Riverside Energy Park

Environmental Statement Technical Appendices

APPENDIX:

I.2

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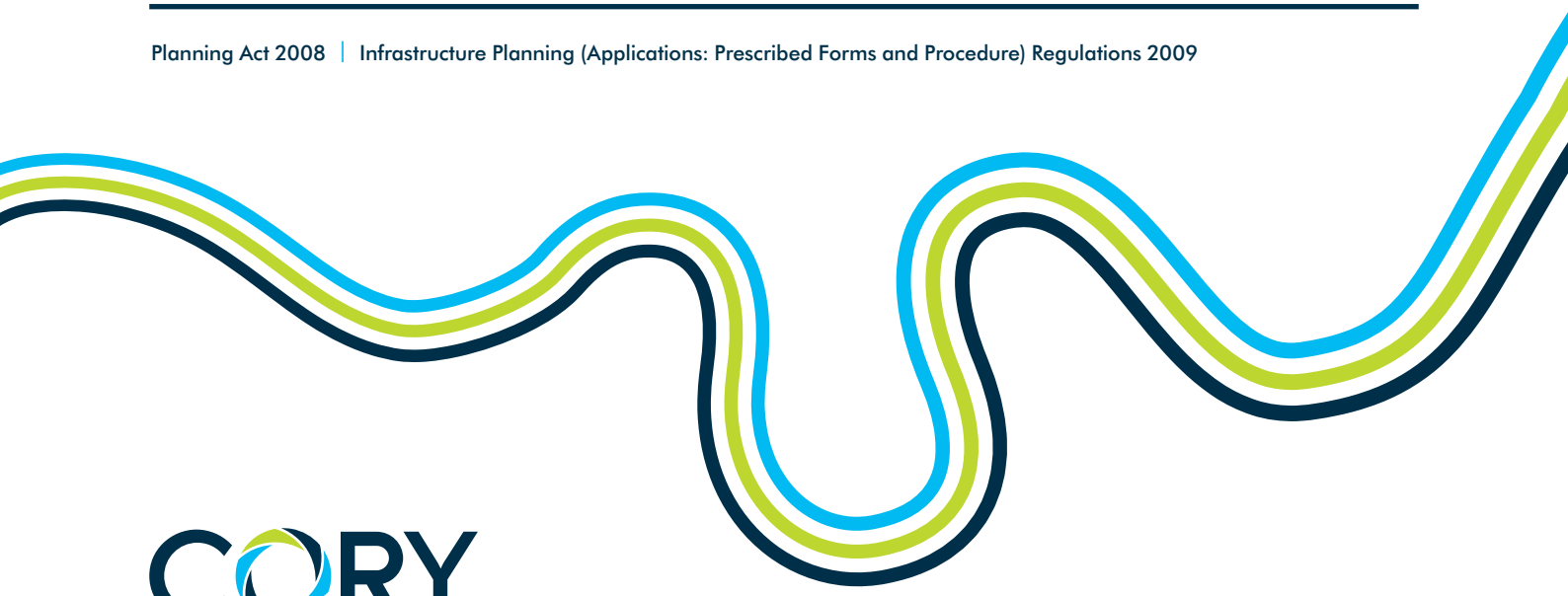

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Rev00	10/09/18	Draft for comment	NH	VKR	PJ
Rev01	22/10/2018	Revision following Client review	NH	VKR	PJ
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1 Introduction

1.1 Preamble

1.1.1 Peter Brett Associates LLP (PBA) has been commissioned by Cory Riverside Energy (Cory) to prepare a preliminary Phase 2 Ground Condition Assessment (GCA) for the proposed Riverside Energy Park (REP) site.

1.1.2 The Proposed Development is classified as a Nationally Significant Infrastructure Project (NSIP). This report has been prepared in order to support a submission for a Development Consent Order (DCO) application.

1.1.3 The Proposed Development (Application Site) includes the REP site together with an associated electrical connection, Main Temporary Construction Compound and Data Centre site. The various elements comprising the Proposed Development have been described in detail in the PBA Phase 1 Ground Condition Assessment reference 42166/3501/GCA (PBA 2018a) which will also be submitted as part of the application. This report should be read in conjunction with the PBA 2018a Phase 1 GCA report (**Appendix I.1**).

1.1.4 This Phase 2 GCA presents an assessment of the ground conditions, together with a preliminary Tier 2 quantitative geoenvironmental risk assessment of the risks and hazards associated with existing or potential contamination in the ground at the REP site.

1.2 Background

1.2.1 In April 2018, a Phase 1 Ground Condition Assessment including a desk study review of readily available published information was undertaken in order to assess the ground conditions for the Application Site and the potential for contamination to be present as a result of previous and present land uses. The Phase 1 GCA report included a preliminary conceptual site model (CSM) and a Tier 1 qualitative contaminated land risk assessment of the geoenvironmental conditions at the Application Site.

1.2.2 The Tier 1 Preliminary Risk Assessment in the PBA 2018a Phase 1 GCA report identified potential pollutant linkages across the Application Site and particularly associated with the REP site (with a worst-case risk identified as moderate) and further recommended that a preliminary Phase 2 Ground Investigation be carried out to confirm the CSM, investigate the identified on-site potential sources of contamination (PSCs) and to then to inform a preliminary quantitative Tier 2 risk assessment. The objectives of the proposed intrusive ground investigation were therefore to provide information on the baseline soil, groundwater and surface water conditions, including the installation of groundwater/gas monitoring standpipes to allow a groundwater/gas monitoring programme to be undertaken.

1.2.3 This Phase 2 Ground Condition Assessment presents an assessment of the ground conditions at the REP site and immediate surrounding land and a preliminary Tier 2 quantitative geoenvironmental assessment of the risks and hazards associated with existing or potential contamination in the ground at the REP site. In accordance with the requirements of the National Planning Policy Framework (MHCLG, 2018), the Tier 2 assessment has been carried out in accordance with "established procedures" using current UK best practice and guidance as given in British Standard 10175 (2017) and Contaminated Land Report 11 (EA, 2004).

