Ref: 425480E, 558489N
STKEY 8880
Structure No. A1/443.00/Q
AIP - Allerdene Railway Bridge
Ref SOR03

Smithy Lane Overbridge
OS Grid Ref: 425760E, 558280N
STKEY 16439
Structure No. A1/442.50
AIP - Smithy Lane Overbridge
Ref SOR04

Gantry SG009
AIP - Long Span Truss
Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG007
AIP - Super Span Truss
Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG008
AIP - Long Span Truss
Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG010
AIP - Long Span Truss
Type Cantilever Gantry
STKEY TBC
Ref SOR09

ALLERDENE CULVERT EXTENSION AND DRAINAGE DITCH TO BE REALIGNED.

PROPOSED ALLERDENE UNDERBRIDGE TO BE CONSTRUCTED OFFLINE.

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- RETAINED EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- NETWORK RAIL LAND BOUNDARY

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO EMKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

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Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 1 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP
Suitability: S0

Drawing Number
Project: HE551462
Originator: WSP
Volume: HGN
Location: BCH
Type: DR
Role: D
Number: 10004
Project Ref. No.
Revision: P04

Millimetres 100 0 10

DO NOT SCALE

A1

CR Retaining wall 2
STKEY TBC
Ref SOR10

Gantry SG011
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Gantry SG013
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

CR Retaining wall 3
STKEY TBC
Ref SOR10

Eighton Lodge Slip Road Underbridge
OS Grid Ref: 426527E, 557592N
STKEY 16441
Structure No. A1/440.90//6
AIP - Widening of Eighton Lodge North & Slip Road Underbridges
Ref SOR05

Gantry SG014
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Eighton Lodge North Underbridge
OS Grid Ref: 426682E, 557517N
STKEY 16440
Structure No. A1/441.00
AIP - Widening of Eighton Lodge North & Slip Road Underbridges
Ref SOR05

Eighton Lodge South Underbridge
OS Grid Ref: 426801E, 557466N
STKEY 8883
Structure No. A1/440.90
AIP - Widening of Eighton Lodge South Bridge
Ref SOR05

Longbank Bridleway Underbridge
OS Grid Ref: 427169E, 557294N
STKEY 26280
Structure No. A1/440.80
AIP - Longbank Underpass
Ref SOR06

Gantry SG016
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG015
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

CR Retaining wall 4
STKEY TBC
Ref SOR10

Gantry SG017
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

EIGHTON LODGE CULVERT; STRUCTURE KEY 15468. STRUCTURE IS APPROXIMATELY 18m BELOW GROUND LEVEL SO WILL BE UNAFFECTED.

JUNCTION 66 - EIGHTON LODGE (426739,557494)

ANGEL OF THE NORTH

A167 DURHAM ROAD

B1296 LONG BANK

A167 NEWCASTLE BANK

NORTH DENE

LONG BANK

EXTENT OF WORKS

A1 SB

A1 NB

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- PROPOSED SIGNAL
- EXISTING SIGNAL

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO EBKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

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Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 2 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP
Suitability: S0

Drawing Number
Project: HE551462 | Originator: WSP | Volume: HGN
Location: BCH | Type: DR | Role: D | Number: 10005
Project Ref. No.
Revision: P04

DO NOT SCALE

Millimetres 0 10 100

A1

North Dene Footbridge
OS Grid Ref: 427538E, 557089N
STKEY 8886
Structure No. A1/440.30
AIP - North Dene Footbridge
Ref SOR07

Gantry SG018
AIP - Long Span Truss Type Cantilever Gantry
STKEY TBC
Ref SOR09

Retaining wall 6
AIP- King Post Retaining Wall
STKEY TBC
Ref SOR10

Gantry SG020
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

Gantry SG019
AIP - Super Span Truss Portal Gantry
STKEY TBC
Ref SOR09

NEW BUILDING DEVELOPEMENT

CRATHIE

A1 SB
A1 NB
CUTLINE E
CUTLINE E
EXTENT OF WORKS

North Side Overbridge
OS Grid Ref: 428090E, 556770N
STKEY 8887
Structure No. A1/439.70
AIP - North Side Bridge
Ref SOR08

JUNCTION 65 - BIRTLEY
(428150,556714)

A1231 SB
A1231 NB
A1(M) SB
A1(M) NB
A194(M) NB

KEY

- EXISTING STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- REMOVED EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- PROPOSED SIGNAL
- EXISTING SIGNAL

Rev.	Date	Description	By	Chk'd	App'd
P01	05/09/16	FOR INFORMATION	JAC		
P02	07/09/16	MINOR AMENDMENTS TO EWKS & STRUCTURES, CHAINAGE ADDED	JWL	CP	NGR
P03	07/09/16	ISSUED FOR PUBLIC CONSULTATION	JWL	SG	NGR
P04	10/02/17	DESIGN DEVELOPMENT POST PUBLIC CONSULTATION	JWL	SG	NGR

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Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE WITH RETENTION OF COAL HOUSE JCT GENERAL ARRANGEMENT SHEET 3 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Longmore	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	10/02/17	10/02/17	10/02/17	---

Drawing Status: INITIAL STATUS OR WIP
Suitability: S0

Drawing Number
Project: HE551462
Originator: WSP
Volume: HGN
Location: BCH
Type: DR
Role: D
Number: 10006
Project Ref. No.
Revision: P04

Appendix B

STATUTORY UNDERTAKERS INFORMATION

highways england

APPENDIX B-1

STATUTORY UNDERTAKERS INFORMATION

DO NOT SCALE

Millimetres 0 10 100

A1

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- BT — BT DUCT
- IC — INSTALCOM
- W — NORTHUMBRIAN WATER COMBINED
- W — NORTHUMBRIAN WATER FOUL
- W — NORTHUMBRIAN WATER ABANDONED
- W — NORTHUMBRAIN WATER SURFACE
- W — NORTHUMBRIAN WATER TREATED
- W — NORTHUMBRIAN WATER DISTRIBUTION
- W — NON NORTHUMBRIAN WATER PRIVATE
- G — NORTHERN GAS LOW PRESSURE
- G — NORTHERN GAS MEDIUM PRESSURE
- G — NORTHERN GAS INTERMEDIATE PRESSURE
- G — NORTHERN GAS REGIONAL HIGH PRESSURE
- T — VIRGIN MEDIA CABLE
- E — NORTHHERN POWER GRID CABLE
- C — VODAFONE CABLE
- IC01 — UTILITY REFERNCE

NOTES

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2. REFER TO SECTION 3.10 OF THE TECHNICAL APPRAISAL REPORT FOR DETAILS OF THE DIVERSION WORKS PROPOSED.
3. ALL DIAMETERS OF WATER MAINS ARE MEASURED IN MILLIMETERS UNLESS OTHERWISE STATED.

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HSG185 - HEALTH & SAFETY IN EXCAVATIONS (BY HSE)
CONSTRUCTION INFORMATION SHEET (CIS) 6 - SAFETY IN EXCAVATIONS (BY HSE)
GENERAL SERIES (GS) 6 - AVOIDANCE OF DANGER FROM OVERHEAD ELECTRIC LINES (BY HSE)

Rev.	Date	Description	By	Chk'd	App'd
	22/05/17				
P01	22/05/17	D-MAFT	JS	SG	NGR
P02	23/05/17	Design options, NG4 1" 1 added	JS	SG	NGR

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Tel: +44 (0)113 395 6200
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Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE
EXISTING STATUTORY UNDERTAKERS APPARATUS
SHEET 1 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Singh	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	23/05/17	23/05/17	23/05/17	---

Drawing Status: INITIAL STATUS OR WIP — Suitability: S0

Drawing Number

Project	Originator	Volume			Project Ref. No.
HE551462	WSP	VUT			
BCH	DR	D	00001		Revision P02
Location	Type	Role	Number		

Millimetres 100 0 10

DO NOT SCALE

A1

ANGEL OF THE NORTH

A167 DURHAM ROAD

A1 SB

A1 NB

EXTENT OF WORKS

JUNCTION 66 - EIGHTON LODGE (426739,557494)

B1286 LONG BANK

A167 NEWCASTLE BANK

NORTH DENE

LONG BANK

NG109 VF102 V104 V105 NG110 NW110 NW111 NP108 BT107

KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- BT BT DUCT
- IC INSTALCOM
- W NORTHUMBRIAN WATER COMBINED
- W NORTHUMBRIAN WATER FOUL
- W NORTHUMBRIAN WATER ABANDONED
- W NORTHUMBRAIN WATER SURFACE
- W NORTHUMBRIAN WATER TREATED
- W NORTHUMBRIAN WATER DISTRIBUTION
- W NON NORTHUMBRIAN WATER PRIVATE
- G NORTHERN GAS LOW PRESSURE
- G NORTHERN GAS MEDIUM PRESSURE
- G NORTHERN GAS INTERMEDIATE PRESSURE
- G NORTHERN GAS REGIONAL HIGH PRESSURE
- T VIRGIN MEDIA CABLE
- E NORTHHERN POWER GRID CABLE
- C VODAFONE CABLE
- IC01 UTILITY REFERNCE

NOTES

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2. REFER TO SECTION 3.10 OF THE TECHNICAL APPRAISAL REPORT FOR DETAILS OF THE DIVERSION WORKS PROPOSED.
3. ALL DIAMETERS OF WATER MAINS ARE MEASURED IN MILLIMETERS UNLESS OTHERWISE STATED.

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HSG185 - HEALTH & SAFETY IN EXCAVATIONS (BY HSE)
CONSTRUCTION INFORMATION SHEET (CIS) 8 - SAFETY IN EXCAVATIONS (BY HSE)
GENERAL SERIES (GS) 6 - AVOIDANCE OF DANGER FROM OVERHEAD ELECTRIC LINES (BY HSE)

Rev.	Date	Description	By	Chk'd	App'd
	22/05/17				
P01	22/05/17	D-MAFT	JS	SG	NGR
P02	23/05/17	Design options, NG01 & 1 added	JS	SG	NGR

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Tel: +44 (0)113 395 6200
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Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY
EXISTING STATUTORY UNDERTAKERS APPARATUS
SHEET 2 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Singh	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	23/05/17	23/05/17	23/05/17	---

Drawing Status: INITIAL STATUS OR WIP

Suitability: S0

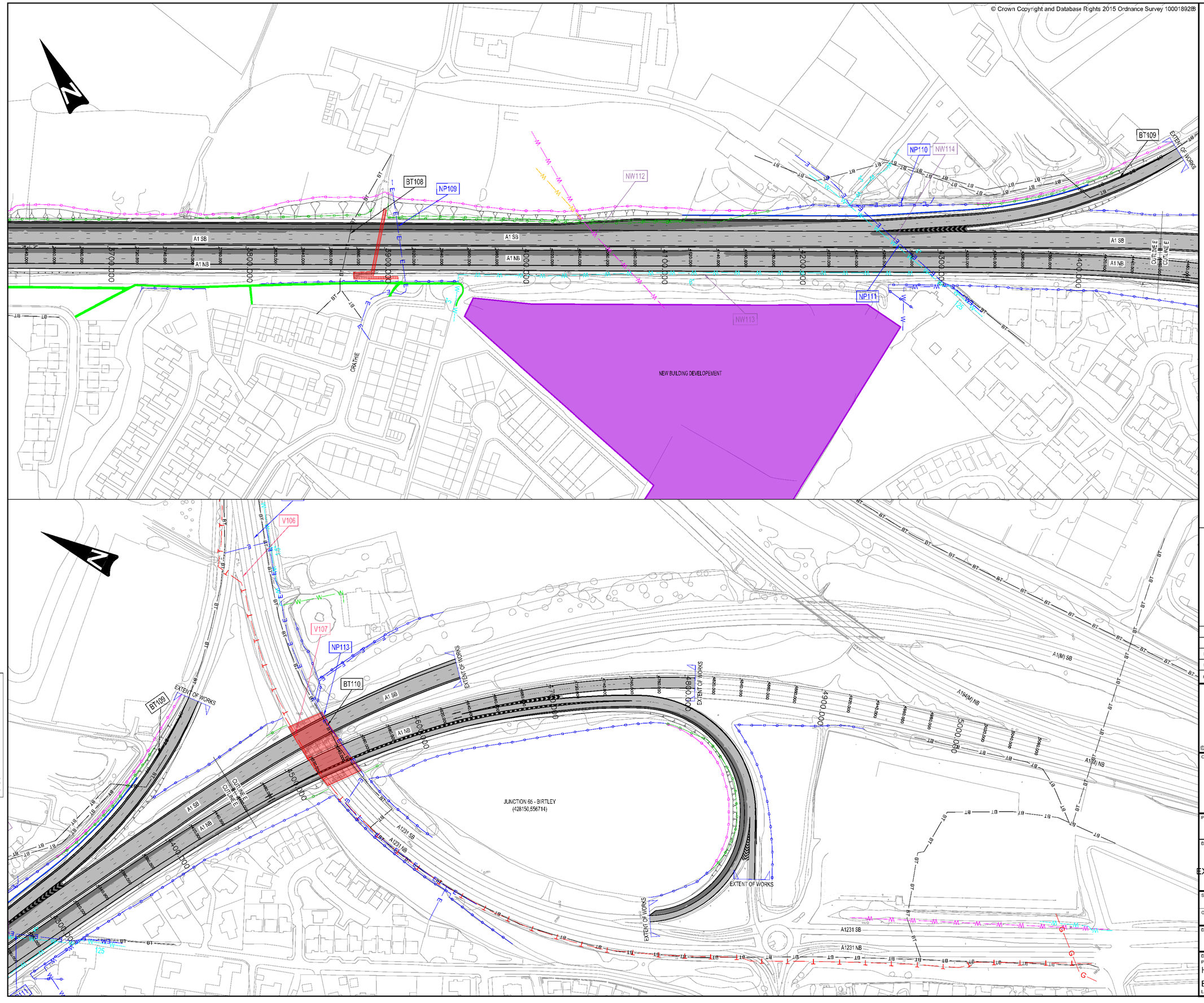
Drawing Number

Project	Originator	Volume			Project Ref. No.
HE551462	WSP	VUT			
BCH	DR	D	00002		Revision
Location	Type	Role	Number		P02

DO NOT SCALE

Millimetres 0 10 100

A1



KEY

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- PROPOSED RETAINING WALL
- PROPOSED HIGHWAYS FENCE LINE
- EXISTING HIGHWAYS FENCE LINE
- NEW CARRIAGEWAY CONSTRUCTION
- EXISTING CARRIAGEWAY TO BE RETAINED
- PROPOSED DRAINAGE DITCH
- PROPOSED FOOTPATH DIVERSION
- EXISTING FOOTPATH
- BT — BT DUCT
- IC — INSTALCOM
- W — NORTHUMBRIAN WATER COMBINED
- W — NORTHUMBRIAN WATER FOUL
- W — NORTHUMBRIAN WATER ABANDONED
- W — NORTHUMBRAIN WATER SURFACE
- W — NORTHUMBRIAN WATER TREATED
- W — NORTHUMBRIAN WATER DISTRIBUTION
- W — NON NORTHUMBRIAN WATER PRIVATE
- G — NORTHERN GAS LOW PRESSURE
- G — NORTHERN GAS MEDIUM PRESSURE
- G — NORTHERN GAS INTERMEDIATE PRESSURE
- G — NORTHERN GAS REGIONAL HIGH PRESSURE
- T — VIRGIN MEDIA CABLE
- E — NORTHHERN POWER GRID CABLE
- C — VODAFONE CABLE
- IC01 — UTILITY REFERNCE

NOTES

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PRIOR TO ANY WORKS ON SITE, THE CONTRACTOR SHALL REFER TO;
HSG47 - AVOIDING DANGER FROM UNDERGROUND SERVICES (BY HSE)
HGS185 - HEALTH & SAFETY IN EXCAVATIONS (BY HSE)
CONSTRUCTION INFORMATION SHEET (CIS) 8 - SAFETY IN EXCAVATIONS (BY HSE)
GENERAL SERIES (GS) 6 - AVOIDANCE OF DANGER FROM OVERHEAD ELECTRIC LINES (BY HSE)

Rev.	Date	Description	By	Chk'd	App'd
	22/05/17				
P01	22/05/17	D-MAPT	JS	SG	NGR
P02	23/05/17	Design update, NQ4 1-1 added	JS	SG	NGR

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Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: OPTION 1A - OFFLINE REPLACEMENT OF ALLERDENE RAILWAY BRIDGE
EXISTING STATUTORY UNDERTAKERS APPARATUS
SHEET 3 OF 3

Scale	Drawn	Checked	Approved	Authorised
1:1250	J.Singh	S.Ghosh	N.Rawcliffe	---
Original Size	Date	Date	Date	Date
A1	23/05/17	23/05/17	23/05/17	---

Drawing Status: INITIAL STATUS OR WIP — Suitability: S0

Drawing Number: Project HE551462 | Originator WSP | Volume VUT | Location BCH | Type DR | Role D | Number 00003

Project Ref. No.

Revision: P02

Appendix C

PROPOSED STRUCTURES

highways england

APPENDIX C-1

ADS GANTRY SCHEDULE

A1 BIRTLEY TO COAL HOUSE WIDENING

Gantry Options Schedule

Gantry	Chainage	Type	Span (m)	Sign		Foundation	Construction Costs		Structural Commentary	Geotechnical Commentary	Existing Boreholes near location	Proposed Boreholes	Ground Profile	Proposed Ground Level	Groundwater profile	Cutting or embankment?	Geotechnical Risk	Associated Mining risk
				Width (m)	Height (m)		Substructure	Superstructure										
SG006	1090	Truss Cantilever	14.37	12.839	5.200	Piled	Cost to be determined by HE Commercial team		Relatively narrow sign facilitates the use of a simple tubular cantilever	A number of medium level risk are assocaited with this site	H35-B53	None	Glaciolacustrine deposits (40m), glacial till (12m) & mudstone+slltsone+siltstone (10m)	22mAOD	14mAOD	Cutting	Sub vertical faults present within rock head Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltsone & sandstone) will have many different properties over short depths. Slope stability may be an issue in cuttings	Historical mine entrances present in vicinity
SG007	1150	Portal	56.00	20.870	3.162	Piled			The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but it may be more cost effective to consider a central reserve leg/foundation.	A number of medium level risk are assocaited with this site	H35-B53	BH17-16 & BH17-15	Glaciolacustrine deposits (25m) , glacial till (12m) & mudstone+slltsone+siltstone (10m)	14mAOD	14mAOD	Cutting	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue in cuttings	Sandstone +mudstone+ siltstone could potentially contain coal seams Historical mine entrances present in vicinity
SG008	1350	Truss Cantilever	16.89	15.642	3.162	Piled			The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective. A lighter weight portal could be used with a central reserve leg/foundation.	A number of medium level risk are assocaited with this site	H41 BHZ2, H41 BHY1, BGS1 NZ25NE/127, BH17-20 & H43 BH26 (EAST)	BH17-18 & BH17-19	Glaciolacustrine deposits(18m), glacial till (5m) & mudstone+sandstone+siltstone (15m)	17mAOD	16mAOD	Cutting	Sub vertical faults present within rock head Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue in cuttings	Coal seams present at -12mADO, -20mAOD, -22mAOD & -27mAOD Historical mine entrances present in vicinity
SG009	1550	Truss Cantilever	16.10	12.731	5.200	Piled			Relatively narrow sign facilitates the use of a simple tubular cantilever	A number of minor risks are associated with this site	H41 BHX	BH17-26 &BH17-28	Glaciolacustrine deposits (5m), glacial till (10m) & mudstone+sandstone+siltstone (12m)	27mAOD	18mAOD	Cutting	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue in cuttings	Sandstone +mudstone+ siltstone could potentially contain coal seams Historical mine entrances present in vicinity
SG010	1920	Truss Cantilever	17.55	16.885	3.162	Piled			The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective and would potentially obscure the sign on gantry SG003. A lighter weight portal could be used with a central reserve leg/foundation.	A number of minor risks are associated with this site	H53 TP11 & H53 BH3	BH17-69	Glacial Till (15m) & mudstone+sandstone+siltstone (10m)	43mAOD	43mAOD	Cutting	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue in cuttings	Sandstone +mudstone+ siltstone could potentially contain coal seams Historical mine entrances present in vicinity
SG011	2140	Truss Cantilever	17.55	12.602	5.200	Piled			Relatively narrow sign facilitates the use of a simple tubular cantilever	A number of minor risks are associated with this site	H41 BHH, BGS/TP804, H41 BH1 & BGS/TP805	BH17-34,	Glacial Till (12m) & mudstone+sandstone+siltstone (10m)	53mAOD	43mAOD	Embankment	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue on embankments	Sandstone +mudstone+ siltstone could potentially contain coal seams Historical mine entrances present in vicinity
SG013	2440	Portal	45.15	24.532	4.075	Piled			The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG012, it may therefore be more appropriate to consider a central reserve leg/foundation.	A number of minor risks are associated with this site	WS17-05		Glacial Till (5m) & mudstone+slltsone+siltstone (10m)	68mAOD	73mAOD	Embankment	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue on embankments	Sandstone +mudstone+ siltstone could potentially contain coal seams Historical mine entrances present in vicinity