1.2.4 A ground investigation was carried out at the REP site by Terraconsult Ltd, under the technical direction of Doran Consulting Ltd. The primary purpose of the ground investigation was to provide geotechnical design information for the detailed design of the structures proposed as part of the development, however the scope of works was extended to also include geoenvironmental sampling and laboratory testing, and installation of additional groundwater and ground gas monitoring wells in boreholes.

1.2.5 The ground investigation was undertaken between 27/03/18 and 03/05/18 and comprised twelve cable percussion (CP) boreholes, two rotary drilled boreholes and six machine dug trial pits. A further (CP) borehole was drilled between 11/06/18 and 15/06/18. The investigation included geoenvironmental sampling and laboratory testing of selected samples taken from both Made Ground materials and also from the upper portion of the underlying natural strata. A total of four ground gas monitoring wells and four groundwater monitoring wells were installed as part of the geoenvironmental scope. Soil and water laboratory testing was scheduled by PBA and laboratory testing carried out by i2 Analytical on behalf of Terraconsult Ltd.

1.2.6 All geotechnical elements of the investigation including the scoping, in-situ field and laboratory testing were carried out by contractors working on behalf of Terraconsult Ltd, under the technical direction of Doran Consulting Ltd. A separate geotechnical interpretative report is outside the scope of the works undertaken by PBA.

1.2.7 Guidance on the context of this report and any general limitations or constraints on its content and usage are given in a separate guidance note included after the text of this report.

1.3 Scope of Work

1.3.1 The ground investigation was undertaken within the boundaries of the REP site and did not include the other areas that form the Application Site as a whole (see Section 2.2 in the PBA 2018a Phase 1 GCA). Therefore, this Phase 2 GCA provides a Tier 2 assessment for the REP site only together with the associated on-site or immediately adjacent controlled waters, and not for the additional Application Site areas.

1.4 Methodology

Potentially Contaminated Land

1.4.1 The PBA methodology for the assessment of potentially contaminated land in England is presented in **Appendix 1**.

1.4.2 The underlying principle is the evaluation of pollutant linkages in order to assess whether the presence of a source of contamination could potentially lead to harmful consequences. A pollutant linkage consists of the following three elements:

- A source of contamination or hazard that has the potential to cause harm or pollution;
- A pathway for the hazard to move along / generate exposure; and
- A receptor which is affected by the hazard.

1.4.3 For each potential pollutant linkage identified the risk is estimated through consideration of the magnitude of the potential consequences and the likelihood or probability of an event occurring.

2 Site Location and General Description

2.1 Site Location

2.1.1 The REP site is located approximately 1.3 km to the north of Belvedere railway station, situated on the southern bank of the River Thames between Erith and Woolwich, in the London Borough of Bexley, as presented in **Figure 1** – Site Location Plan. The REP site is centred at approximate National Grid Reference TQ 496 806.

2.2 Site Description and Current Land Use

2.2.1 This section presents a short summary of current land uses at the REP site. A more detailed description for the REP site is presented in the PBA 2018a Phase 1 GCA (**Appendix I.1**). The Site Layout Plan, presented in **Figure 3** indicates the layout of the Application Site and shows the extent of the REP Site that is the subject of this Phase 2 GCA.

Riverside Energy Park (REP) Site

2.2.2 The REP site occupies an area of approximately 7.7 ha and comprises an area of land predominantly to the west of but also surrounding the existing RRRF plant. This area specifically **excludes** the existing RRRF plant.

2.2.3 The current land use within the REP site includes the existing ancillary infrastructure (roads, security outbuildings, electrical substation area etc.) associated with the existing RRRF. In addition, the REP site area also currently includes: ancillary soft-landscaped areas, wetland and wasteland habitat areas, and an ash container storage yard area.

2.2.4 There are also two parcels of land currently used by a Portakabin hire firm and for vehicle/plant maintenance and a partially macadam surfaced car parking area formerly used by a nearby car factory.

2.3 REP Site History

2.3.1 A detailed summary of the REP Site history is provided in PBA 2018a Phase1 GCA, and is summarised below.

2.3.2 The earliest available Ordnance Survey (OS) mapping dated 1869 - 1870 shows several buildings labelled as a Manure Works in the northeast of the REP site with a small terrace of houses to the south of the main works area.

2.3.3 By 1897, the manure works is no longer labelled on the OS mapping, and the former manure works buildings appear to have been redeveloped. There are three main buildings in the north east of the REP site and it is not clear if these were part of the Belvedere Mills that are indicated to be present adjacent to the eastern boundary (although shown as disused). The Thames Fish, Guano and Oil Works are indicated to have been developed in the north part of the REP site. At this time, additional houses have been constructed on the terrace in the south-east part of the REP site.

2.3.4 The 1909 edition OS map indicates that the disused Belvedere Mills is now in use as a borax refinery. The Thames Fish, Guano and Oil Works also included two large trenches that were potentially used for storage/maturing of the manure.

2.3.5 The OS maps indicate that the borax refinery remained largely unchanged during the first half of the 20th Century. Additional houses were added to the terrace in the south east. In the 1950s

the fish, guano and oil works building was redeveloped for use as a depot (the former trenches are no longer shown and are assumed to have been infilled).

2.3.6 The 1958 edition OS map indicates that a large depot building has been constructed to the south of the main depot building and the borax refinery (now labelled as a Mill) has been significantly expanded. The western side of the REP site is indicated to remain undeveloped. The terrace of housing has been demolished by this time.

2.3.7 In the 1960s a strip of the REP site adjacent to the western boundary is shown on the OS mapping to have been partitioned off for use a car park for employees of a car factory (Ford) on the opposite side of the river.

2.3.8 By 1974 the OS mapping shows that a new storage shed has been constructed immediately to the west of the main depot building. Also at this time the southern 1950s depot shed was demolished.

2.3.9 The 1984 OS map edition indicates that whilst west and south west parts of the REP site appear to remain undeveloped, they have been split into separate land areas which, following the demolition of the northern half of the main depot building by 1991, are shown on the 1992 and 1996 OS maps to be in use as individual depots.

2.3.10 The OS maps indicate that the majority of the buildings in the central, northern and eastern parts of the REP site have been demolished by the mid-late 1990s. The separate strip of land within the western part of the REP site is shown to be in use as a car park until 2005.

2.3.11 The 2018 OS mapping indicates the current site layout with the existing RRRF having been constructed between 2009 and 2011. As part of this development a Wasteland Habitat Area was constructed. It is understood (LDA Design, September 2007, Submission Under Planning Condition 34 – Wasteland Habitat Design) that this area was constructed using material sourced from the demolition of the former borax processing works.

2.4 Topography

2.4.1 In general, the developed ground level at the REP site rises gently from south to north, from approximately +1 m above Ordnance Datum (mAOD) on the REP site's southern boundary to approximately +2.80 mOD at the north-western corner. In the north of the REP site, across the northern edge between the REP site and the River Thames, a flood defence bund is present, at an approximate height of 3.5 m above the surrounding ground.

3 Summary of Environmental Setting

3.1 Published Geology

3.1.1 According to the British Geological Survey (BGS) Geological Maps (1:50,000 Sheets 257 (1976) and 271 (1998)) the solid geology of the area generally consists of the following sequence of strata:

Superficial Deposits

- Alluvium (AL), comprising normally soft to firm consolidated, compressible silty clay, but can also contain layers of silt, sand, peat and basal gravel.
- River Terrace Deposits (RTD), comprising sand and gravel, locally with lenses of silt, clay or peat.

Bedrock Deposits

- The London Clay Formation (LC), comprising laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay. Commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite.
- Harwich Formation (HF), comprising glauconitic silty or sandy clays, silts and fine to coarse-grained glauconitic sands, some gravelly, varying to flint gravel beds.
- The Lambeth Group (LG) comprising vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignites and occasional sandstone and conglomerate.
- The Thanet Formation (TF) comprising pale yellow-brown, fine-grained sand that can be clayey and glauconitic. Rare calcareous or siliceous sandstones may also be present.
- The Lewes Nodular Chalk Formation (LNCK), comprising chalk with flints. The LNCK can contain discrete marl seams, nodular chalk, sponge-rich and flint seams throughout.

3.2 Hydrology and Hydrogeology

3.2.1 The aquifer designation map provides the following aquifer classifications for the strata beneath the REP Site:

Table 3.2 – Aquifer Designations

Lithology	Aquifer Designation
Alluvium	Secondary Undifferentiated
River Terrace Deposits	Secondary A
London Clay	Unproductive Strata
Harwich Formation	Secondary A
Lambeth Group	Secondary A

Thanet Formation	Secondary A
Lewes Nodular Chalk	Principal

3.2.2 The Principal Aquifer in the Chalk and the overlying Secondary A aquifers are all largely separated from both perched water in any Made Ground, and from the Secondary Aquifers in the Superficial Deposits by the London Clay. The London Clay is considered to be relatively impermeable, forming an aquiclude that separates the aquifers (River Terrace Deposits and Harwich Formation) above and below respectively. It is however noted that, (as discussed in **Section 6**), in the very south of the site (BH11 and BH12) the London Clay Formation appears to be present in only a limited thickness and as more granular material and in these areas the aquifers are likely to be in vertical continuity.

3.2.3 It is anticipated that groundwater flow across the site will generally be to the north and north-east, towards the River Thames, although a tidal influence should be anticipated.

3.2.4 A drainage ditch is present inside the REP site's eastern boundary and connects into a series of artificial ponds which form a wetland habitat area.

3.2.5 A second drainage ditch is present along the southern boundary, and partially along the western boundary of the REP site. This does not appear to connect to either the River Thames, or the Great Breach Dyke located to the west of the REP site.

3.2.6 Surface water ponding has been observed in the grazing land immediately south of the REP site.

3.2.7 The REP site is not located within any part of a groundwater Source Protection Zone (SPZ).

3.3 Environmental Search

3.3.1 According to the Envirocheck Report and information datasets published by the Environment Agency the following historical landfills listed in **Table 3.1.1** are present within 1 km of the REP Site. It should be noted that these landfills are all located on the northern side of the River Thames.

Table 3.3.1 – Landfills within 1km of the REP site

Name	Wastes Received	Distance (at closest point) from the REP Site	Waste Input Dates
Dagenham Dock	Industrial, Special	370 m N	1939 to1990
Ex-City of London Site	Inert, Commercial, Household	380 m N	Up to 1988
Manor Way	Unknown	~550 m NE	Unknown

3.3.2 Full details of the environmental searches undertaken are presented in PBA 2018a. **Table 3.3.2** below summarises the findings of this search.