Gantry	Chainage	Type	Span (m)	Sign		Foundation	Construction Costs		Structural Commentary	Geotechnical Commentary	Existing Boreholes near location	Proposed Boreholes	Ground Profile	Proposed Ground Level	Groundwater profile	Cutting or embankment?	Geotechnical Risk	Associated Mining risk
				Width (m)	Height (m)		Substructure	Superstructure										
SG014	2955	Portal	33.80	17.414	5.537	Piled	Cost to be determined by HE Commercial team		The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but it may be more cost effective to consider a central reserve leg/foundation.	A number of medium level risk are assocaited with this site	BGS/TP816	BH17-43 & BH17-44	Made Ground (12m), alluvium (3m), sandstone (7m) & mudstone+sandstsone+siltstone (12m)	84mAOD	Unknown	Cutting	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue on cuttings.	Coal seams present at 65mAOD, 60mAOD & 54mAOD Historical mine entrances present in vicinity
SG015	3400	Portal	50.65	20.850	4.318	Piled			The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG016, it may therefore be more appropriate to consider a central reserve leg/foundation.	A number of medium level risk are assocaited with this site	H12 TP903, H12	BH903 &BH17 50	Made Ground (3m), glacial till (7m), sandstone (17m) & mudstone+sandstsone+siltstone (13m)	82mAOD	Unknown	Cutting	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue on cuttings.	Coal seams present at 51mAOD Historical mine entrances present in vicinity
SG016	3490	Portal	43.70	20.956	5.537	Piled			The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG015, it may therefore be more appropriate to consider a central reserve leg/foundation.	A number of minor risks are associated with this site	H12 B905 & H12 TP905		Glacial Till (5m), sandstone (10m) & sandstone +mudstone+ siltstone (10m)	81mAOD	Unknown	Cutting	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue on cuttings.	Sandstone +mudstone+ siltstone could potentially contain coal seams Historical mine entrances present in vicinity
SG017	3630	Truss Cantilever	17.55	16.096	4.318	Piled			The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective. A lighter weight portal could be used with a central reserve leg/foundation.	A number of medium level risk are assocaited with this site	H12 BH908, H12 BH909	None	Glacial Till (2m), sandstone (12m) & sandstone +mudstone+ siltstone (10m)	80mAOD	Unknown	Cutting	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue on cuttings.	Coal seams presnt within 100m @ 70mAOD, 65mAOD & 62mAOD Historical mine entrances present in vicinity
SG018	4025	Truss Cantilever	18.07	14.932	5.537	Piled			The extended width of the sign prevents the use of a tubular cantilever but is still within the economic range of a truss cantilever. A portal at this location would require a long span which would not be cost effective. A lighter weight portal could be used with a central reserve leg/foundation.	A number of medium level risk are assocaited with this site	H12 TP926 & H12 BH919AR	None	Glacial Till (2m), sandstone (20m) & sandstone +mudstone+ siltstone (10m)	90mAOD	74mAOD	Embankment	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths. Slope stability may be an issue on embankments.	Coal seams present at 72mAOD & 70mAOD Historical mine entrances present in vicinity
SG019	4215	Portal	41.55	17.382	4.318	Piled			The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG020, it may therefore be more appropriate to consider a central reserve leg/foundation.	A number of minor risks are associated with this site	WS17-08 & H12 TP932	None	Glacial Till (5m), sandstone (20m) & sandstone +mudstone+ siltstone (12 m)	95mAOD	Unknown	at grade	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths.	Sandstone +mudstone+ siltstone could potentially contain coal seams Historical mine entrances present in vicinity
SG020	4280	Portal	43.70	20.550	4.387	Piled			The width of the sign is too great for a cantilever to be cost effective. Current guidance suggests that the portal should span both carriageway but this could potentially obscure gantry SG019, it may therefore be more appropriate to consider a central reserve leg/foundation.	A number of minor risks are associated with this site	H12 BH925	None	Glacial Till (8m), sandstone (18m) & sandstone +mudstone+ siltstone (10 m)	98mAOD	Unknown	at grade	Glacial Till could contain materials of varying size- this could affect piling Heterogenous rock (undifferentiated mudstone, siltstone & sandstone) will have many different properties over short depths.	Sandstone +mudstone+ siltstone could potentially contain coal seams Historical mine entrances present in vicinity

highways england

APPENDIX C-2

ADS GANTRY OUTLINE GENERAL ARRANGEMENT DRAWINGS

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Millimetres
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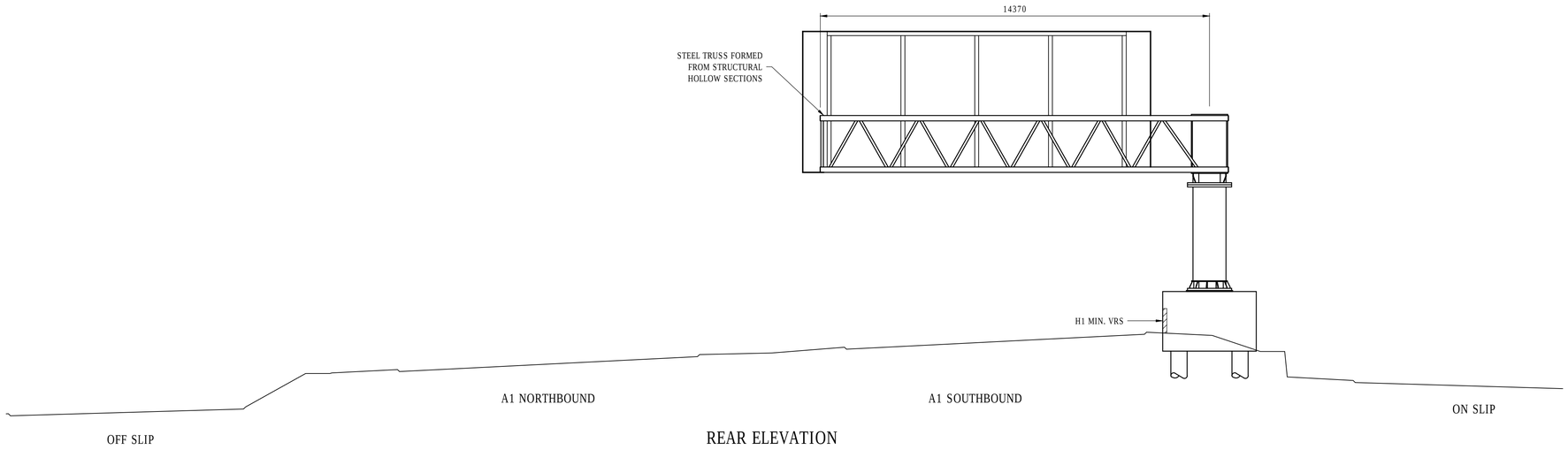
DO NOT SCALE



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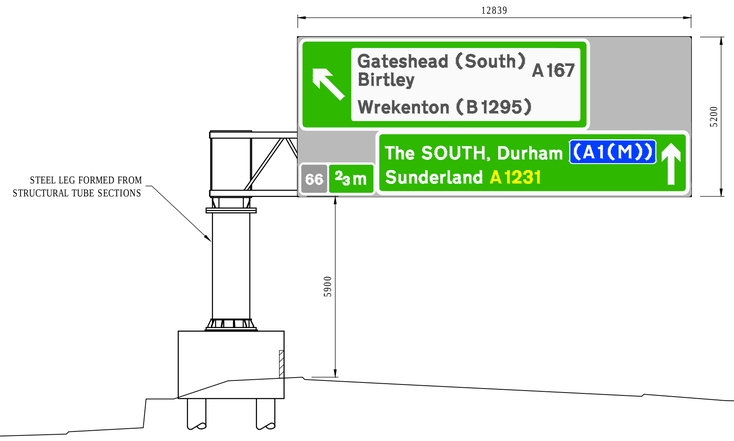

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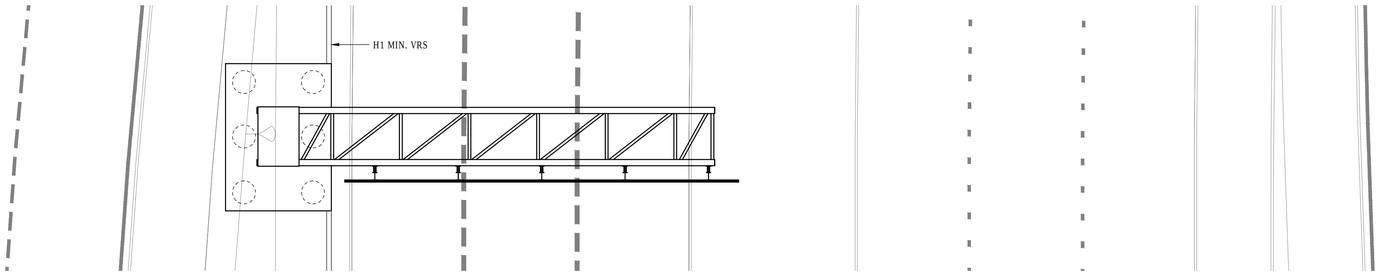

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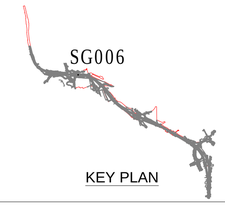

KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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Client
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Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
GANTRY SG006
CH. 1090
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

Drawing Status: PRELIMINARY
Suitability: S0

Drawing Number

Project	Originator		Volume	Project Ref. No.
HE551462	RAM		SGY	
SG006	SK	CB	0001	Revision
Location	Type	Role	Number	P01.1

RAMBOLL

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Millimetres
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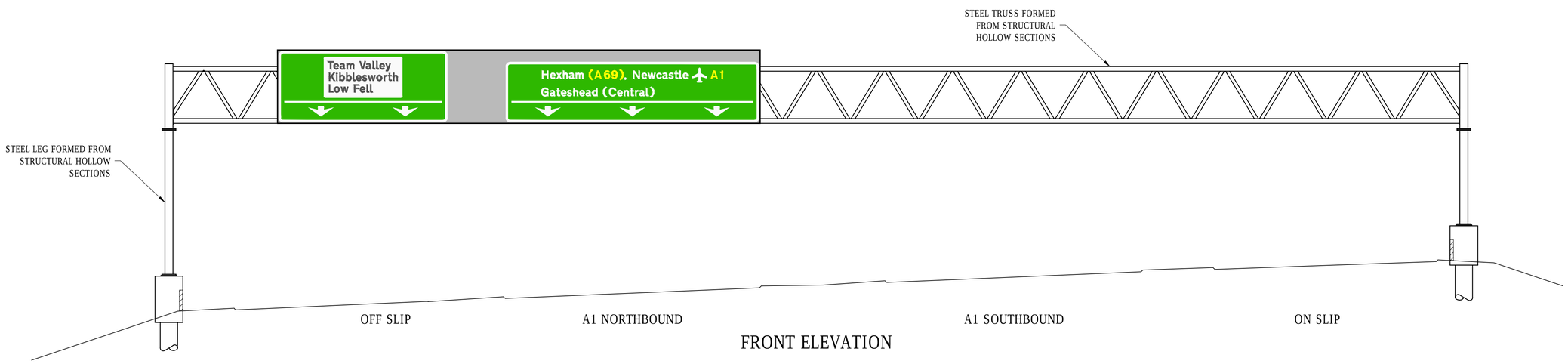
DO NOT SCALE



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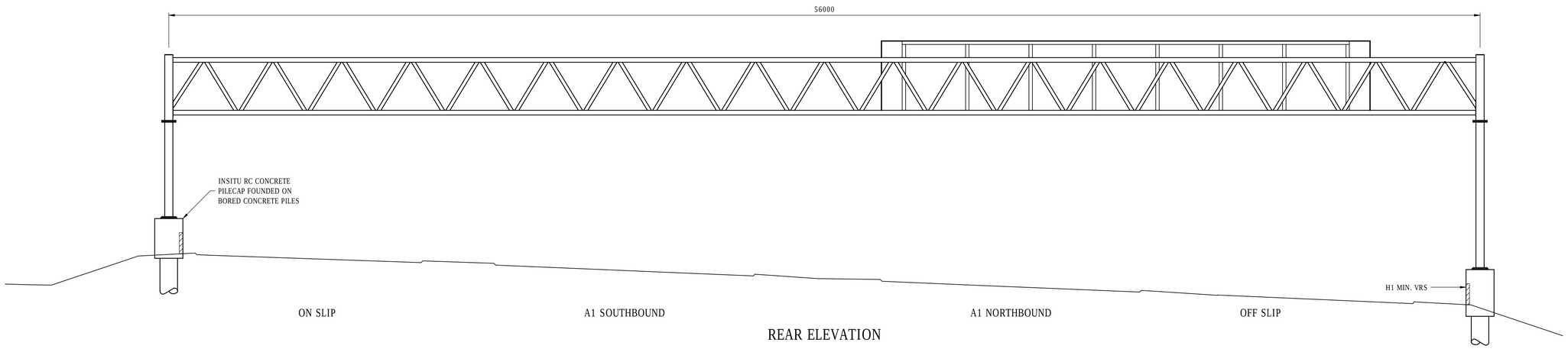

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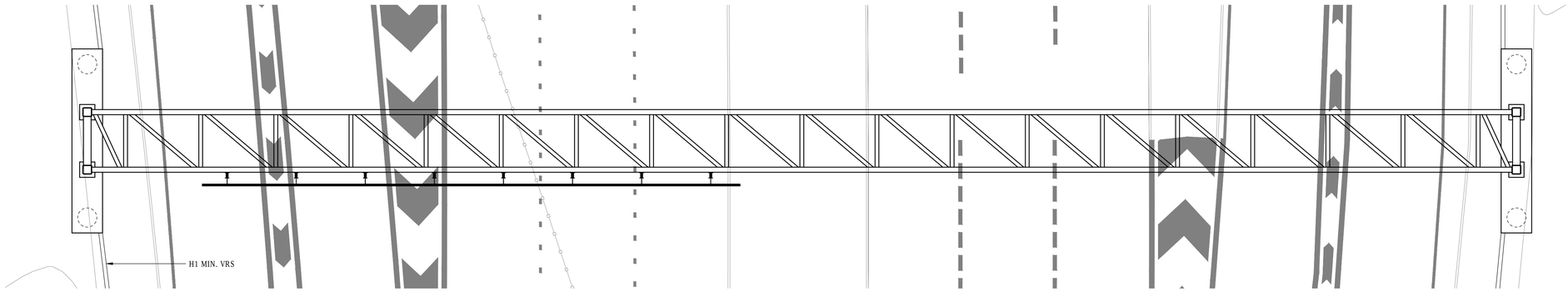

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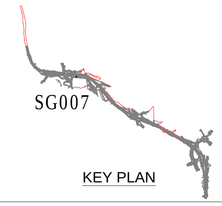

KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: GANTRY SG007
CH. 1150
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

Drawing Status: PRELIMINARY
Suitability: S0

Drawing Number
Project: HE551462
Originator: RAM
Volume: SGY
Location: SG007
Type: SK
Role: CB
Number: 0001
Project Ref. No.:
Revision: P01.1

RAMBOLL

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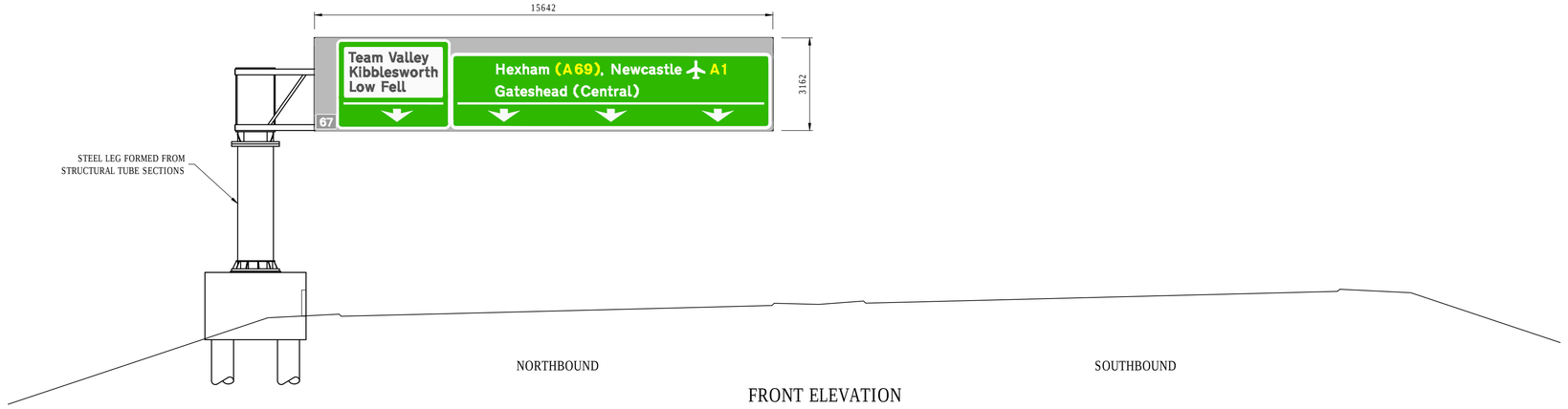

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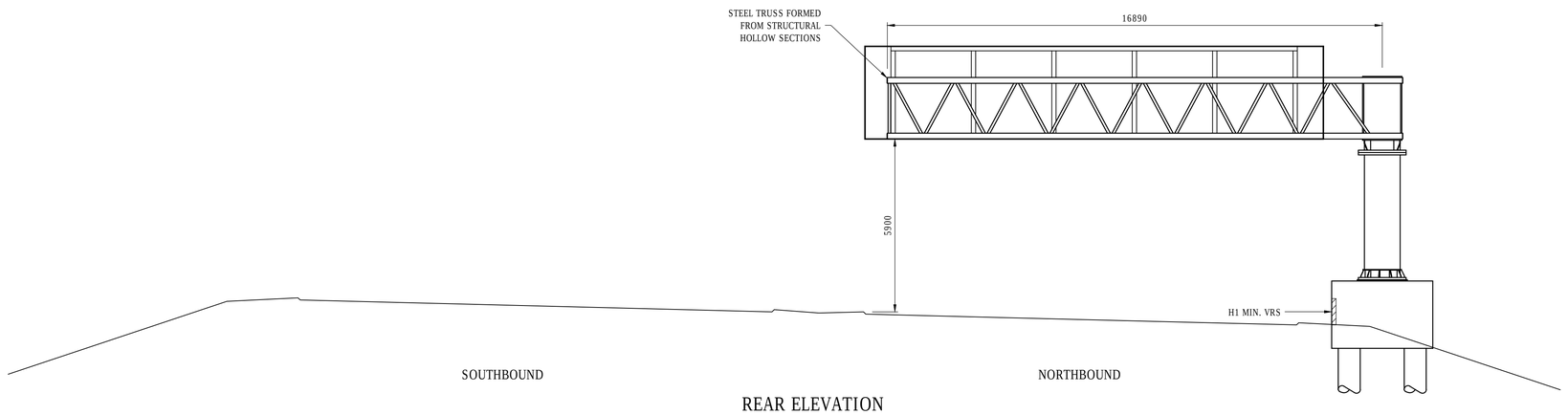

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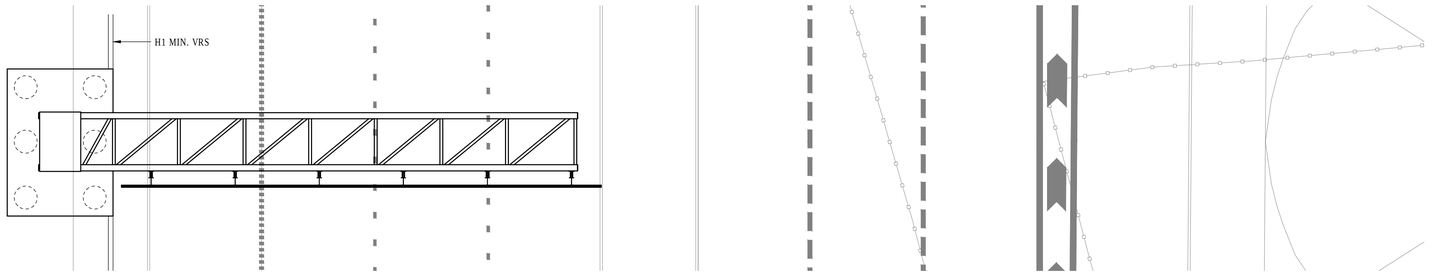

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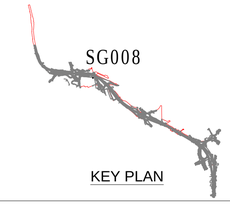

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
GANTRY SG008
CH. 1350
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