Table 3.3.2 – Summary of Environmental and Industrial Setting within 1km of the REP site

Data Type	Number on Site (1)	Number within 1 km of Site (1)
Waste Regulation		
Landfill Sites	0 (0)	0 (3)

Data Type	Number on Site (1)	Number within 1 km of Site (1)
Licensed Waste Management Facilities	1 (0)	5 (0)
Statutory Permits/Authorisations		
Pollution Prevention and Control(2)	1 (0)	6 (0)
Radioactive Substance Authorisations	0 (0)	0 (1)
Planning Hazardous Substances	0 (0)	8 (1)
COMAH Sites(3)	0 (0)	2 (0)
NIHHS Sites(4)	0	0 (2)
Potential Contaminative Uses		
Fuel Stations	0 (0)	0 (0)
Groundwater and Surface Water Controls		
Abstractions	1 (0)	2 (0)
Discharge Consents	1 (0)	4 (11)
Pollution Incidents to Controlled Waters	0	46

Notes:

1) Numbers in brackets denotes number of authorisations, licenses or permits that are lapsed, revoked, cancelled, superseded, defunct, surrendered, not applicable, withdrawn or not yet started.
2) Includes Integrated Pollution Controls, Integrated Pollution Prevention and Control, Local Authority Integrated Pollution Prevention and Control and Local Authority Pollution Prevention and Control permits.
3) COMAH denotes Control of Major Accident Hazards
4) NIHHS denotes Notification of Installations Handling Hazardous Substances

4 Summary of Previous Reports

4.1 REP Site

4.1.1 Several historical ground investigations have previously been undertaken, at least partly within the REP site. The information below has been compiled from the following:

- AERC's 2003 Site Investigation and Remediation Proposals Report (Ref: C3477/R1384), which describes both AERC's own 2003 ground investigation, and also the results of earlier ground investigation work undertaken by others; and,
- AERC's 2007 Contaminated Land Remediation Method Statement (Ref: C34129/R2489). This describes further additional ground investigation undertaken by AERC in 2006.

Ground Conditions – AERC, 2003 & 2006

4.1.2 Ground investigations were carried out by AERC in 2003 and 2006 to inform the development of the existing RRRF, the scope of which was at least partly within the REP site. These ground investigations identified hotspots of elevated Lead and TPH concentrations when compared to screening criteria[1] for an industrial end use. Arsenic and boron were identified as being present in a mobile form that could present a potential risk to surface water.

4.1.3 The site investigations also identified elevated concentrations of lead, nickel, arsenic, boron, sulphate and TPH in groundwater when compared to the relevant screening criteria current at the time of that reporting. (UK Drinking Water Standards (DWS) and Environmental Quality Standards (EQS) for freshwater).

AERC 2007 Remediation Strategy

4.1.4 Remediation proposals for the RRRF development were outlined by AERC in 2003 and formalised in 2007 with the aims of:

- Reducing the potential for leaching of metals, particularly arsenic, into surface waters; and
- Providing a 'clean' seed bed for areas of planting.

4.1.5 These proposals split the area investigated (the wider RRRF construction area), into five areas as follows, all of which (with the exception of Zone 4) form the REP site:

- Zone 1 – Proposed wetland habitat and landscaping
- Zone 2 – Areas of landscaping
- Zone 3 – Proposed wasteland habitat
- Zone 4 – Main RRRF plant
- Zone 5 – Areas of hardstanding (i.e. roads, car parks etc.)

[1] It is noted that, in the absence of Soil Guideline Values, the screening criteria applied by AERC were their own company-derived Risk Assessment Values which are both (variably) more, and less conservative than current standards.

4.1.6 No enabling works remediation was proposed (by AERC) in Zones 3 and 5 given that Zone 3 was to be raised by some 0.5 m and that the coverage of Zone 5 by buildings and hardstanding. As such for both areas the AERC strategy was that such engineering works would provide a sufficient barrier between potential receptors and the underlying ground, and as such no affirmative remediation was necessary.

4.1.7 The studies undertaken by AERC did not identify a significant risk to controlled waters. It is understood that AREC did not establish any specific groundwater remediation requirements, beyond reducing the risks to groundwater by source removal from soils. This remedial strategy was agreed by the Environment Agency's (EA) Contaminated Land Technical Specialist. Correspondence dated 14/01/2007 (EA ref: Bex017) which provides comment on a draft of the 2007 AERC Remediation Method Statement, and states that the EA "*concur with the general conclusions of the risk assessment that mobile contaminants in the Made Ground, principally arsenic, boron and hydrocarbons, are unlikely to pose and unacceptable risk to the underlying minor aquifer (Terrace Gravels) or the River Thames*".

Remedial Works Undertaken and Validation Testing

4.1.8 Zones 1, 2 and 4 were taken forward for affirmative remediation, comprising an initial phase of the removal of 14 hotspots of hydrocarbon impacted ground (being determined as locations which encountered Total Petroleum Hydrocarbon (TPH) concentrations of greater than 1000 mg/kg) by excavation and subsequent validation testing of the sides and base of the remaining material.

4.1.9 The remediation of these hotspots is described in AMEC's 2008 Validation Report: Phase 1 – Hotspots (ref: C34129/R2976). A threshold remediation target criteria of 500 mg/kg was adopted. The validation samples taken after hotspot removal were all shown to below the threshold criteria in four of the fourteen hotspots. In the remaining ten hotspots, AERC report that the "vast majority" of the validation samples identified TPH concentrations below the threshold criteria. The validation samples that exceeded the threshold criteria were described as generally only "marginally elevated".

4.1.10 The remediation report identifies that 19 exceedances of the 500 mg/kg threshold were recorded, with values typically between 500 mg/kg and 900 mg/kg, and a maximum concentration of 1263 mg/kg. The assessment in the report concluded that these exceedances did not pose a significant risk to human health on the basis of the proposed clean capping layer and the proposed lining in the wetland area water body.

4.1.11 The general remediation proposals for Zone 4 following removal of the TPH hotspots, included the excavation and removal of contaminated soils from site and the provision of a clean cover system in all areas of soft-landscaping of a minimum thickness of 0.45 m, for the protection of human health.

4.1.12 Further to the remediation and validation in Zone 4 described above, a further phase of investigation and remediation was undertaken in 2010. Con-Form's 01/2010 Validation Report (ref: C1387/09/01) describes that 24,750 m^3 of excavated materials were screened to recover 4,270 m^3 of aggregate and 20,480 m^3 of fines. Validation testing of the screened fines indicated that the materials were unsuitable for use in a commercial/industrial end-use and subsequently were treated off-site prior to being disposed of as non-hazardous fill.

4.1.13 The details of the remediation and validation works undertaken in Zone 1 and Zone 2 have, at the time of reporting, not been provided or made available.

4.2 PBA 2018a Phase 1 GCA Conclusions and Recommendations

4.2.1 The Phase 1 GCA identified potentially contaminative historical land uses at the REP site, and the presence of geological strata that could present a ground gas risk.

4.2.2 The study also identified, as a result of the previous AERC site investigations, that elevated concentrations of metals and hydrocarbons had been previously encountered across parts of the REP site, alongside the presence of asbestos. Although some remediation has been undertaken in some parts of the REP site, the validation information available for review was limited in nature, or not available. In addition, there have been changes in screening criteria since the remediation was undertaken.

4.2.3 The PBA 2018a Phase 1 GCA identified that despite some remedial works being undertaken across the site that the potential hazard for significant remaining on-site sources of contamination to be present at the REP site was Moderate, and that the contaminants of concern included hydrocarbons, metals and asbestos.

4.2.4 It was also considered that the potential for remaining off-site sources of contamination to be present was Moderate to High and that the contaminants of concern included metals, hydrocarbons, organics and solvents.

4.2.5 The Phase 1 GCA identified a worst-case risk estimation for the REP Site as Moderate in relation to Surface Water and Property and Low to Moderate for Human Health.

4.2.6 It was recommended that a Phase 2 Ground Investigation should be carried out to confirm the preliminary CSM, investigate further the identified remaining on-site PSCs and inform a preliminary quantitative Tier 2 risk assessment. The objectives of the proposed ground investigation also included installation of groundwater and ground gas monitoring wells and a robust monitoring programme to provide information on the baseline soil, groundwater, surface water and ground gas conditions.

5 Ground Investigation

5.1 Introduction

5.1.1 An intrusive ground investigation was carried out between March and June 2018 by Terraconsult Ltd on behalf of Doran Consulting Ltd for the purposes of providing detailed geotechnical design information to Cory's design and build contractor for the proposed REP facility.

5.1.2 The scope of this intrusive ground investigation was extended to include preliminary geoenvironmental sampling and testing of soil, groundwater and surface water. The investigation also included the installation of geoenvironmental monitoring wells in boreholes in which installations had not been scheduled as part of the geotechnical works. Following completion of the field works a preliminary programme of groundwater and ground gas monitoring was also undertaken.

5.2 Aim and Objectives of the Investigation

5.2.1 As discussed in section 4.2 above, the PBA 2018a Phase 1 GCA recommended that an intrusive ground investigation be undertaken to provide additional information to confirm and refine the Conceptual Site Model, and to inform a Tier 2 contaminated land risk assessment such that informed decisions on the proposed development of the site could be made.

5.2.2 The principal objectives of the geoenvironmental aspects of the investigation were to:

- Determine the nature, extent and distribution of any Made Ground and potential residual contamination of the ground, groundwater and any surface waters at the site, and the potential for hazardous ground gas emission at the site.
- Determine the presence and depth of any shallow groundwater in the near-surface soils.
- Recover samples of soil, surface water and groundwater for geoenvironmental laboratory testing.
- Install monitoring wells to allow an assessment of the potential for hazardous ground gas emission at the site to be undertaken in order to assess the potential impact of and to the proposed scheme;

5.3 Scope of the Investigation

General Geotechnical Scope

5.3.1 The scope of the completed ground investigation specifically undertaken for geotechnical purposes (specified by Doran Consulting) comprised the following:

- 13 No. Cable percussion boreholes to depths of between 30.00 m and 34.10 m below ground level with in-situ geotechnical testing and the recovery of undisturbed samples for geotechnical laboratory testing. One of these boreholes (BH07) was not completed by the contractor due to the presence of underground services.
- 2 No. follow-on rotary cored boreholes in the cable percussion boreholes to depths below ground level of 50.50 m to 50.71 m.
- 6 No. Trial pits to depths of between 2.50 m and 3.85 m. One of these (TP03) was not completed by the contractor due to the presence of underground services.

- Bulk samples and small disturbed samples for geotechnical laboratory testing
- Construction of monitoring installations within four of the boreholes.
- Logging and provision of exploratory hole records.
- Survey of the exploratory monitoring holes.

Geoenvironmental Scope

5.3.2 The additional scope for geoenvironmental purposes comprised,

- The construction of 8 No. monitoring installations within the proposed geotechnical boreholes with four being installed for groundwater sampling purposes from the River Terrace Deposits and four installed for ground gas monitoring purposes in the Alluvium.
- Recovery of soil samples from both the Made Ground and within the top of the natural occurring strata for geochemical analysis, for a range of potential contaminants.
- The recovery of samples of groundwater from the monitoring wells and surface water from both the drainage ditches adjacent to the REP site, and from the River Thames both upgradient and downgradient of the REP site.
- Photo Ionisation Detector (PID) testing undertaken by TerraConsult on behalf of PBA using a Phocheck Tiger PID at approximately 1m intervals within the Made Ground and at the top of the natural deposits.
- Monitoring of groundwater levels and ground gas concentrations by TerraConsult on behalf of PBA, following completion of fieldwork.
- Monitoring by TerraConsult on behalf of PBA of groundwater levels and ground gas concentrations over a complete 12-hour tidal cycle (not completed at time of writing).

5.3.3 During the fieldwork programme a representative of PBA attended site on a part-time basis to provide direction for geoenvironmental sample recovery and to observe the ground conditions within the near-surface strata. PBA also scheduled the geoenvironmental laboratory testing and provided construction details for the geoenvironmental groundwater and ground gas monitoring wells.