Drawing Status: PRELIMINARY
Suitability: S0

Drawing Number Project	Originator		Volume	Project Ref. No.
HE551462	RAM		SGY	
SG008	SK	CB	0001	Revision
Location	Type	Role	Number	P01.1

RAMBOLL

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Millimetres
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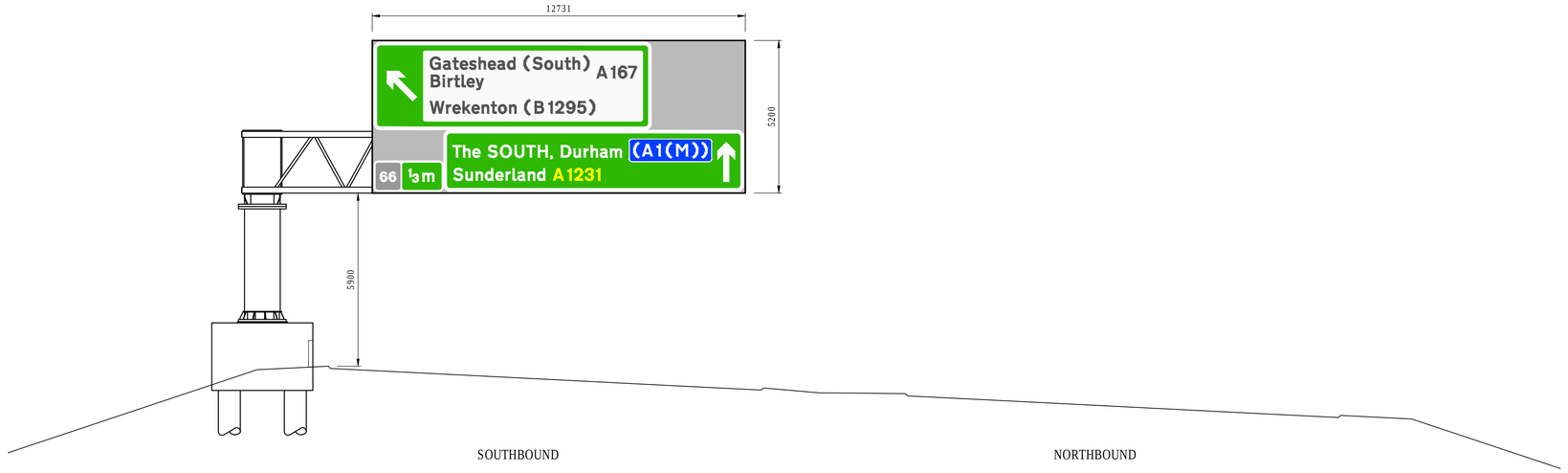
DO NOT SCALE



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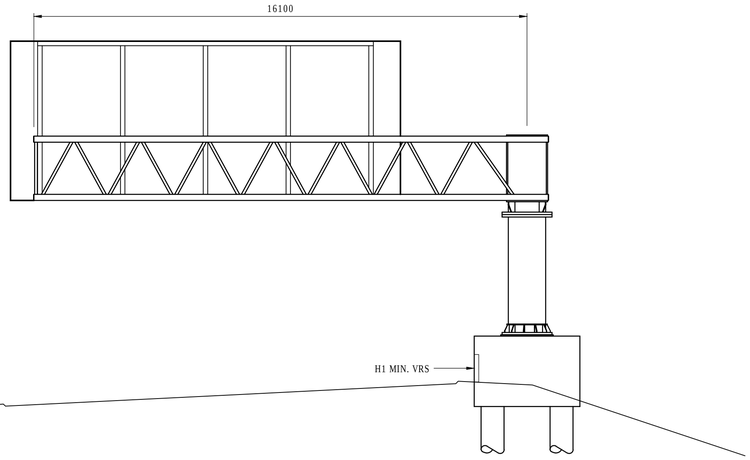

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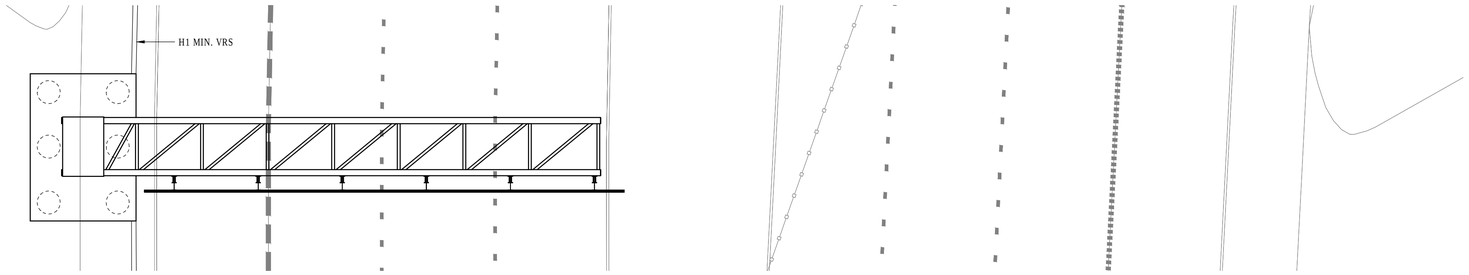

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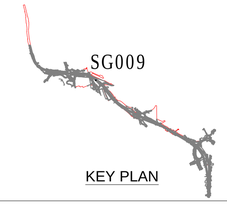

KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: GANTRY SG009
CH. 1550
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
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Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

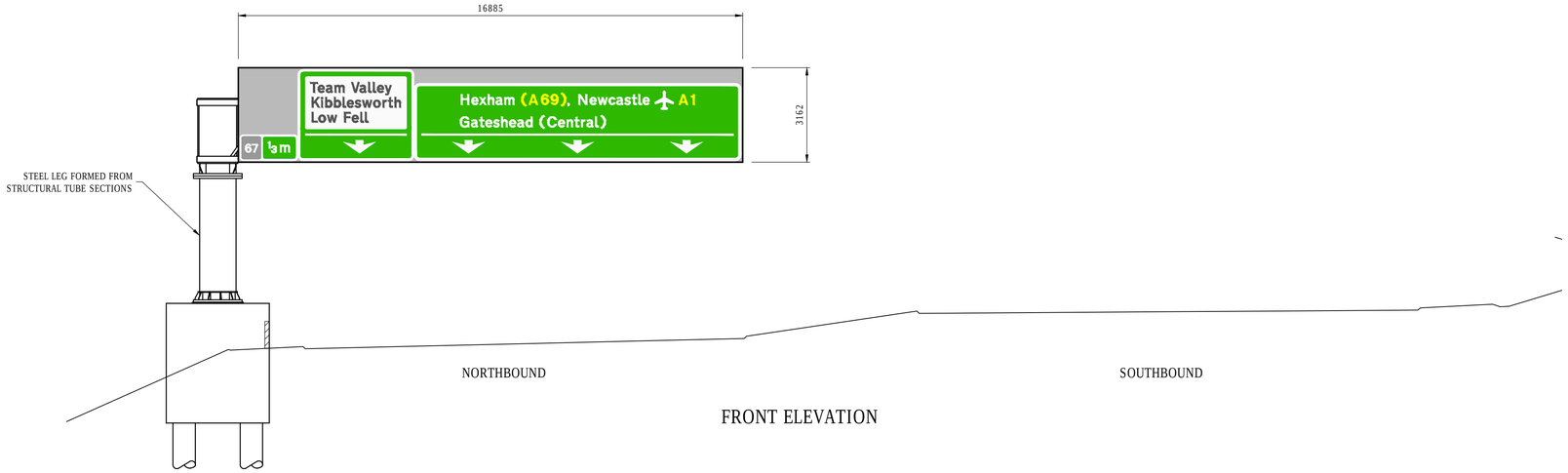
Drawing Status: PRELIMINARY
Suitability: S0

Drawing Number
Project: HE551462 | Originator: RAM | Volume: SGY
Location: SG009 | Type: SK | Role: CB | Number: 0001

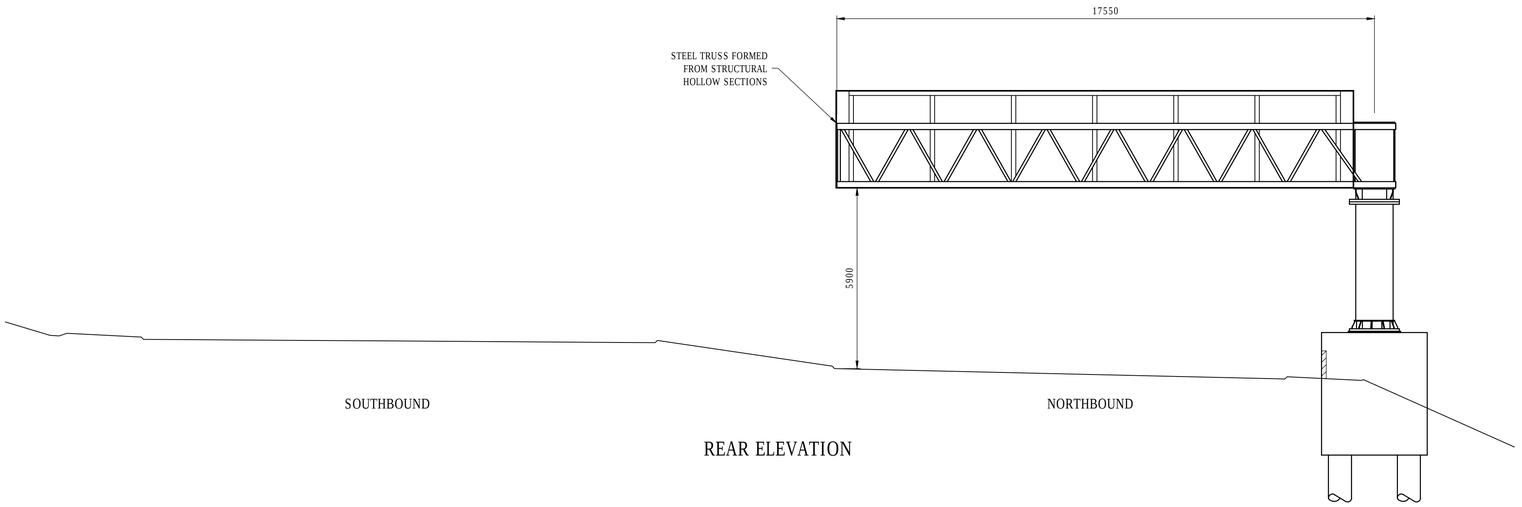
Project Ref. No.

Revision: P01.1

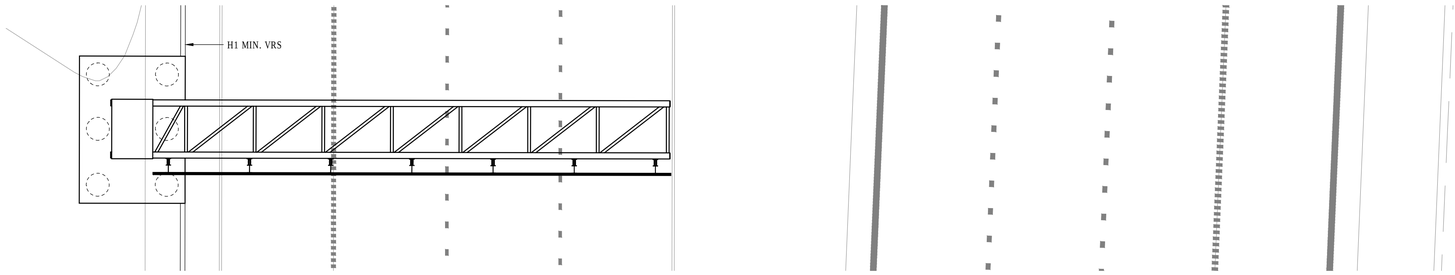
RAMBOLL



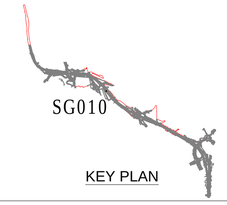
FRONT ELEVATION



REAR ELEVATION



PLAN



KEY PLAN

NOTES

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

wsp
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T+ 44 (0) 113 395 6200, F+ 44 (0) 113 395 6201
wsp.com

Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
GANTRY SG010
CH. 1920
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	ACL	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

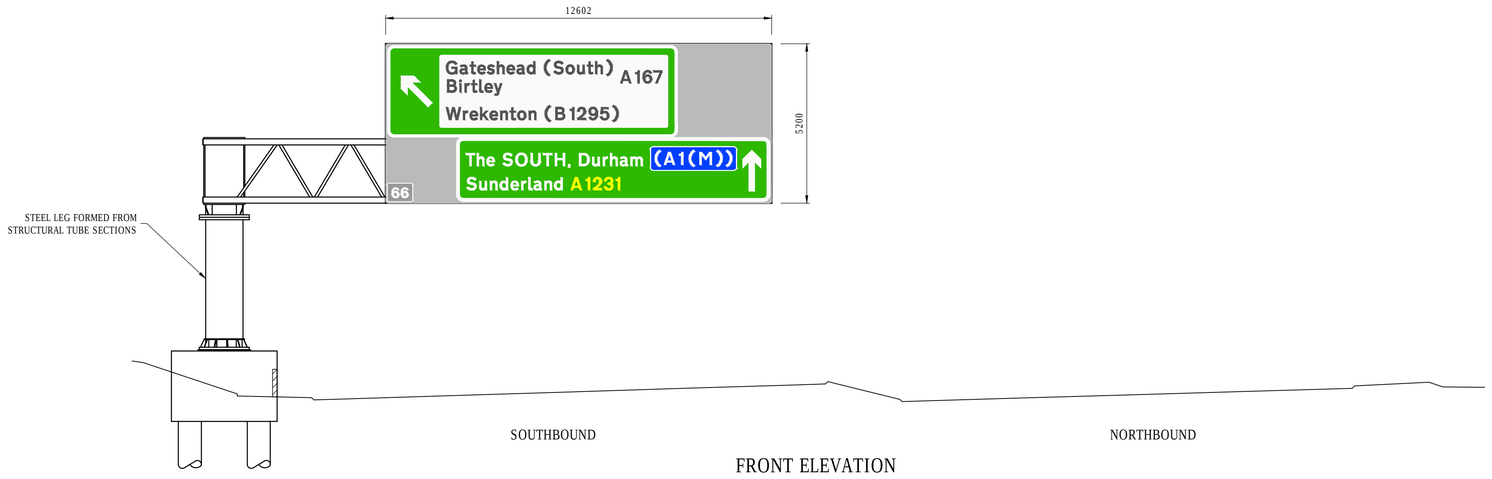
Drawing Status: PRELIMINARY
Suitability: S0

Drawing Number
Project: HE551462
Originator: RAM
Volume: SGY
Location: SG010
Type: SK
Role: CB
Number: 0001

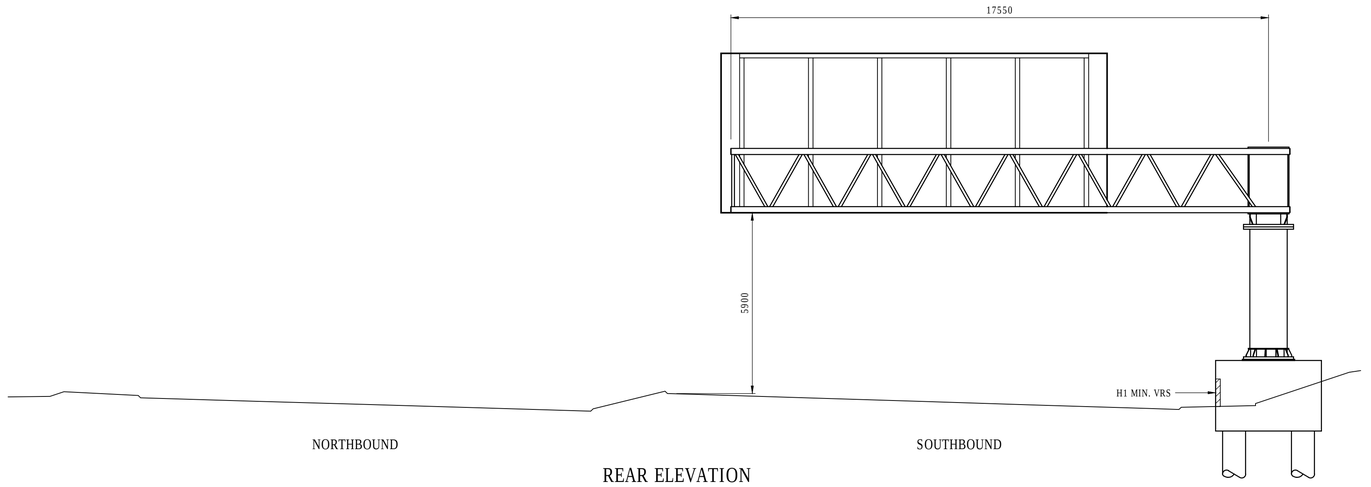
Project Ref. No.

Revision: P01.1

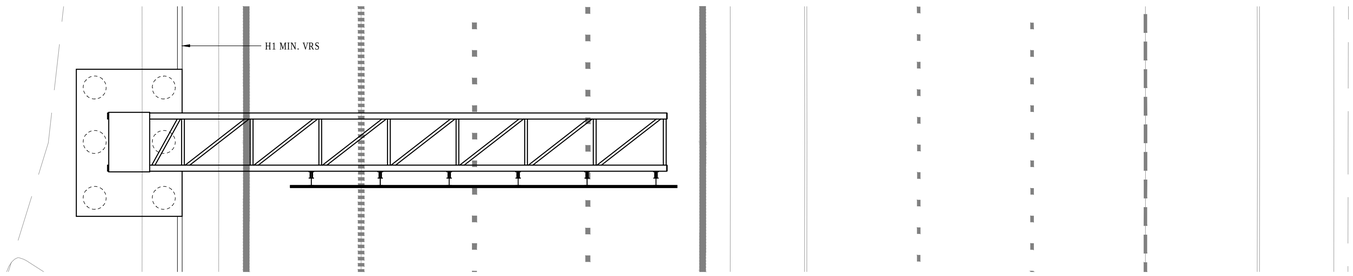
RAMBOLL



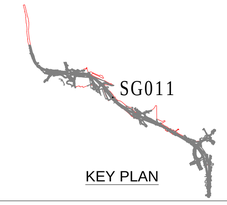
FRONT ELEVATION



REAR ELEVATION



PLAN



KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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wsp.com

Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
GANTRY SG011
CH. 2140
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	ACL	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

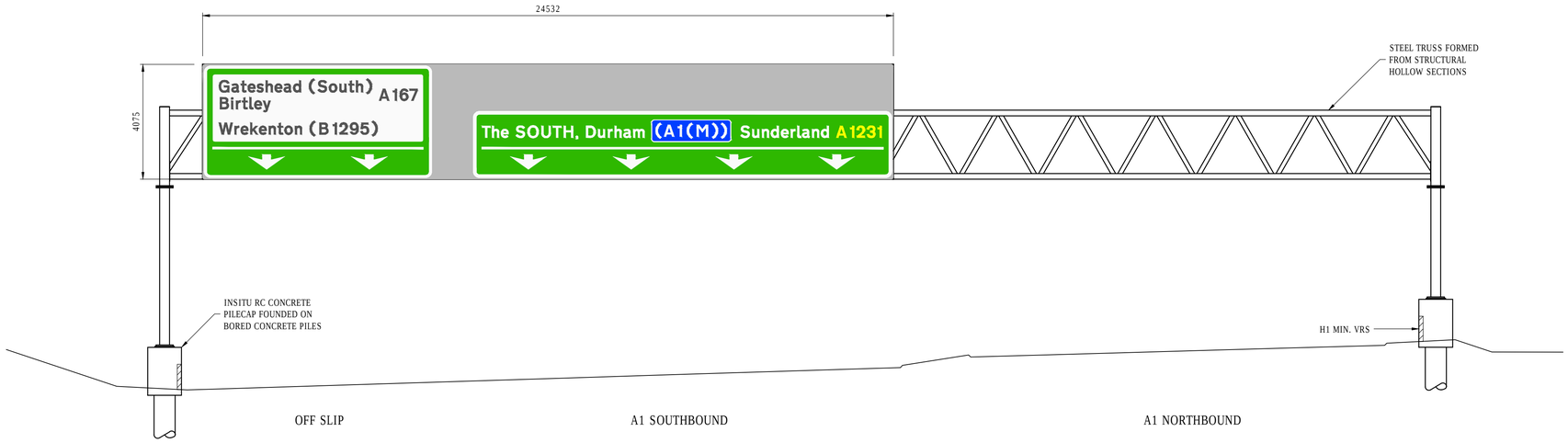
Drawing Status: PRELIMINARY
Suitability: S0

Drawing Number
Project: HE551462 | Originator: RAM | Volume: SGY
Location: SG011 | Type: SK | Role: CB | Number: 0001
Project Ref. No.:
Revision: P01.1

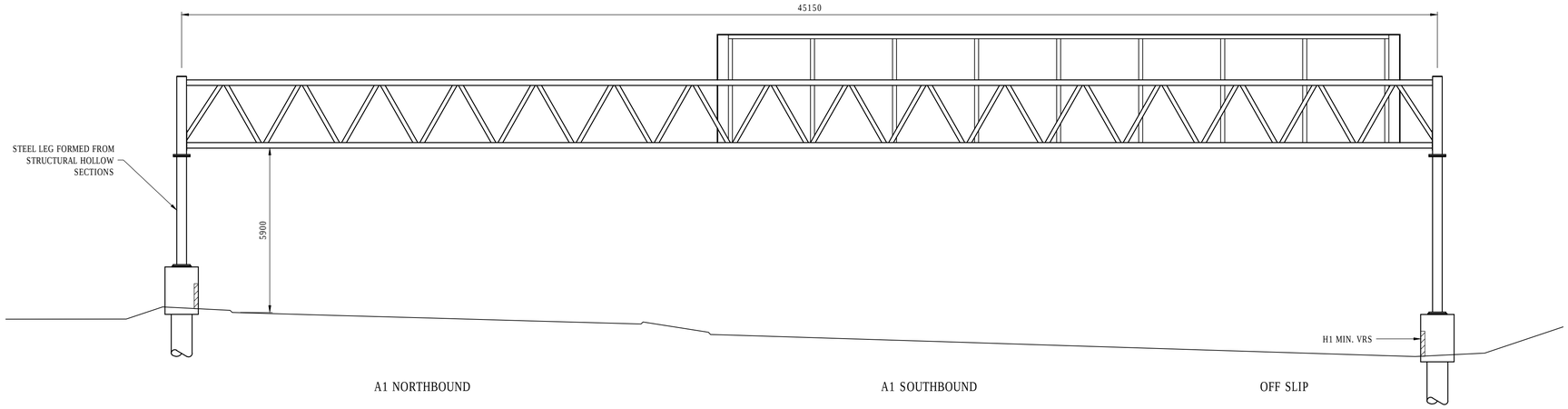
RAMBOLL

100 Millimetres 0 10

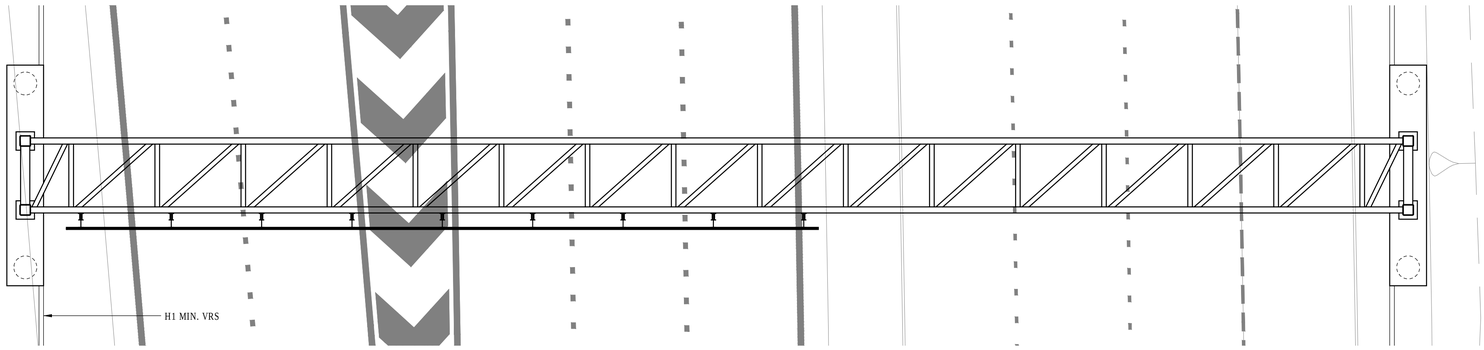
DO NOT SCALE



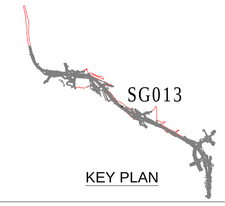
FRONT ELEVATION



REAR ELEVATION



PLAN



KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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T+ 44 (0) 113 395 6200, F+ 44 (0) 113 395 6201
wsp.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: GANTRY SG013
CH. 2440
INDICATIVE ARRANGEMENT

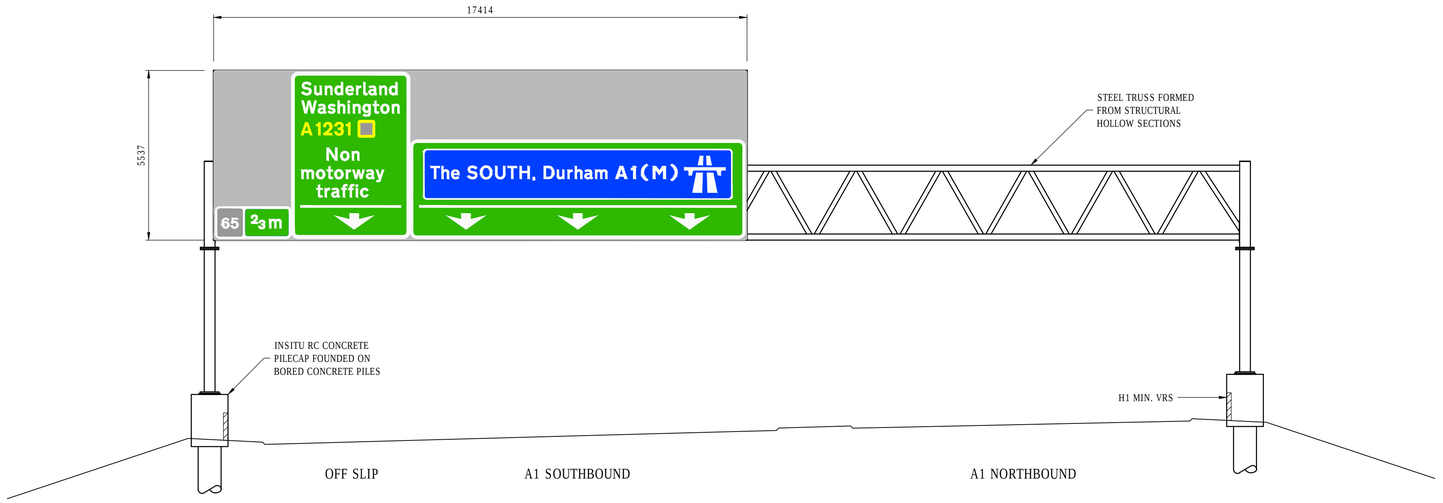
Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

Drawing Status: PRELIMINARY

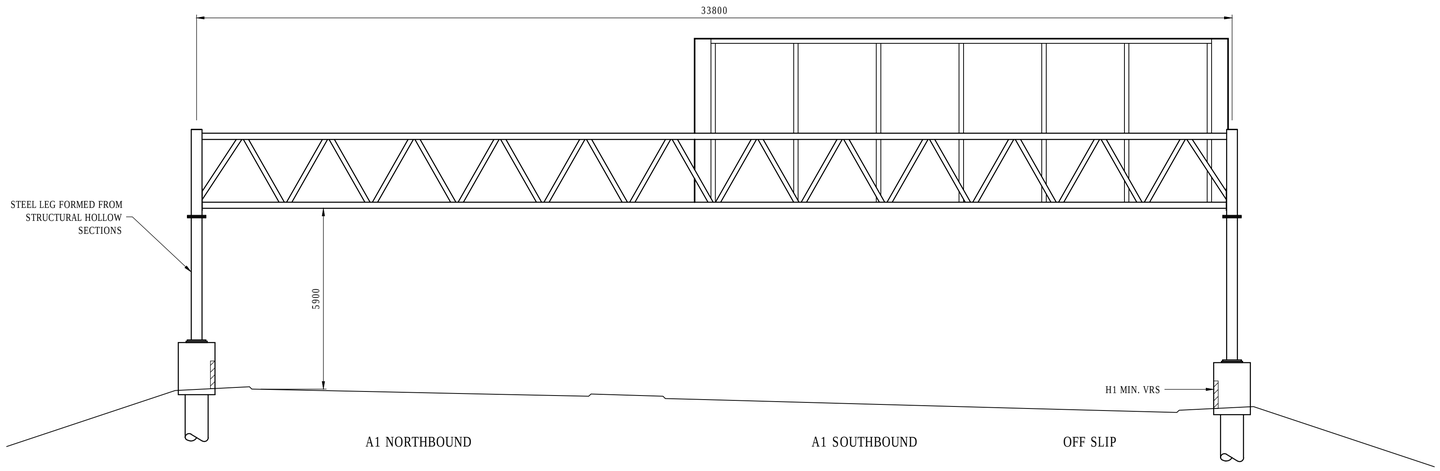
Suitability: S0

Drawing Number Project	Originator		Volume	Project Ref. No.
HE551462	RAM		SGY	
SG013	SK	CB	0001	Revision
Location	Type	Role	Number	P01.1

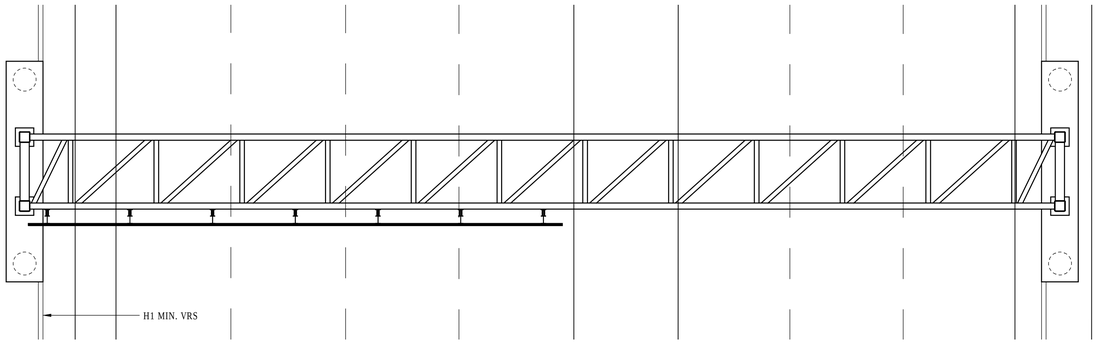
RAMBOLL



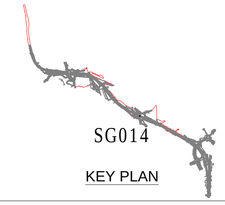
FRONT ELEVATION



REAR ELEVATION



PLAN



KEY PLAN

NOTES

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: GANTRY SG014
CH. 2955
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

Drawing Status: PRELIMINARY

Suitability: S0

Drawing Number

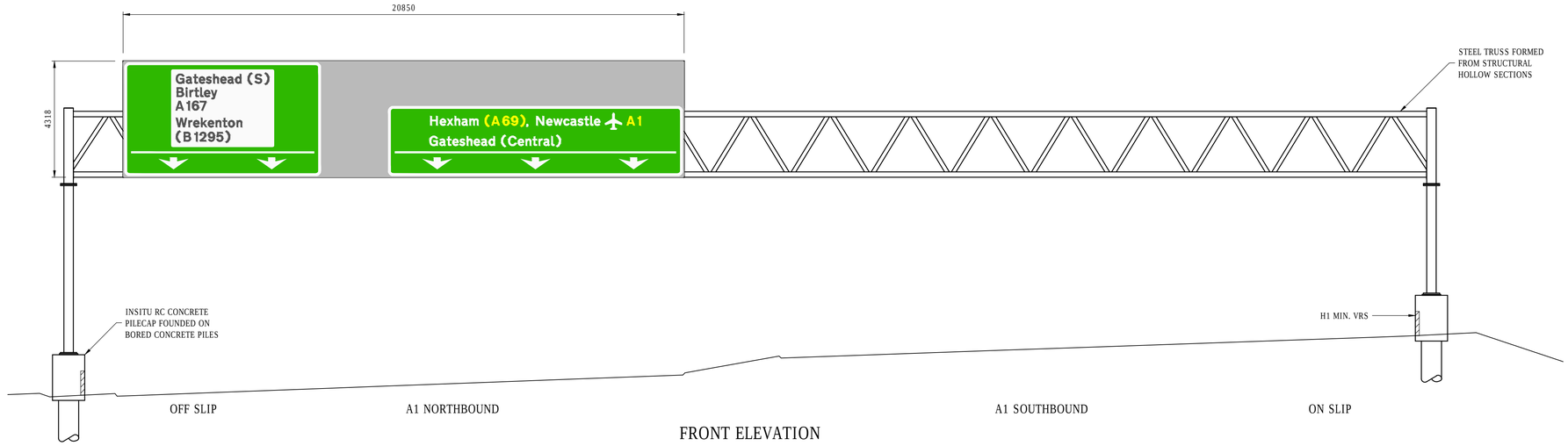
Project	Originator	Volume	Project Ref. No.
HE551462	RAM	SGY	
SG014 (Location)	SK (Type)	CB (Role)	0001 (Number)

Revision: P01.1

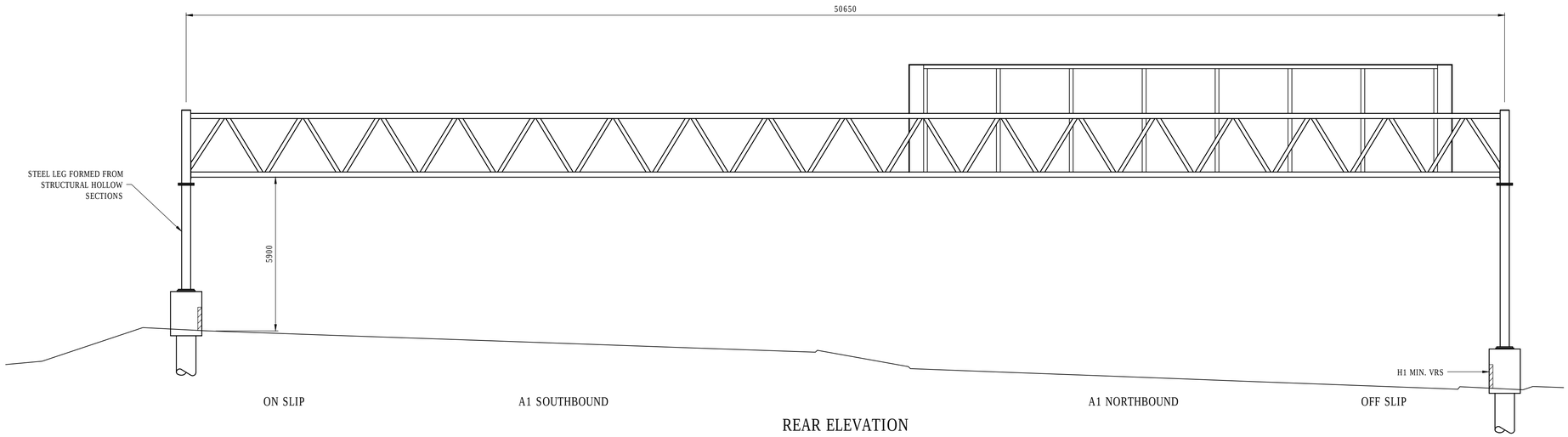
RAMBOLL

100 Millimetres 0 10

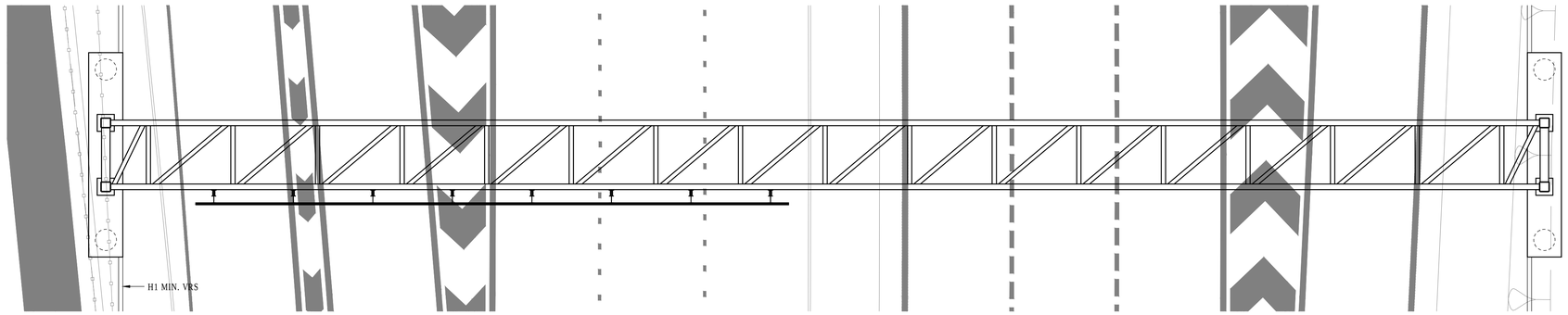
DO NOT SCALE



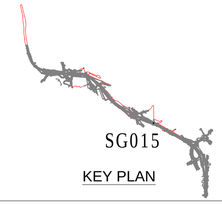
FRONT ELEVATION



REAR ELEVATION



PLAN



KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: GANTRY SG015
CH. 3400
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

Drawing Status: PRELIMINARY

Suitability: S0

Drawing Number

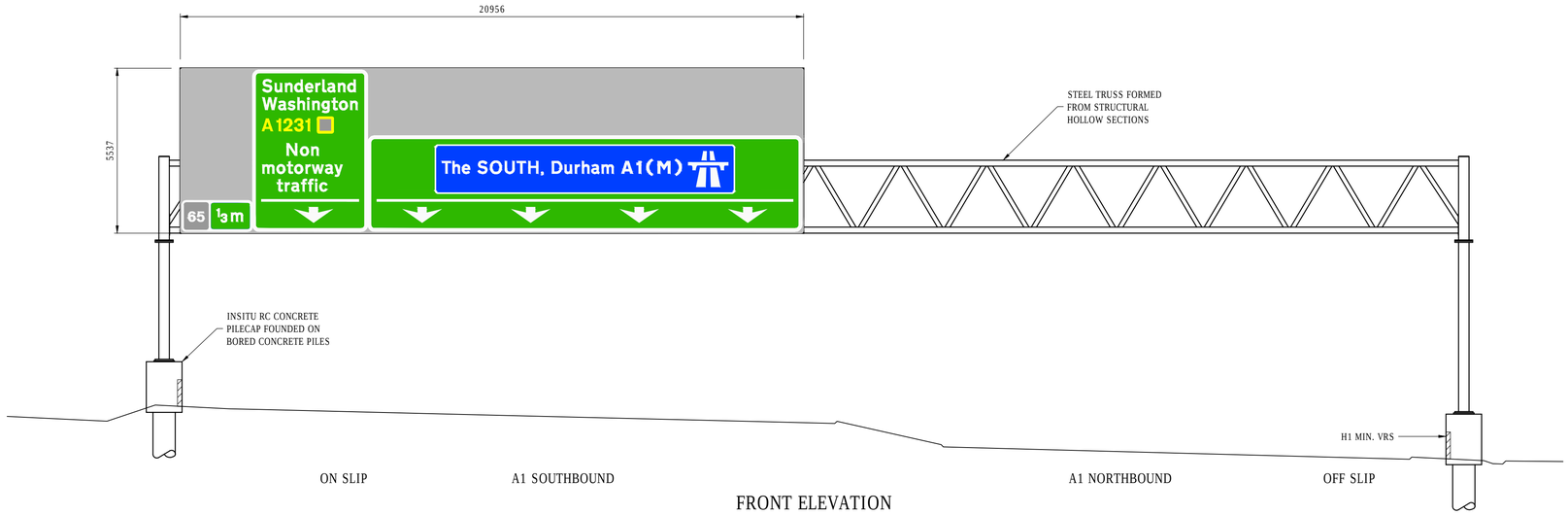
Project	Originator	Volume	Project Ref. No.
HE551462	RAM	SGY	