5.4 Fieldwork

5.4.1 Copies of the exploratory hole records are provided in the Factual Report prepared by TerraConsult (Ref: 3765R001-2, July 2018).

5.4.2 In-situ visual and olfactory observations for contamination were made during the site works by TerraConsult.

5.4.3 Screening for the presence of Volatile Organic Compounds (VOCs) was carried out by TerraConsult on behalf of PBA on both Made Ground and natural strata samples using a Photo-Ionisation Detector (PID) at depths of between 0.20 m bgl and 4.00 m bgl.

5.4.4 The geoenvironmental monitoring installations are described in **Table 5.4** below.

Table 5.4 – Schedule of Monitoring Installations

Location	Depth of Response Zone (m bgl)	Specified By	Purpose
BH02	3.0 – 8.5	PBA	Monitoring of ground gases within Alluvium
BH03	3.5 – 8.5	PBA	Monitoring of ground gases within Alluvium
BH05	10.0 – 13.5	PBA	Monitoring of groundwater levels in shallow aquifer
BH06	12.0 – 14.0	PBA	Monitoring of groundwater levels in shallow aquifer
BH08	10.0 – 15.0	PBA	Monitoring of groundwater levels in shallow aquifer
BH11	1.0 – 9.0	PBA	Monitoring of ground gases within Alluvium
BH12	11.5 – 25.5	PBA	Monitoring of groundwater levels in shallow aquifer
BH13	2.0 – 8.0	PBA	Monitoring of ground gases within Alluvium

5.5 Monitoring and Sampling

5.5.1 The ground gas monitoring wells were monitored by Terraconsult to determine the concentrations of methane, carbon dioxide, hydrogen sulphide, carbon monoxide and oxygen together with gas flow rates and differential and atmospheric pressure. At the time of writing, monitoring visits have been undertaken on three occasions on 30th May 2018, 11th June 2018 and 28th June 2018.

5.5.2 Following the completion of the fieldwork exercise, the groundwater sampling wells were developed and sampled by Terraconsult to recover samples of groundwater for subsequent laboratory testing. Sampling was undertaken on 10th May 2018, 7th June 2018 and 10th July 2018.

5.5.3 Additionally, samples of surface water from two locations in the drainage ditches adjacent to the REP site were retrieved by Terraconsult, alongside samples of surface water from the River Thames (upgradient and downgradient of the REP site) on the 11th May 2018, 18th June 2018 and 10th July 2018.

5.6 Laboratory Testing

Geoenvironmental Laboratory Testing

5.6.1 A programme of geoenvironmental laboratory testing was carried out on soil samples and groundwater samples to determine the concentrations of a range of commonly occurring potential contaminants. The laboratory testing was scheduled by PBA and submitted by TerraConsult to their selected geoenvironmental laboratory, i2 Analytical.

5.6.2 A summary of the geoenvironmental testing carried out during the 2018 Terraconsult investigation is presented in **Table 5.6**. The results of the geochemical analyses are presented in **Appendix 3** and discussed in **Sections 7 to 10** of this report.

Table 5.6 – Summary of Geoenvironmental I Testing

Testing Suite	Soil Samples Tested	Water Samples Tested
Metals – Arsenic, Boron (Water Soluble), Cadmium, Total Chromium, Hexavalent Chromium, Copper, Lead, Mercury, Nickel, Zinc, Selenium	40	20
Anions and cations	-	20
Total Petroleum Hydrocarbon - Criteria Working Group (TPH CWG C5-35) Aliphatic/Aromatic Split	20	20
Speciated Polycyclic Aromatic Hydrocarbons United States Environmental Protection Agency (PAH-USEPA 16)	27	20
Asbestos Screen	28	Not applicable
Asbestos Quantification Analysis (Detailed Gravimetric Quantification)	12	Not applicable
Volatile Organic Compounds and semi Volatile Organic Compounds	8	20
Benzene, Ethylbenzene Toluene, Xylene	23	20

6 Ground Conditions

6.1 Stratigraphy

6.1.1 The ground conditions encountered during the recent investigation were generally in accordance with both the published geological information and past ground investigations undertaken at the REP site and are summarised in the **Table 6.1** below.

Table 6.1 – Summary of Ground Conditions beneath the REP site

Strata	Thickness, m	Base of Stratum Min/Max (mAOD)
Made Ground	0.20 – 2.80 (TC, 2018) 0.6 – 5.95 (past)	+1.75 to -1.39
Alluvium	7.10 – 10.25 (TC, 2018) 3.1 – 11.1 (past)	-2.35 to -10.95
River Terrace Deposits	2.60 – 10.30 (TC, 2018) 1.8 – 12.05 (past)	-9.80 to -19.52
London Clay	1.20 – 7.50 (TC, 2018) 4.7 – 8.8 (past)	-11.16 to -25.12
Harwich Formation	4.75 – 26.3 (TC, 2018) 0.7 – 10.5 (past)	-18.94 to -32.05
Lambeth Group	30.9 – 35.55 (TC, 2018) +19.0 (past)	-27.6 to -42.49
Thanet Sand	Thickness not proven +6.95m (TC, 2018) +11.92 (past – proven beneath RRRF but not within REP Site)	Proven to -49.41

6.2 Made Ground (MG)

6.2.1 Both the historical ground investigations and the 2018 Terraconsult ground investigation recorded the presence of a variable thickness of Made Ground across the REP site, generally described as a soft to firm black mottled dark brownish grey slightly sandy slightly gravelly to cobbly clay where the gravel/cobbles typically comprised brick, concrete and flint. Less commonly the Made Ground contained glass, metal, wire, plastic, textiles, string, ash, ceramic pieces, asphalt, 'slag', cables and rubber ducting.