Location	Type	Role	Number	Revision
SG015	SK	CB	0001	P01.1

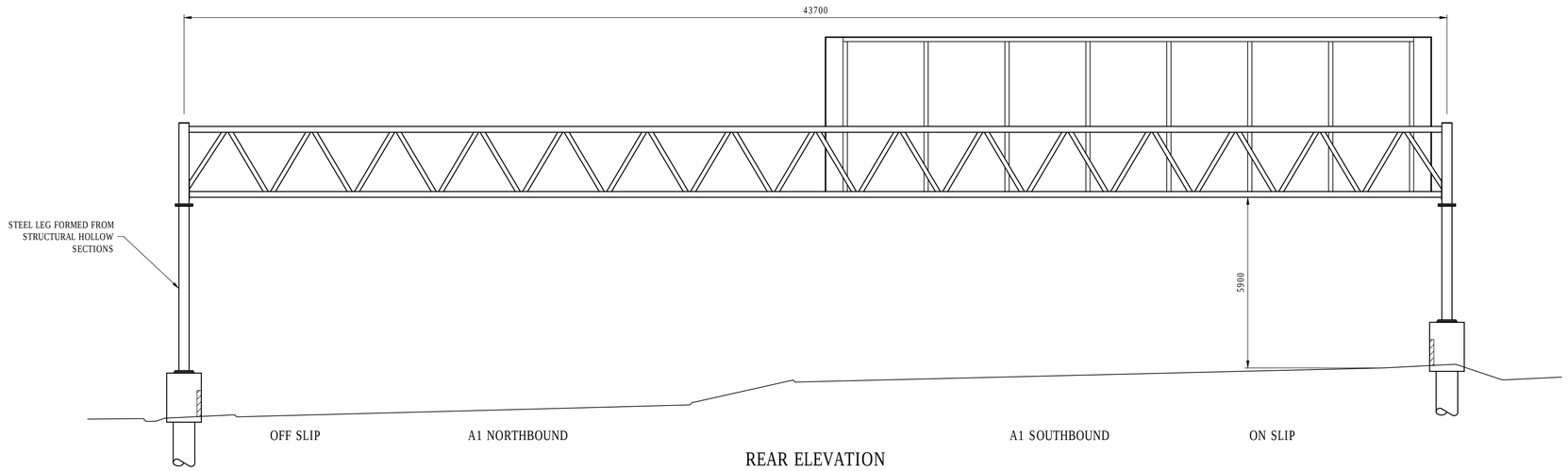
RAMBOLL

100 Millimetres 0 10

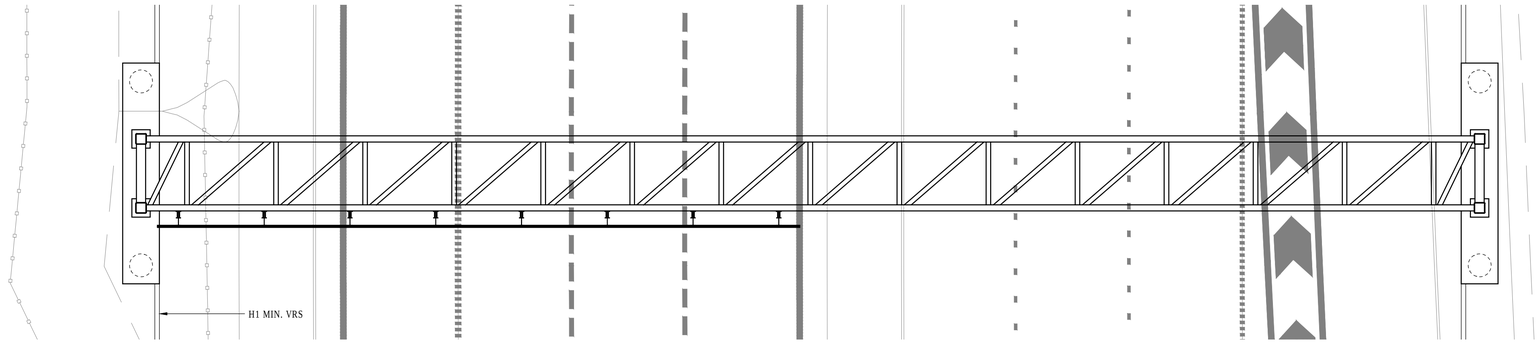
DO NOT SCALE



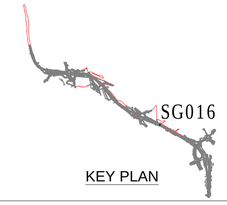
FRONT ELEVATION



REAR ELEVATION



PLAN



KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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Client

Working on behalf of highways england

Project Title

A1 BIRTLEY TO COALHOUSE

Drawing Title

GANTRY SG16
CH. 3490
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

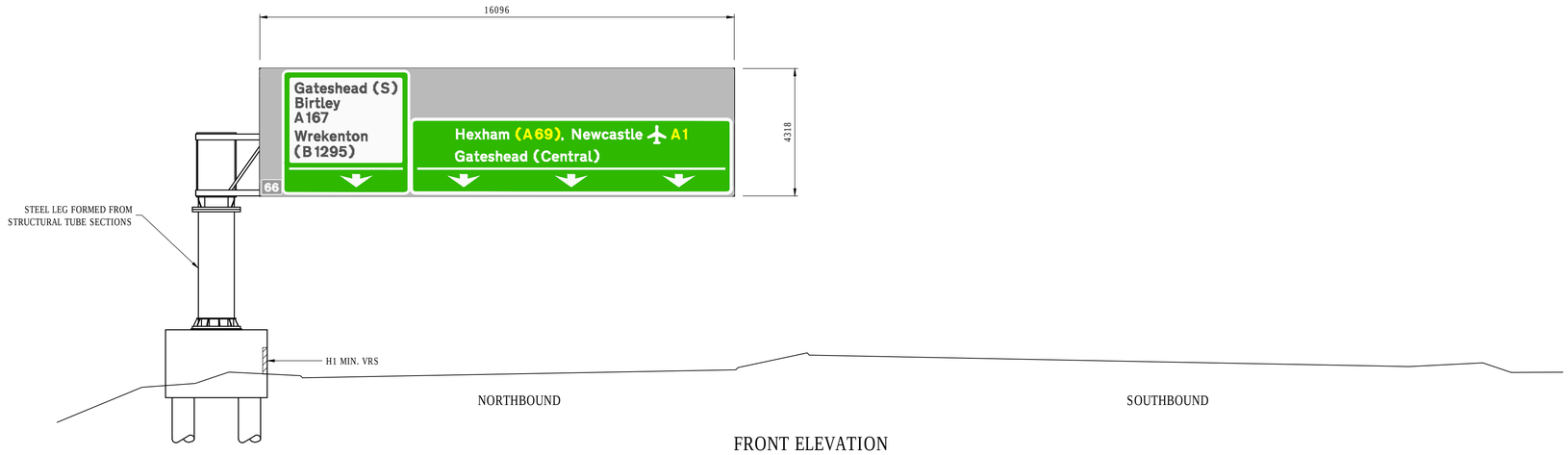
Drawing Status: PRELIMINARY

Suitability: S0

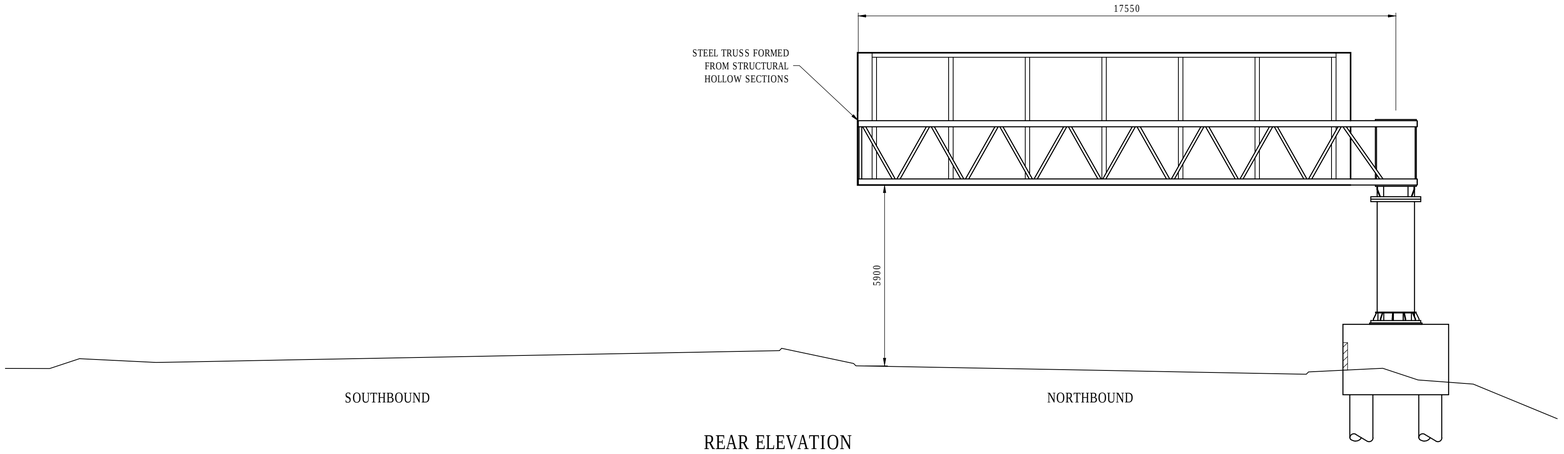
Drawing Number

Project	Originator	Volume		Project Ref. No.
HE551462	RAM	SGY		
SG016	SK	CB	0001	Revision P01.1
Location	Type	Role	Number	

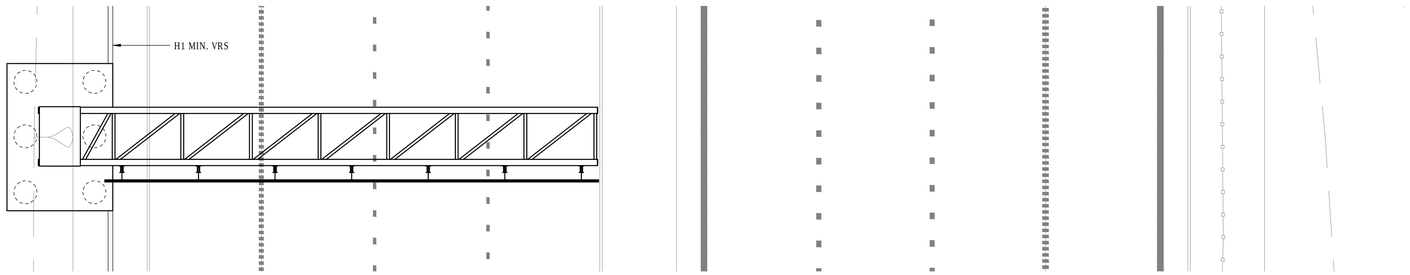
RAMBOLL



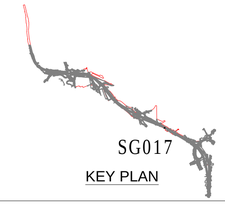
FRONT ELEVATION



REAR ELEVATION



PLAN



KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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wsp.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: GANTRY SG017
CH. 3625
INDICATIVE ARRANGEMENT

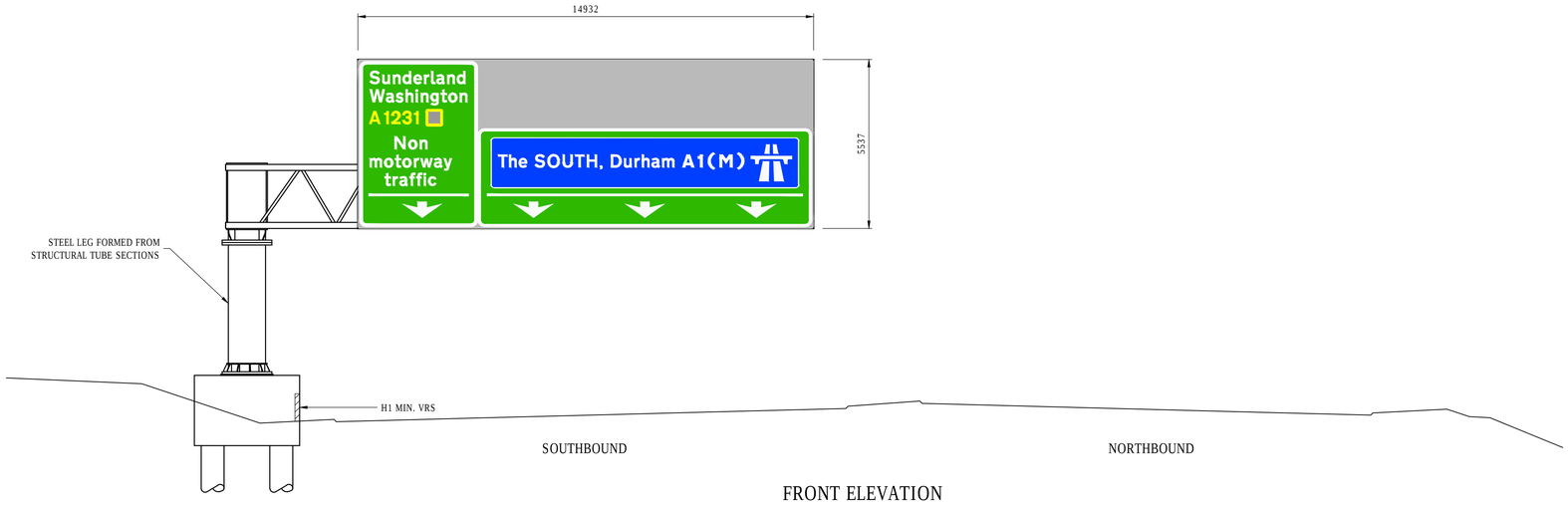
Scale	Drawn	Checked	Approved	Authorised
1:100	ACL	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

Drawing Status: PRELIMINARY
Suitability: S0

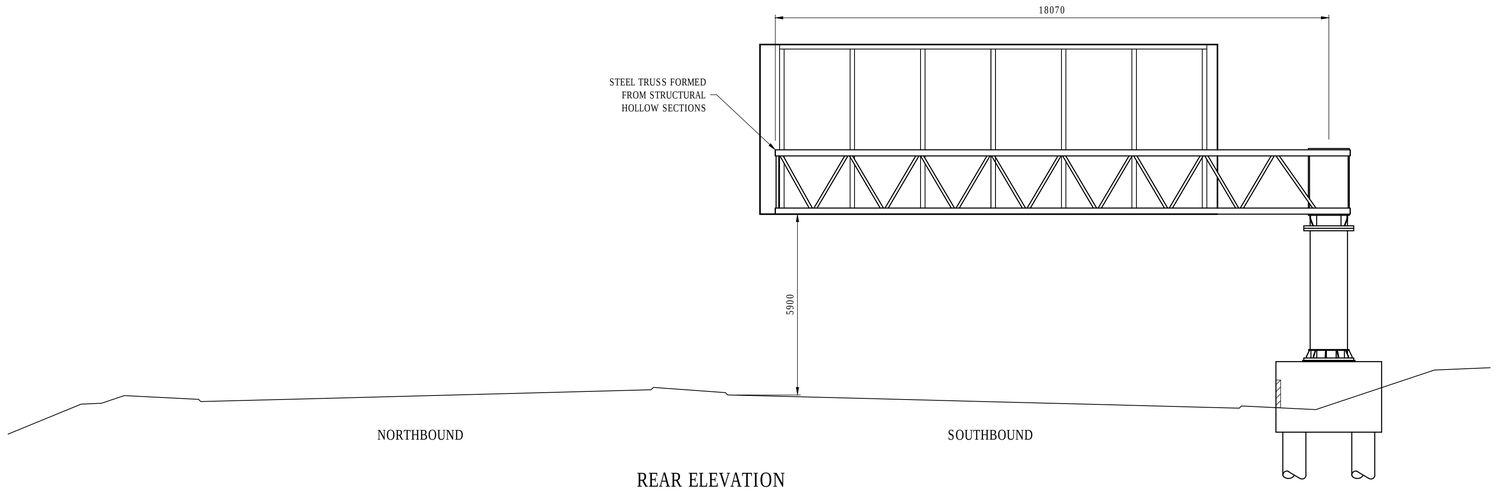
Drawing Number
Project: HE551462
Originator: RAM
Volume: SGY
Location: SG017
Type: SK
Role: CB
Number: 0001
Project Ref. No.:
Revision: P01.1

RAMBOLL

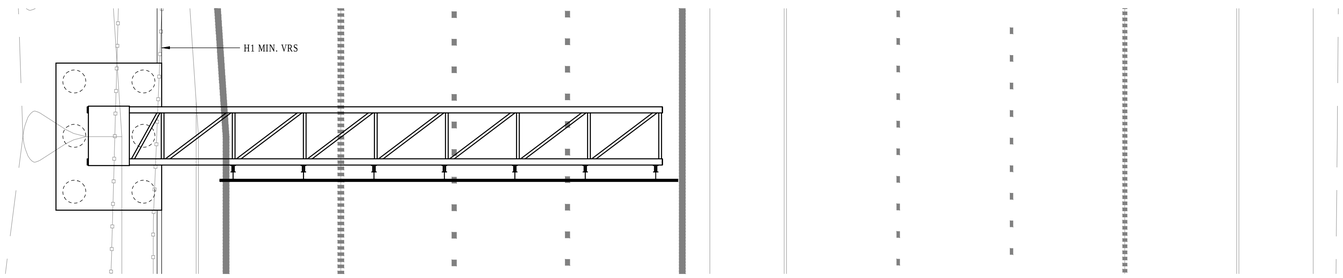
100
Millimetres
0 10
DO NOT SCALE



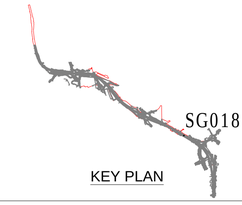
FRONT ELEVATION



REAR ELEVATION



PLAN



KEY PLAN

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Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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T+ 44 (0) 113 395 6200, F+ 44 (0) 113 395 6201
wsp.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

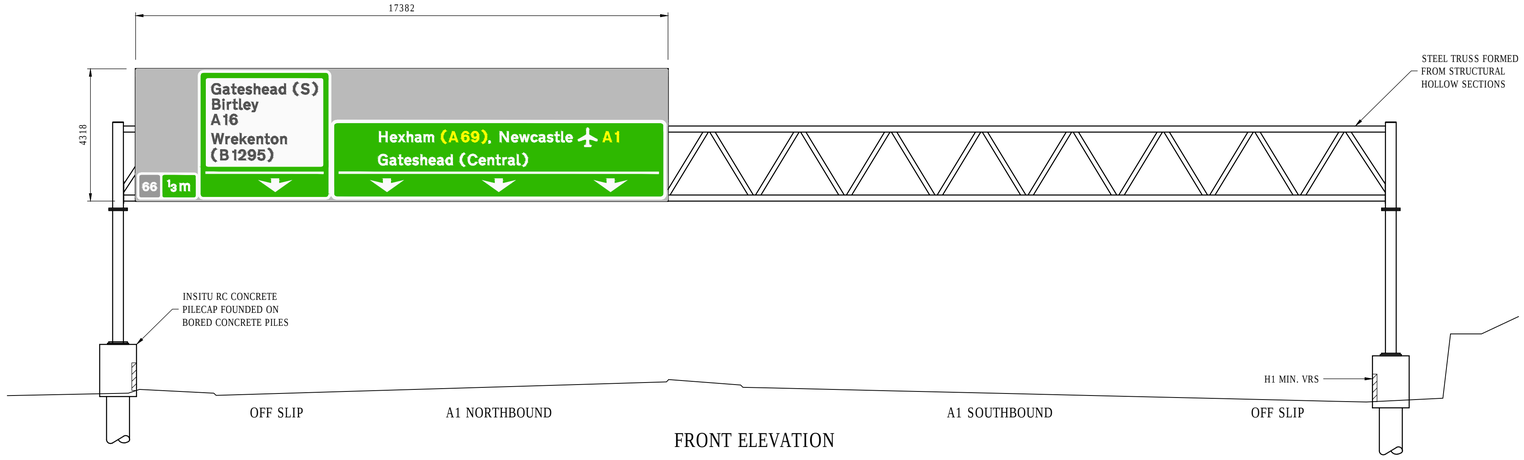
Drawing Title: GANTRY SG018
CH. 4025
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	ACL	---	SJB	---
Original Size	Date Nov 2017	Date ---	Date Nov 2017	Date ---

Drawing Status: PRELIMINARY
Suitability: S0

Drawing Number
Project: HE551462 | Originator: RAM | Volume: SGY
Location: SG018 | Type: SK | Role: CB | Number: 0001
Project Ref. No.
Revision: P01.1

RAMBOLL



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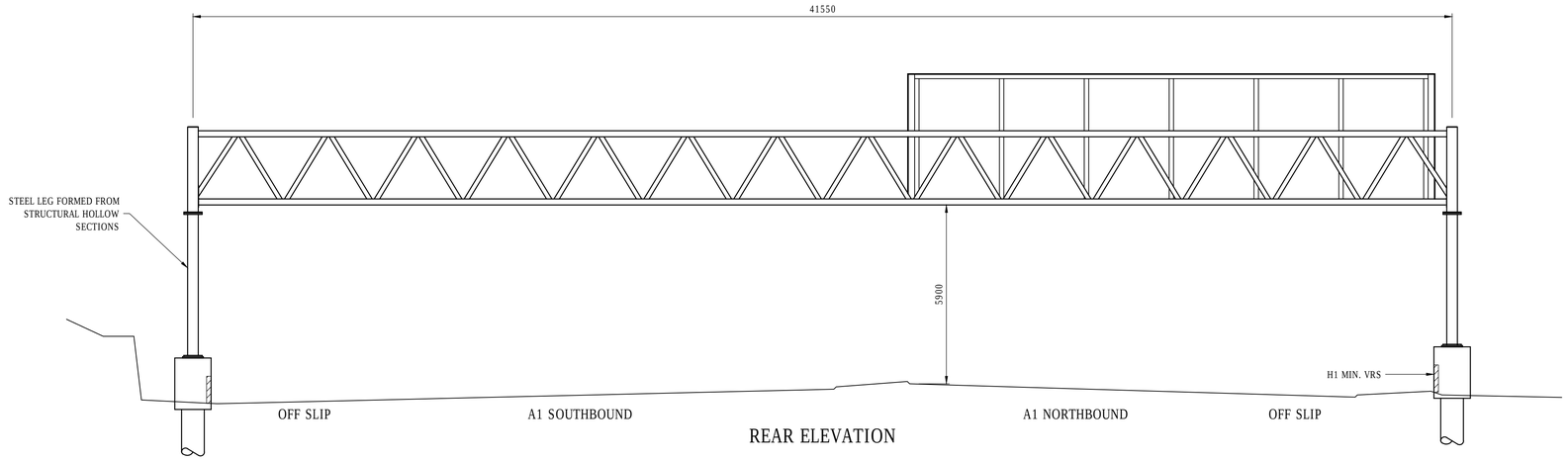

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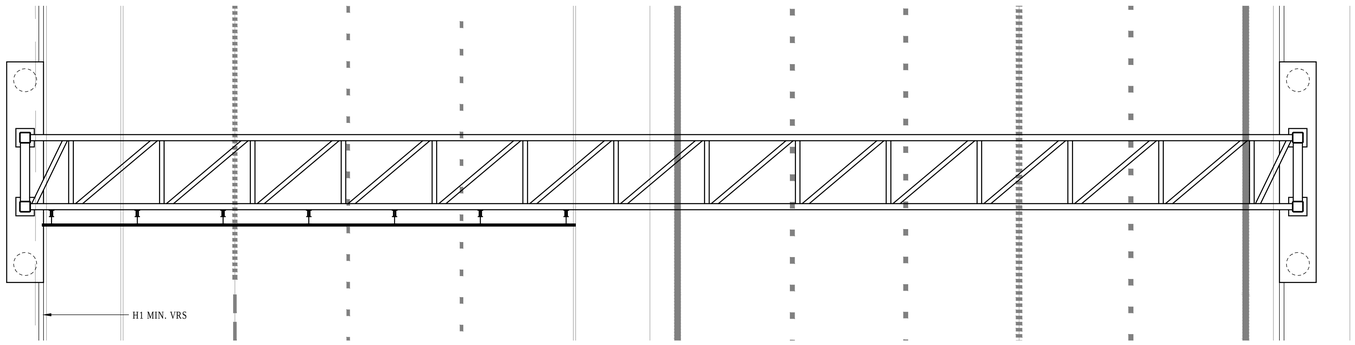
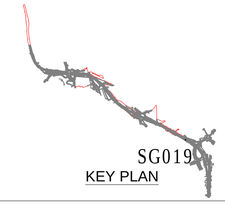


PLAN



KEY PLAN

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES RELATED TO SITE DATUM UNLESS NOTED OTHERWISE.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT CONTRACT DRAWINGS.
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5. THE GANTRY ARRANGEMENTS SHOWN ARE INDICATIVE AND SUBJECT TO CONFIRMATION AS PART OF THE DETAILED DESIGN PROCESS.

Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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wsp.com

Client: Working on behalf of highways england

Project Title: A1 BIRTLEY TO COALHOUSE

Drawing Title: GANTRY SG019
CH. 4215
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date	Date	Date	Date
	Nov 2017	---	Nov 2017	---

Drawing Status: PRELIMINARY

Suitability: S0

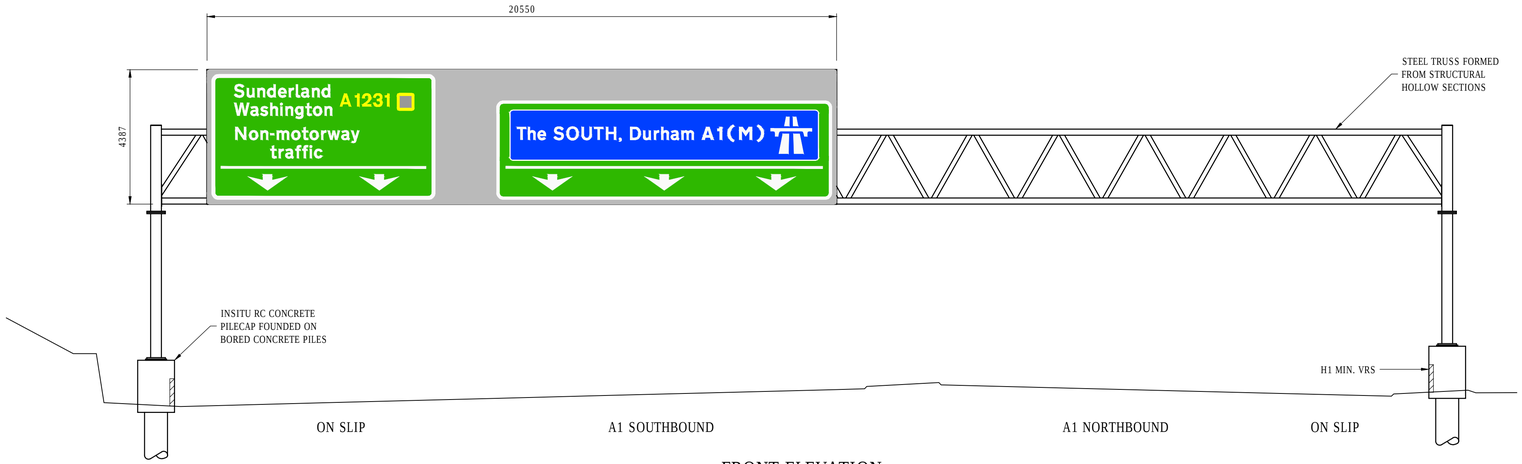
Drawing Number
Project: HE551462
Originator: RAM
Volume: SGY
Location: SG019
Type: SK
Role: CB
Number: 0001

Project Ref. No.

Revision: P01.1

RAMBOLL

100
Millimetres
0 10
DO NOT SCALE



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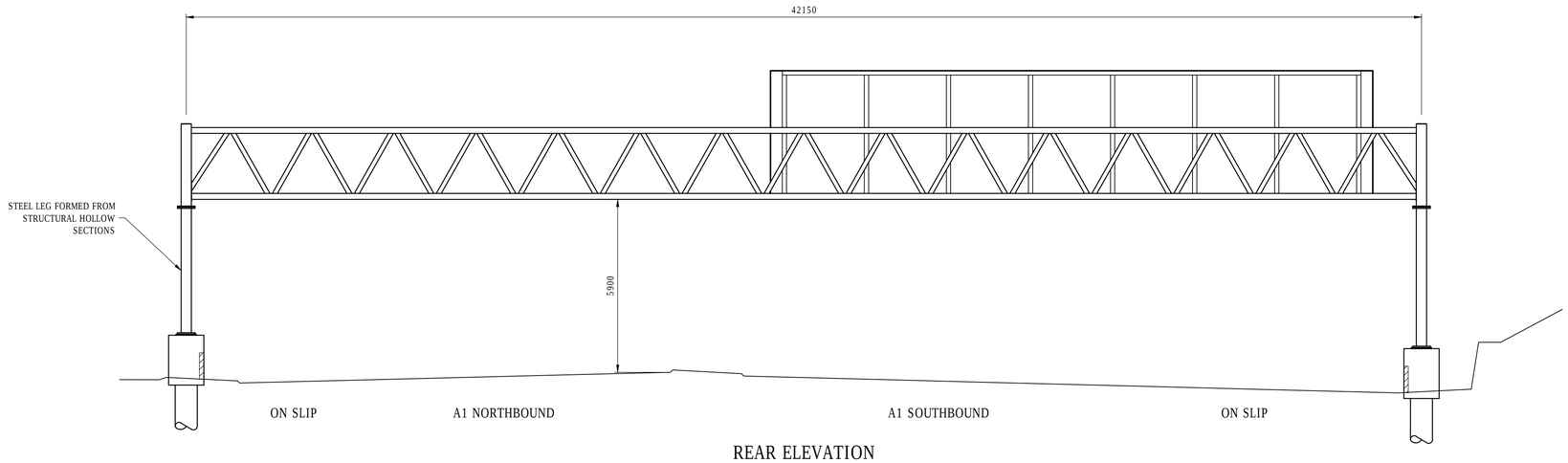

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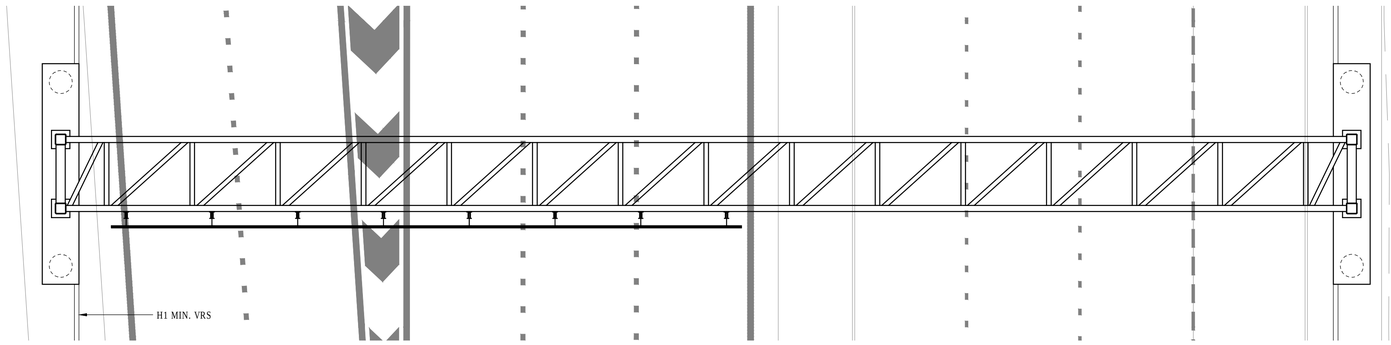
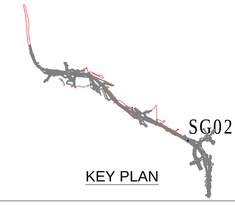


PLAN



KEY PLAN

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES RELATED TO SITE DATUM UNLESS NOTED OTHERWISE.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT CONTRACT DRAWINGS.
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5. THE GANTRY ARRANGEMENTS SHOWN ARE INDICATIVE AND SUBJECT TO CONFIRMATION AS PART OF THE DETAILED DESIGN PROCESS.

Rev.	Date	Description	By	Chk'd	App'd
P01.1	05/12/17	PRELIMINARY	SB	---	SJB

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Client
Working on behalf of
highways england

Project Title
A1 BIRTLEY TO COALHOUSE

Drawing Title
GANTRY SG020
CH. 4280
INDICATIVE ARRANGEMENT

Scale	Drawn	Checked	Approved	Authorised
1:100	SB	---	SJB	---
Original Size	Date Nov 2017	Date ---	Date Nov 2017	Date ---

Drawing Status: PRELIMINARY
Suitability: S0

Drawing Number
Project: HE551462 | Originator: RAM | Volume: SGY
Location: SG020 | Type: SK | Role: CB | Number: 0001
Project Ref. No.
Revision: P01.1

RAMBOLL

Appendix D

GEOTECHNICAL INFORMATION

highways england

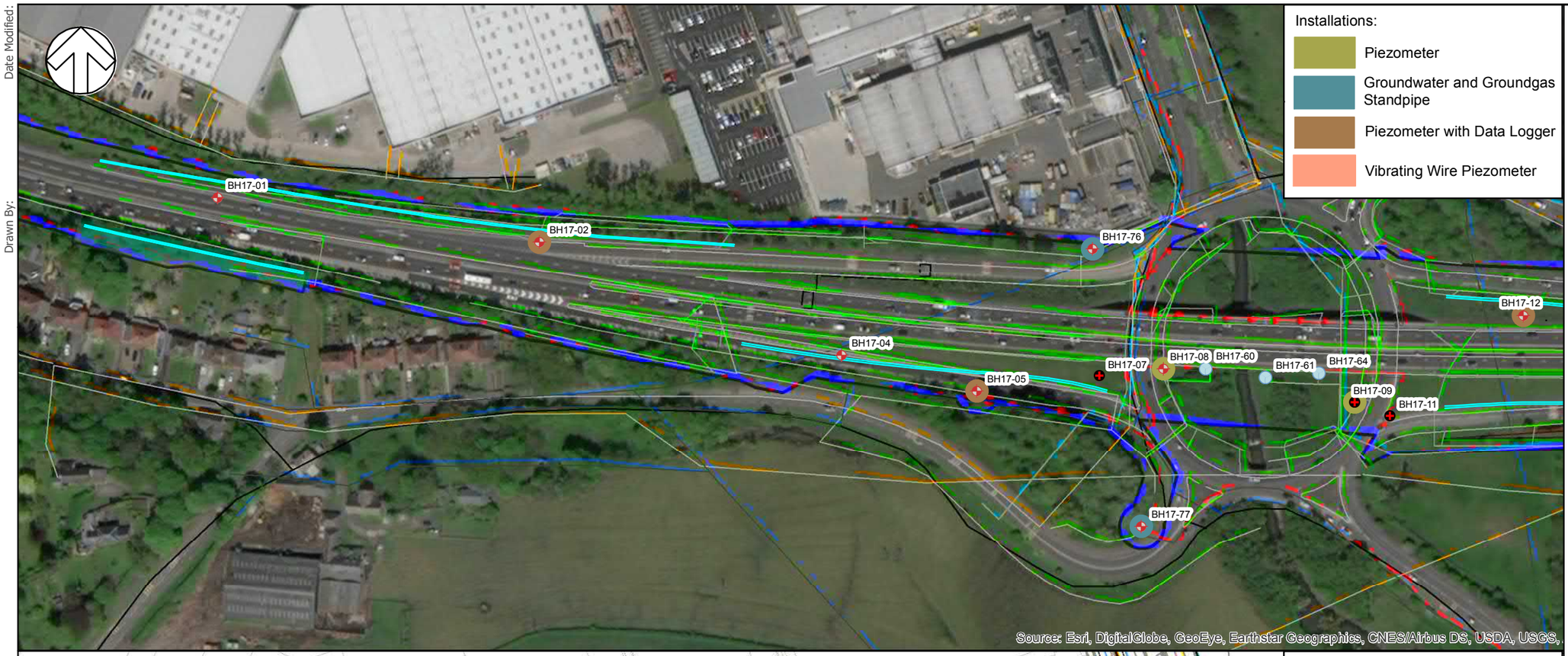
APPENDIX D-1

GEOTECHNICAL INFORMATION

Date Modified:

Drawn By:

File:



Installations:

- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:

- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

BH17-60 and BH17-61 no additional ecological surveys are required, however at these locations a minimum off set from the river bank of 10m is to be maintained.

Area of hand held window samples no additional ecological surveys are required.

0 0.01 0.02 0.04 0.06 0.08 Kilometres

Legend

- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:

- Existing Carriageway
- Proposed retaining walls

Proposed GI:

- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:

- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Abandoned NGN Gas

DRAWING STATUS: FOR INFORMATION

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CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

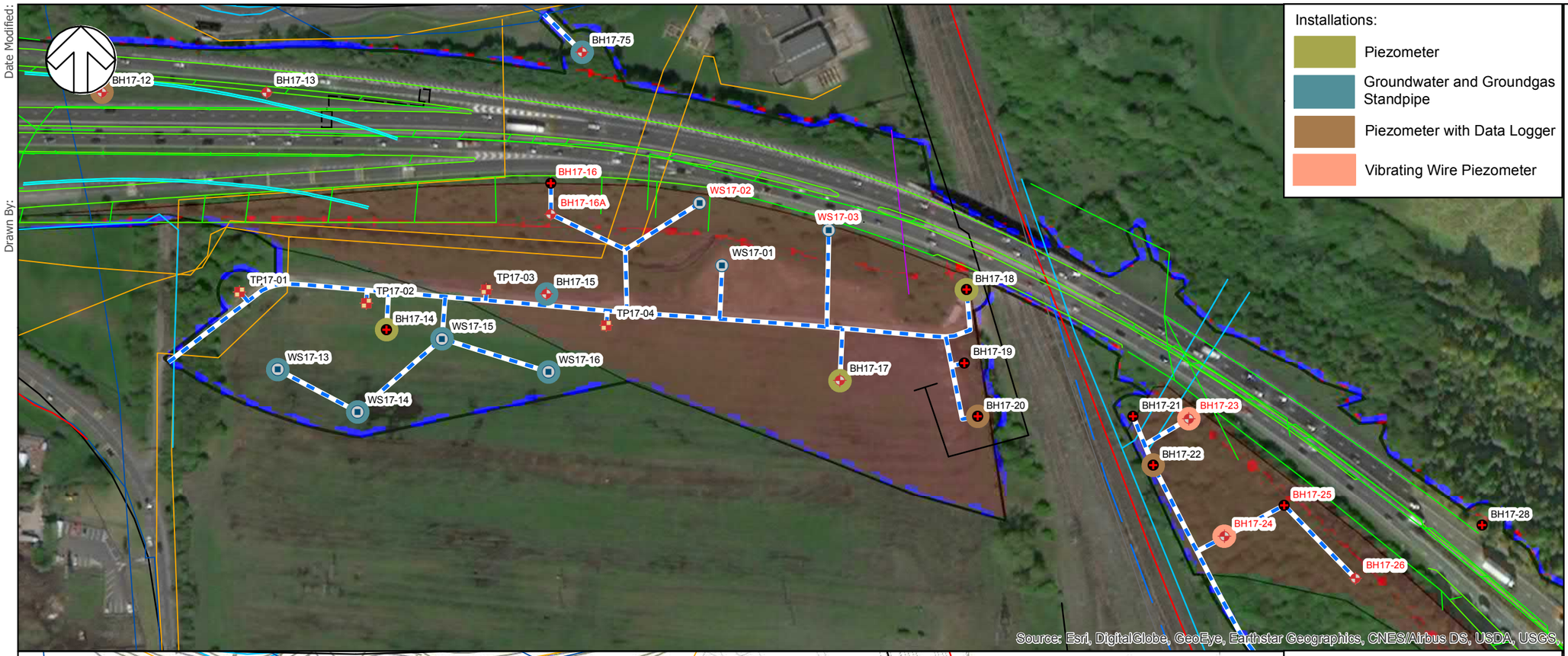
TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 1 OF 10

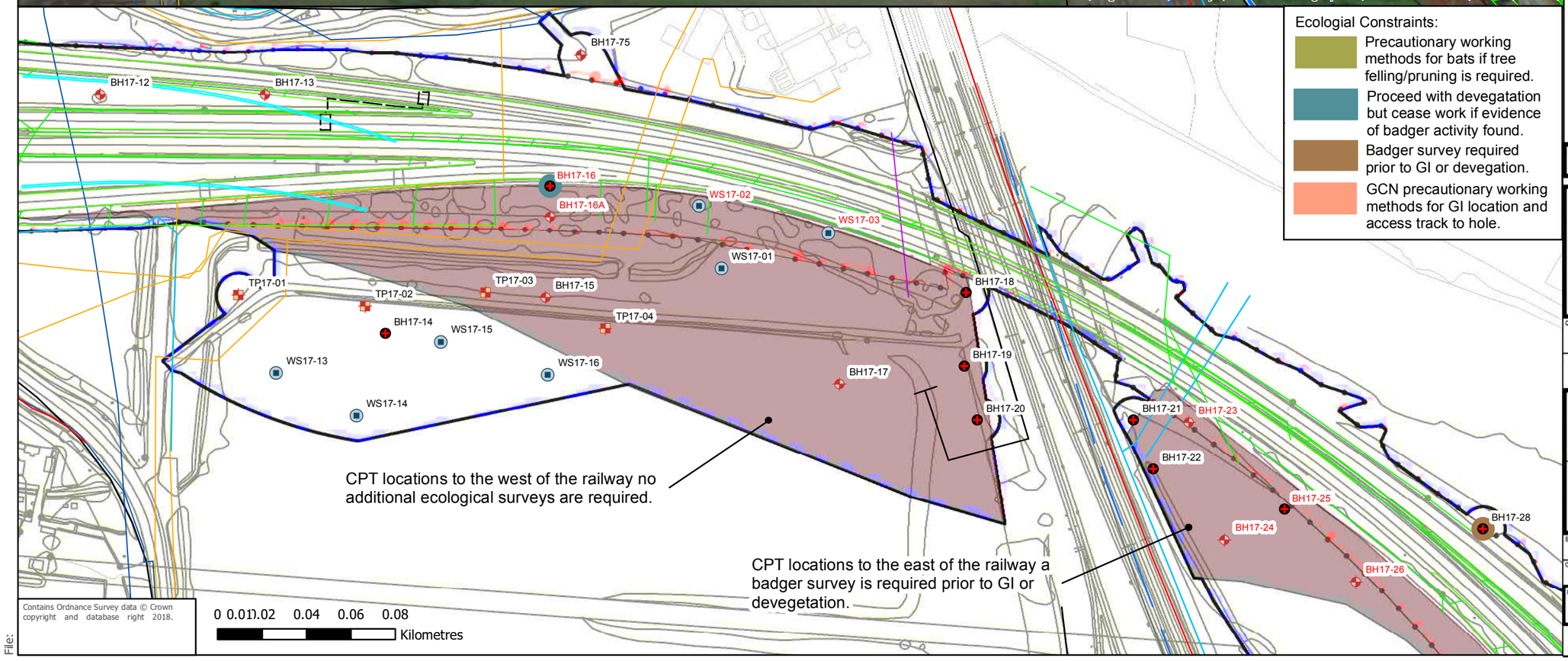
SCALE	CHECKED	APPROVED
1:3,000	RJ	DR
CAD FILE:	DESIGN-DRAWN: BW	DATE: October 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0023	REV: B-3