6.2.2 Excluding the artificial flood defence bund which is present along the northern edge of the site, the Made Ground was encountered at thicknesses between 2.8 m and 0.2 m, but typically less than 1.0 m.

6.3 Natural Soils

Alluvium (AL)

6.3.1 Deposits of Alluvium were recorded within every exploratory hole in the 2018 TerraConsult investigation. This material is generally described as very soft to soft dark black-grey clay, with abundant rootlets and woody plant material. There are also occasional coarse gravel-sized pockets of light grey, slightly sandy clay noted. Layers of pseudofibrous peat were encountered in ten of the thirteen exploratory holes within the Alluvium at varying depths, at thicknesses of between 0.40 m and 3.50 m. Given the absence of peat from the remaining exploratory positions it is inferred that the peat is present in discrete lenses of varying thickness as opposed to being a laterally continuous layer.

6.3.2 The overall thickness of Alluvium varies across the REP site from typically around 7.5 m in the north of the REP site, increasing to almost 10.0 m thick near the REP site's southern boundary.

River Terrace Deposits (RTD)

6.3.3 The River Terrace Deposits were encountered within every exploratory hole in the 2018 TerraConsult investigation and have been described typically as a dark greyish-brown, sandy, slightly clayey gravel of subangular to subrounded, fine to coarse flint.

6.3.4 The thickness of the RTD has been recorded at between 3 m and 4 m in the far north of the REP site, beneath the flood defence bund (as evidenced by earlier investigations). The thickness steadily increases towards the south to around 5 m thick and close to the southern boundary of the REP site the thickness of River Terrace Deposits rapidly increases to around 10 m thickness.

London Clay (LC)

6.3.5 The London Clay Formation was encountered within every exploratory hole in the 2018 TerraConsult investigation and was described generally as a stiff to very stiff dark grey clay with occasional laminations of fine to medium sand and occasional shell fragments. It is noted that in BH11 and BH12 material assumed to represent the basal beds of the London Clay Formation is present. This material is commonly granular as opposed to cohesive, with only a very limited 0.5 m thick layer of clay recorded in BH11 and no material described on the borehole log as clay in BH12. On the basis of being described either wholly or predominantly of granular, permeable material, these basal granular layers of the London Clay are unlikely to be acting as an aquiclude.

6.3.6 The thickness of the London Clay reduces from north (approximately 7.5 m thick at BH6) to south across the site (approximately 1 m thick in BH11).

Harwich Formation (HF)

6.3.7 Material assumed to be representative of the Harwich formation was encountered within all 2018 TerraConsult boreholes and typically comprised a dense, dark blackish-grey, slightly clayey gravel of sub-rounded to rounded, fine to coarse black flint with occasional coarse gravel size pockets of dark grey CLAY. These deposits appear to be characteristic of the Blackheath Member.

6.3.8 In general, this material was found to increase gradually in thickness from northeast to southwest from approximately 4 m thickness (BH05, Soil Mechanics BH313 & BH309) up to approximately 8 m (BH02, BH04 BH13, BH08). Beyond this the thickness rapidly increases to the southwest up to 26.0 m and 26.3 m thickness in BH12 and BH11 respectively.

Lambeth Group (LG)

6.3.9 Material assumed to be representative of the Lambeth Group was encountered in all recent boreholes and comprised interbedded layers of clayey fine to medium sand (variably dark-green mottled orange-brown, dark-green and bluish-green, dark green, dark-greenish grey etc.) and firm to stiff dark greyish-green slightly sandy clay.

6.3.10 In all the investigations undertaken at, and adjacent to the REP site, the full thickness of the Lambeth Group has been proven in only seven boreholes, three of which are located beneath the existing RRRF (proved to thicknesses of 9.5 m, 14.25 m and 19.6 m) and two of which are located beneath the River Thames (proved to thicknesses of 10.2 m and 11.6 m). The remaining two boreholes, both part of the 2018 TerraConsult investigation (BH02A and BH10A) and both located within the REP site, indicate material assumed to be Lambeth Group at thicknesses of 35.55 m and 30.9 m respectively.

Thanet Formation (TF)

6.3.11 Beneath the REP site the Thanet formation was encountered only in boreholes (BH02A and BH10A) and typically comprised a dark greyish-brown slightly silty, fine to medium micaceous sand. It was encountered at depths of 32.3 m and 33.1 m respectively below ground level and was proven to a thickness of 2.6 m and 2.09 m respectively;- the full depth was not proven.

6.4 Groundwater

6.4.1 During the 2018 Terraconsult ground investigation, groundwater was encountered within the various strata beneath the site:

6.4.2 Within the Alluvium, seepages and inflows of groundwater were recorded between levels of +0.76 mAOD and -7.7 mAOD. Generally, these then rose to between -1 mAOD and +1 mAOD, typically within 1 m of the ground surface level.

6.4.3 Groundwater strikes were also recorded within the River Terrace Deposits at levels between -6.6 mAOD and -9.32 mAOD, typically coincident with the top of the strata. Inflows of water were rapid and these strikes typically rose by approximately 5-6 m from the level of the strike, indicating subartesian (confined aquifer) conditions.

6.4.4 A single groundwater strike was recorded at the upper boundary of the London Clay at a level of -12.2 mAOD, immediately underlying the River Terrace Deposits, rising to -1.7 mAOD. An SPT undertaken at the same depth recorded the water level as ‘Dry’. It is considered that this may not be a true strike, and may be the result of flooding of the casing from the overlying sand and gravel deposits.

6.4.5 Groundwater was struck immediately beneath the London Clay, at the upper boundary of material assumed to represent the Harwich Formation, at levels between -19.18 mAOD and -16.1 mAOD. These strikes typically rose to between approximately -3 mAOD and -1 mAOD, indicating subartesian (confined aquifer) conditions, with the overlying London Clay acting as an aquiclude.