Date Modified:

Drawn By:

File:





Installations:

- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:

- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

Legend

- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:

- Existing Carriageway
- Proposed retaining walls

Proposed GI:

- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:

- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Abandoned NGN Gas

0 0.01 0.02 0.04 0.06 0.08 Kilometres

DRAWING STATUS: FOR INFORMATION

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CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

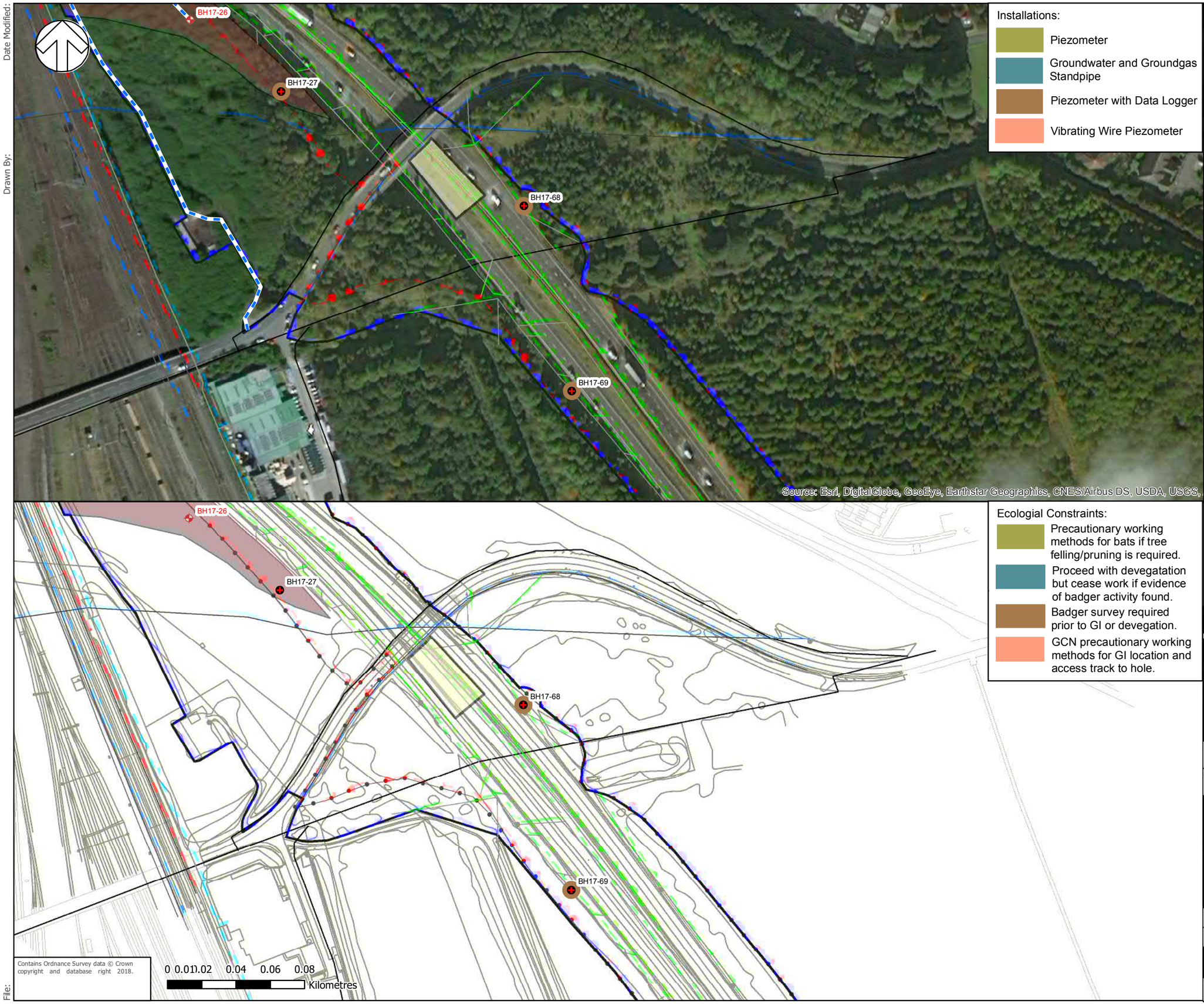
TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 2 OF 10

SCALE	CHECKED	APPROVED
1:3,000	RJ	DR
CAD FILE:	DESIGN-DRAWN: BW	DATE: October 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0024	REV: B-3

Date Modified:

Drawn By:

File:



Installations:

- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:

- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

Legend

- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:

- Existing Carriageway
- Proposed retaining walls

Proposed GI:

- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:

- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Abandoned NGN Gas

DRAWING STATUS: FOR INFORMATION

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Fax: +44 (0)113 395 6201
Website: www.wspgroup.co.uk

CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 3 OF 10

SCALE:	CHECKED:	APPROVED:
1:3,000	RJ	DR
CAD FILE:	DESIGN+DRAWN: BW	DATE: October 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0025	REV: B-3

Date Modified:

Drawn By:

Installations:

- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:

- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

Legend

- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:

- Existing Carriageway
- Proposed retaining walls

Proposed GI:

- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:

- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Overhead electricity cables

0 0.01 0.02 0.04 0.06 0.08 Kilometres

File:

DRAWING STATUS: FOR INFORMATION

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Leeds, LS11 0DL
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Fax: +44 (0)113 395 6201
Website: www.wspgroup.co.uk

CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 4 OF 10

SCALE:	CHECKED:	APPROVED:
1:3,000	RJ	DR
CAD FILE:	DESIGN-DRAWN: BW	DATE: October 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0026	REV: B-3

Date Modified:

Drawn By:

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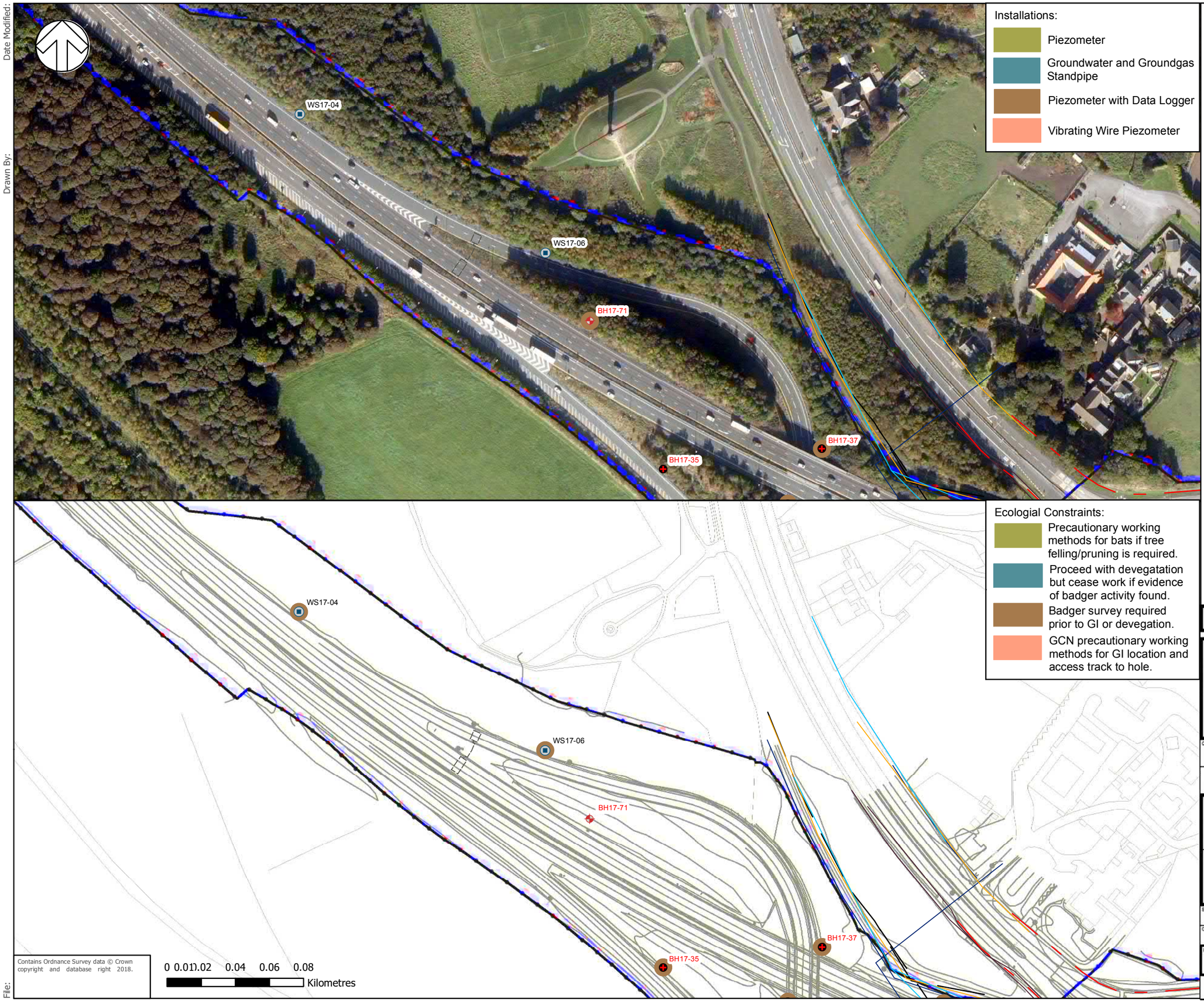

Installations:

- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:

- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

Legend

- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:

- Existing Carriageway
- Proposed retaining walls

Proposed GI:

- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:

- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Overhead electricity cables

0 0.01 0.02 0.04 0.06 0.08 Kilometres

DRAWING STATUS: FOR INFORMATION

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Fax: +44 (0)113 395 6201
Website: www.wspgroup.co.uk

CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 5 OF 10

SCALE:	CHECKED:	APPROVED:
1:3,000	RJ	DR
CAD FILE:	DESIGN-DRAWN: BW	DATE: March 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0027	REV: B-2

Date Modified:

Drawn By:

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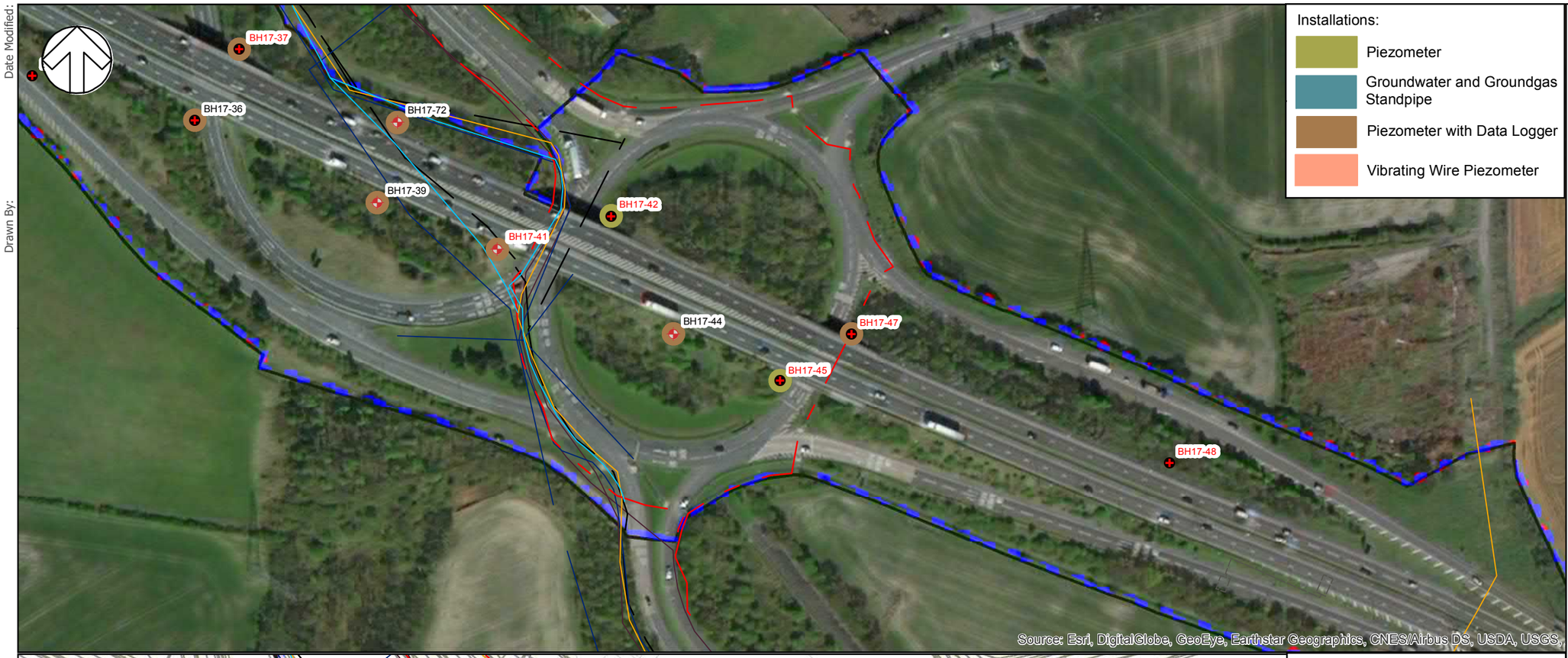

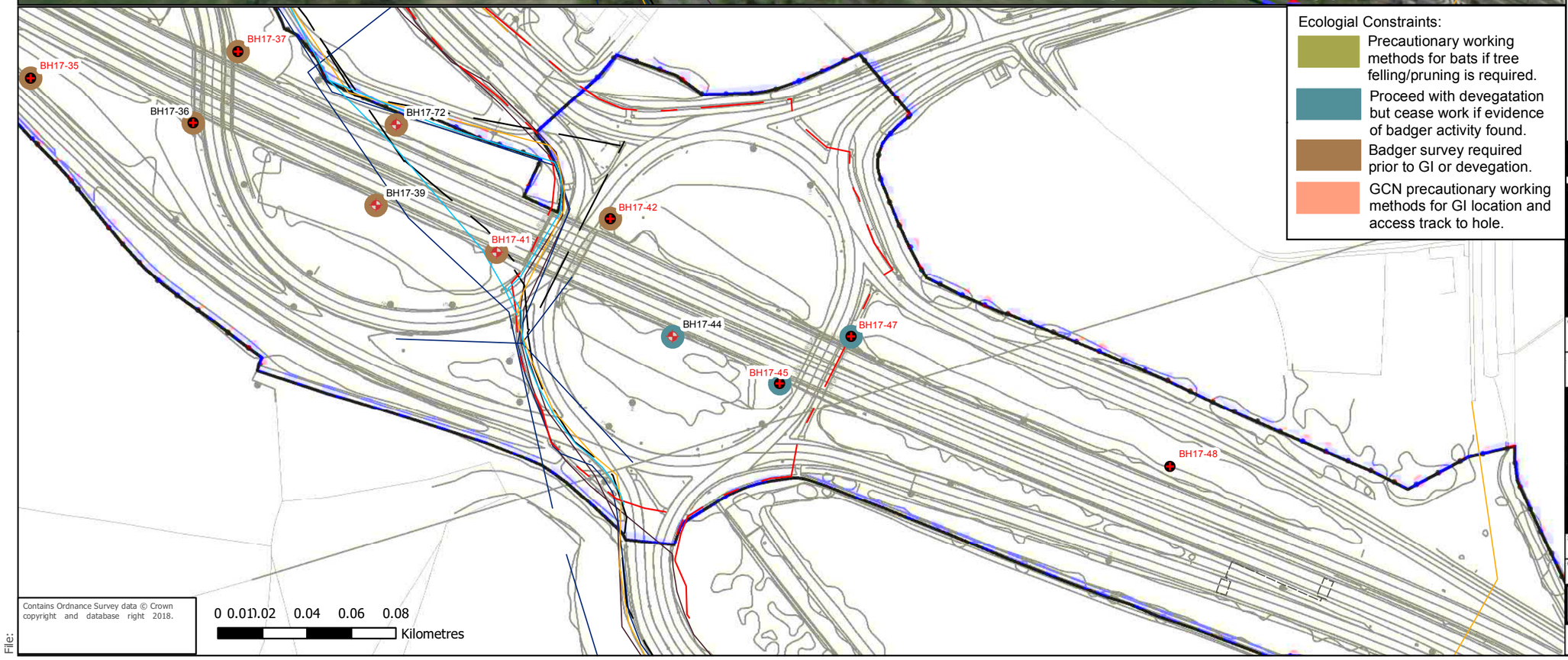

Installations:

- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:

- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

Legend

- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:

- Existing Carriageway
- Proposed retaining walls

Proposed GI:

- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:

- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Overhead electricity cables

0 0.01 0.02 0.04 0.06 0.08 Kilometres

DRAWING STATUS: FOR INFORMATION

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Website: www.wspgroup.co.uk

CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 6 OF 10

SCALE:	CHECKED:	APPROVED:
1:3,000	RJ	DR
CAD FILE:	DESIGN-DRAWN: BW	DATE: March 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0028	REV: B-3

Date Modified:

Drawn By:

File:

Installations:
- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:
- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

Legend
- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:
- Existing Carriageway
- Proposed retaining walls

Proposed GI:
- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:
- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Overhead electricity cables

0 0.01 0.02 0.04 0.06 0.08 Kilometres

DRAWING STATUS: FOR INFORMATION

WSP | PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane
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Fax: +44 (0)113 395 6201
Website: www.wspgroup.co.uk

CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 7 OF 10

SCALE	CHECKED	APPROVED
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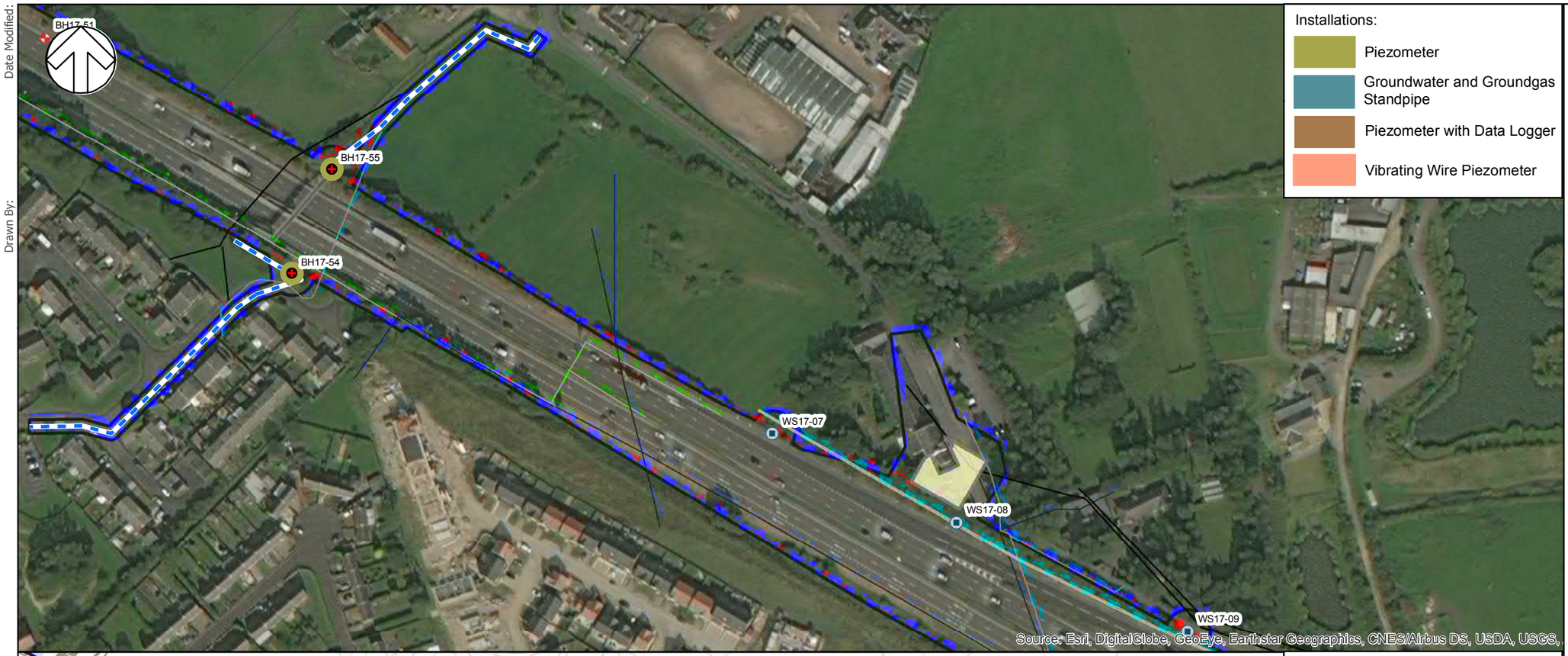
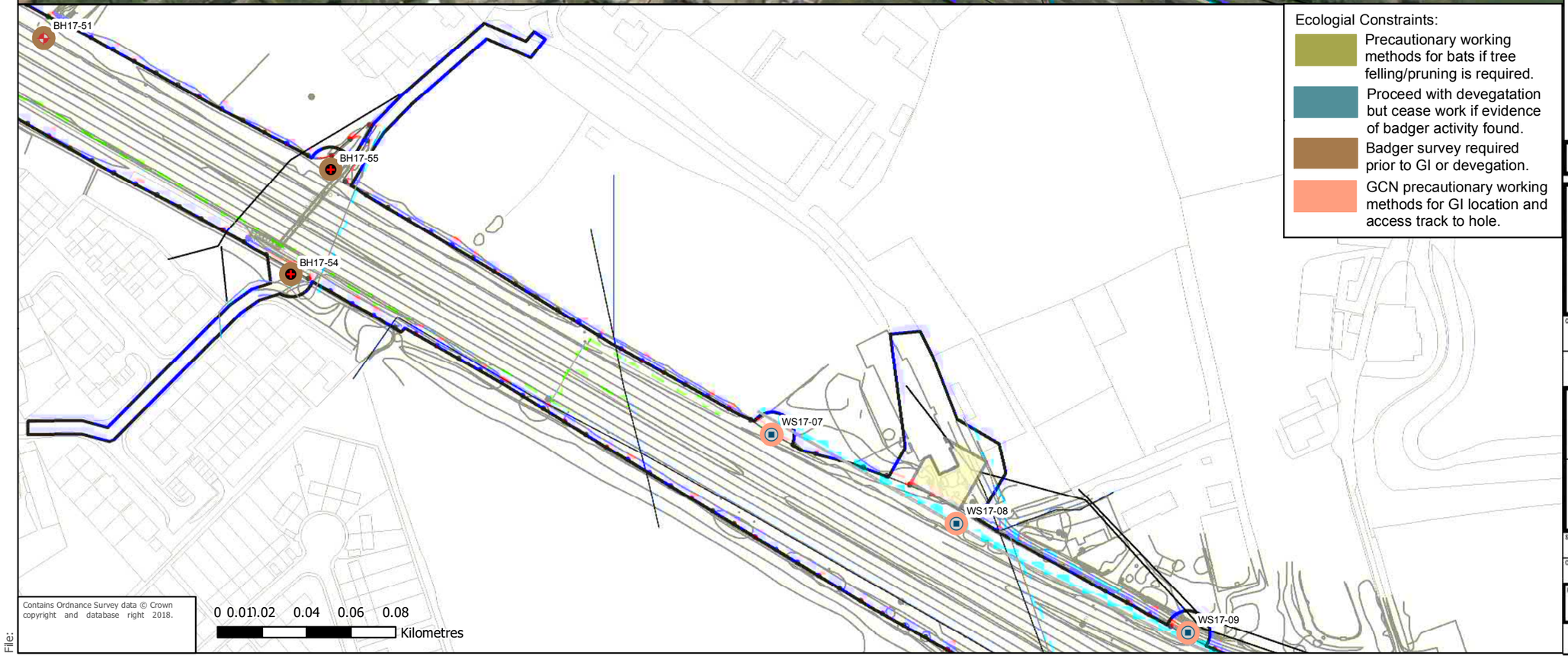
CAD FILE:	DESIGN/DRAWN: BW	DATE: March 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0029	REV: B-2

Date Modified:

Drawn By:

File:





Installations:

- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:

- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

Legend

- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:

- Existing Carriageway
- Proposed retaining walls

Proposed GI:

- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:

- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Overhead electricity cables

0 0.01 0.02 0.04 0.06 0.08 Kilometres

DRAWING STATUS: FOR INFORMATION

WSP | PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane
Leeds, LS11 0DL
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Fax: +44 (0)113 395 6201
Website: www.wspgroup.co.uk

CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

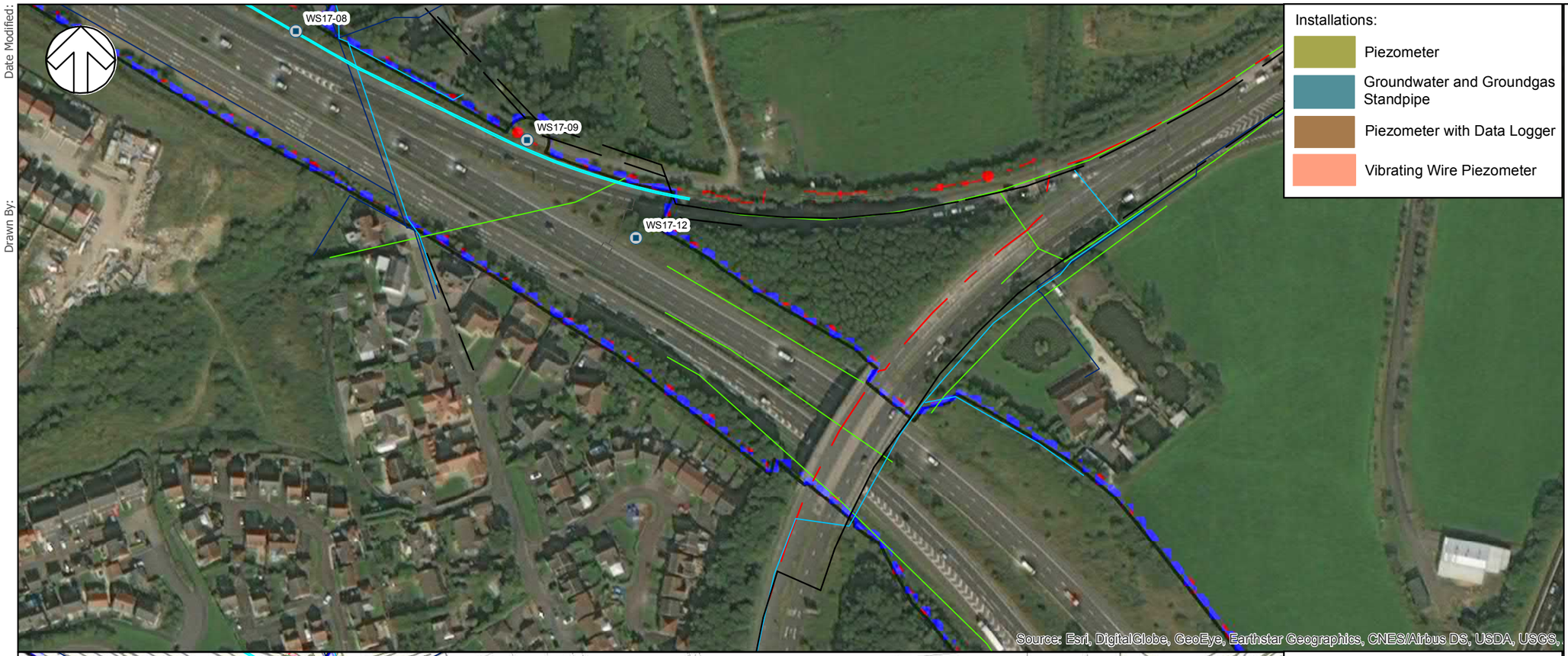
TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 8 OF 10

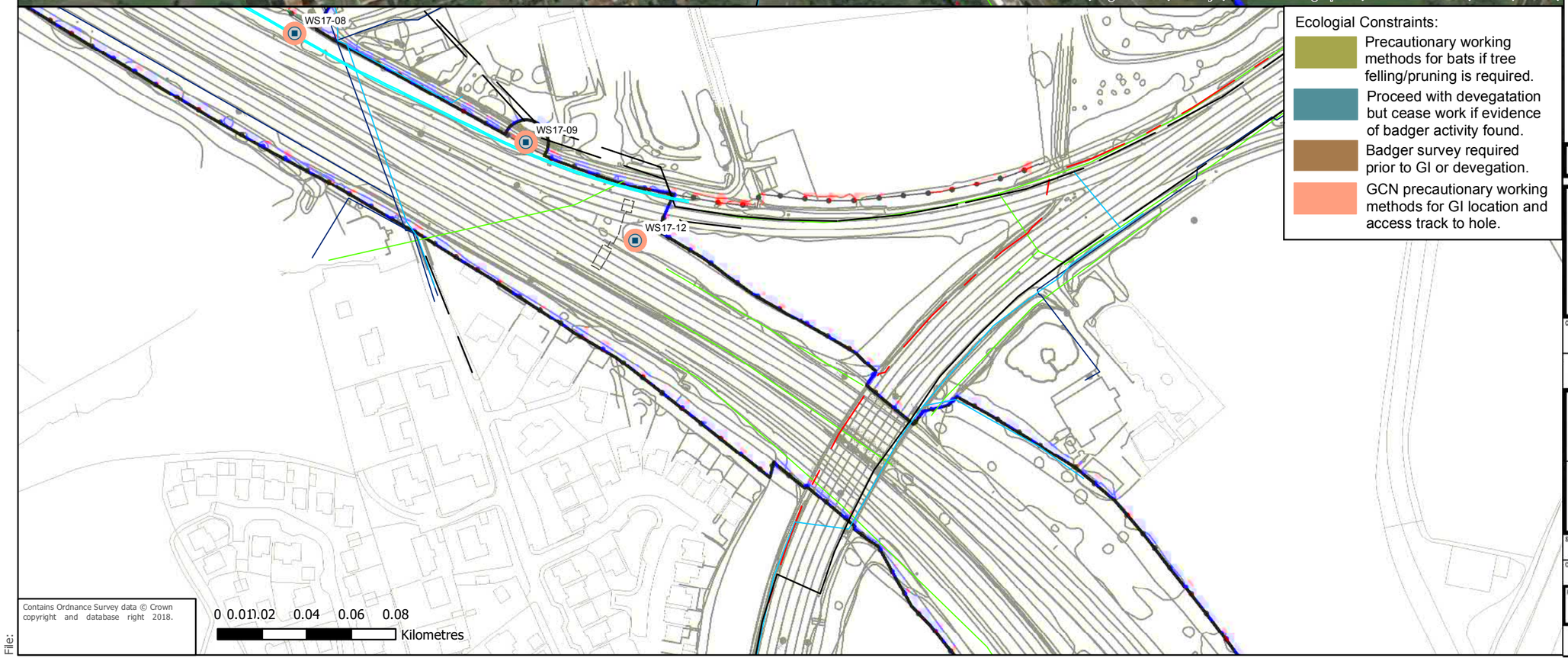
SCALE:	CHECKED:	APPROVED:
1:3,000	RJ	DR
CAD FILE:	DESIGN-DRAWN: BW	DATE: March 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH -DR-GE-0030	REV: B-3

Date Modified:

Drawn By:

File:





Installations:

- Piezometer
- Groundwater and Groundgas Standpipe
- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:

- Precautionary working methods for bats if tree felling/pruning is required.
- Proceed with devegatation but cease work if evidence of badger activity found.
- Badger survey required prior to GI or devegation.
- GCN precautionary working methods for GI location and access track to hole.

Legend

- Approximate Ground Investigation Site Boundary
- Existing Highway Fenceline (Approximate)

Structures and Earthworks:

- Existing Carriageway
- Proposed retaining walls

Proposed GI:

- Cable Percussion with rotary follow on
- Cable Percussion (shell and auger)
- Rotary open hole
- Window Sampler
- Trial Pit
- BH17- Borehole on a Slope
- Area of CPT
- Area of hand held WS
- Area of mine shaft investigation
- Possible access routes to GI on 3rd party land

Services:

- Water
- Electricity
- Gas
- Highways England Surface Drainage
- Virgin
- BT
- Instalcom cable
- Overhead electricity cables

0 0.01 0.02 0.04 0.06 0.08 Kilometres

DRAWING STATUS: FOR INFORMATION

WSP | PARSONS BRINCKERHOFF
Three White Rose Office Park, Millshaw Park Lane
Leeds, LS11 0DL
Tel: +44 (0)113 395 6200
Fax: +44 (0)113 395 6201
Website: www.wspgroup.co.uk

CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 9 OF 10

SCALE:	CHECKED:	APPROVED:
1:3,000	RJ	DR
CAD FILE:	DESIGN-DRAWN: BW	DATE: March 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH -DR-GE-0031	REV: B-3

Date Modified:

Drawn By:

File:

Installations:
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- Piezometer with Data Logger
- Vibrating Wire Piezometer

Ecological Constraints:
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HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

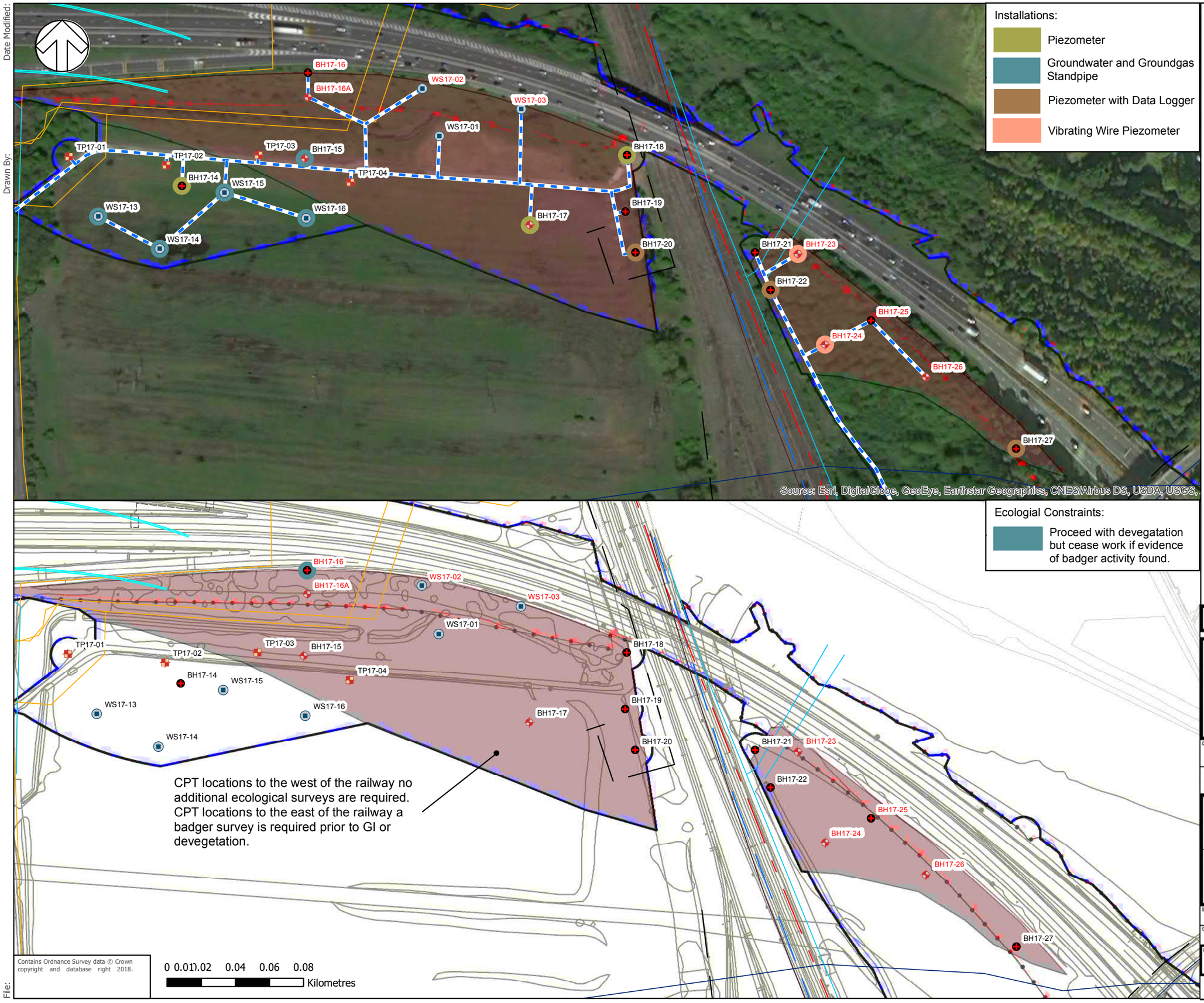
TITLE: PROPOSED GROUND INVESTIGATION WITH UTILITIES SHEET 10 OF 10

SCALE	CHECKED	APPROVED
1:3,000	RJ	DR
CAD FILE:	DESIGN/DRAWN: BW	DATE: March 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0032	REV: B-3

Date Modified:

Drawn By:

File:



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- BT
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DRAWING STATUS: FOR INFORMATION

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Website: www.wspgroup.co.uk

CLIENT: HIGHWAYS ENGLAND

HA GDMS NO.: 29526

PROJECT: A1 ROAD IMPROVEMENTS: COAL HOUSE JUNCTION (J67) TO BIRTLEY JUNCTION (J65)

TITLE: PROPOSED GROUND INVESTIGATION PHASE 1 - SHEET 1 OF 1

SCALE	CHECKED	APPROVED
1:3,000	RJ	DR
CAD FILE:	DESIGN-DRAWN: BW	DATE: October 2017
PROJECT No: 70015226	DRAWING No: HE551462-WSP-HGT-BCH-DR-GE-0033	REV: C

Appendix E

WSP/HIGHWAYS ENGLAND KEY CORRESPONDENCE

APPENDIX E-1

WSP/HIGHWAYS ENGLAND KEY CORRESPONDENCES

Brunetti Barchetta, Giovanna

From: Sunderland, Martin <Martin.Sunderland@highwaysengland.co.uk>
Sent: 05 February 2018 11:52
To: Mistry, Hitan
Cc: Al-Shalechy, Shehed; Mulla, Imtiaz; Gladstone, Peter; Akram, Irfan; Mehta, Rakesh; Wilkes, Nicola; Dennis, Stephen; Meikle, Jessica
Subject: A1B2CH - Gantry SOR No HA551462-WSP-SBR-SGN00X-RP-CB-0001

Hitan

Good morning to you.

I have just reviewed the Gantry SOR document which I received via CD recently.

I confirm agreement with the conclusions and recommendations of the SOR, and that the report No HA551462-WSP-SBR-SGN00X-RP-CB-0001 is accepted.

Regards

Martin Sunderland
Safety, Engineering & Standards
Senior Structures Advisor
Highways England | Lateral | 8 City Walk | Leeds | LS11 9AT
Tel: 0300 470 6165 | [redacted]
Web: http://www.highways.gov.uk

Learn more about Structures Delivery by visiting our Portal Homepage
A web version of this Homepage is currently unavailable.

From: Mistry, Hitan [mailto:Hitan.Mistry@wsp.com]
Sent: 15 January 2018 15:41
To: Sunderland, Martin
Cc: Al-Shalechy, Shehed; Mulla, Imtiaz; Gladstone, Peter; Akram, Irfan; Mehta, Rakesh; Wilkes, Nicola; Dennis, Stephen; Meikle, Jessica
Subject: RE: A1B2CH - Issue of the Gantry SOR and Progress to date 15-01-18

Afternoon Martin,

Just received a email advising that the email below with the attached Gantry SOR (19MB) could not be issued to yourself and other members of the HE

Martin.Sunderland@highwaysengland.co.uk
A problem occurred during the delivery of this message to this e-mail address. Try sending this message again. If the problem continues, please contact your helpdesk.

Nicola.Wilkes@highwaysengland.co.uk
A problem occurred during the delivery of this message to this e-mail address. Try sending this message again. If the problem continues, please contact your helpdesk.

highways england

If you need help accessing this or any other Highways England information, please call **0300 470 4580** and we will help you.

This document is also available on our website at www.gov.uk /highways

If you have any enquiries about this document A1BirtleytoCoalhouse@highwaysengland.co.uk or call 0300 470 4580*.

*Calls to 03 numbers cost no more than a national rate call to an 01 or 02 number and must count towards any inclusive minutes in the same way as 01 and 02 calls.
These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Calls may be recorded or monitored.

Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ
Highways England Company Limited registered in England and Wales number 09346363