6.4.6 During the fieldwork period the contractor monitored the groundwater levels within the completed monitoring installations each day, a record of which is provided in the TerraConsult Factual Report. Monitoring over a complete tidal cycle has not been completed at the time of writing.

6.4.7 A review of this data indicates a significant potential tidal influence upon the groundwater within the River Terrace Deposits aquifer beneath the REP site, as described in **Table 6.4** below.

Table 6.4 – Summary of Groundwater Monitoring Information

Location	Strata Monitored	Maximum water level (mAOD)	Minimum water level (mAOD)	Variation (m)	Approx. distance from River Thames (m)
BH01	Alluvium	0.36	-0.39	0.75	45
BH02	Alluvium	1.62	1.08	0.54	75
BH03	Alluvium	1.02	0.98	0.04	100
BH04	Made Ground/Alluvium	0.69	0.29	0.40	125
BH05	River Terrace Deposits	1.26	-1.44	2.70	125
BH09	Made Ground/Alluvium	0.93	0.80	0.13	145
BH13	Alluvium	0.97	0.70	0.27	185
BH11	Alluvium	0.67	0.62	0.05	210
BH08	River Terrace Deposits	0.73	-0.86	1.59	210
BH12[1]	River Terrace Deposits	0.38	-0.83	0.42	230

1. BH12 is recorded as flooded on 18/04/18

6.5 Visual and Olfactory Indicators of Contamination

6.5.1 Distinctive odours were noted during the 2018 ground investigation by Terraconsult within the Made Ground in four of the nineteen exploratory positions as detailed in **Table 6.5.1** below:

Table 6.5.1 – Summary of visual and olfactory indicators of contamination

Location	Depth (m)	Description
BH01	0.3 – 1.6	MADE GROUND: Loose light orangish brown gravelly slightly clayey fine to coarse SAND. Gravel of subangular to rounded fine to coarse brick and sub-rounded to rounded medium to coarse flint. **Faint hydrocarbon odour**.
BH06	1.5 – 2.8	MADE GROUND: Dark greyish brown gravelly sandy CLAY. Sand is angular to rounded, fine to coarse of flint, brick and concrete. Occasional pockets of greyish white clay (up to 10 cm diameter). Rare glass. **From 1.50 m sweet odour**, numerous fragments of black wood (max 20cm long) and black staining.
BH13	0.6 – 1.0	MADE GROUND: Very soft to soft dark grey to black very sandy gravely CLAY. Sand is fine to coarse. Gravel is fine to coarse concrete. Occasional fragments of wood, metal wire, plastic, glass and ceramic tile. **Hydrocarbon odour**.
TP04	0.8 – 1.1	MADE GROUND: Black ashy gravelly fine to coarse SAND. Gravel is subangular to sub-rounded fine to coarse flint. Rare gravel of slag and asphalt. Rare cables and rubber ducting. **Rotten egg odour**.

6.5.2 All of the olfactory indicators of contamination are from Made Ground material, and from different areas of the REP site.

6.5.3 Asbestos and asbestos containing materials (ACMs) were not visually identified during the 2018 ground investigation.

Photo Ionisation Detector Survey

6.5.4 Photo Ionisation Detector (PID) screening is a qualitative method, the numerical output of which cannot be directly compared to measured soil concentrations of contaminants of concern. Nevertheless, PID readings are a useful field tool for assessing the potential presence of elevated Volatile Compounds in the soil.

6.5.5 The maximum PID reading was 132.2 ppm for Made Ground (described as black stained and with a sweet odour) recovered at 1.50 m bgl at location BH06. The range of data recorded is presented in **Table 6.5.5** below.

Table 6.5.5 – Summary of PID readings

Exploratory Hole	PID depth range (m bgl)	Maximum PID Reading (ppm)
BH01	0.50 – 4.00	0.9 @ 2.00m
BH02	0.50 – 2.50	0.6 @ 2.00m & 2.50m
BH03	0.60 – 2.80	0.3 @ 1.00m
BH04	0.30 – 1.50	0.0 @ All depths measured
BH06	0.50 – 3.00	132.2 @ 1.50m
BH08	0.20 – 1.00	0.6 @ 1.00m
BH09	0.25 – 1.00	0.6 @ 1.00m
BH10	0.20 – 0.80	0.5 @ 0.20m
BH13	0.50 – 1.00	5.9 @ 0.60m
TP02	0.50 – 3.00	0.6 @ 0.90m
TP04	0.80 – 1.50	0.3 @ 1.50m
TP05	0.60 – 1.30	0.3 @ 1.30m

7 Data Review – Soils

7.1 Asbestos

7.1.1 A summary table of the results of the geoenvironmental soils information is presented in **Appendix 4**.

7.1.2 Twelve of the 28No. samples tested recorded the presence of asbestos as presented below:

- Eight of the twelve positive asbestos detections (BH03 @ 0.6 m, BH03 @ 1.0 m, BH05 @ 0.3 m, BH13 @ 0.7 m, TP02 @ 0.5 m, TP04 @ 0.8 m, TP05 @ 0.6 m and TP06 @ 0.3 m) recorded only chrysotile asbestos;
- Three of the twelve positive asbestos detections (BH04 @ 0.3 m, BH06 @ 1.5 m and BH06 @ 2.0 m) recorded chrysotile and amosite asbestos;
- One of the twelve positive asbestos detections (BH03 @ 2.4 m) recorded crocidolite asbestos.

Table 7.1 – Summary of positive detections of Asbestos

Location	Depth (m)	Site Area Encountered within	Type	Form	Percentage[1]
BH03	0.6	Wasteland Habitat Area	Chrysotile	Loose fibres	<0.001
BH03	1.0	Wasteland Habitat Area	Chrysotile	Loose fibres	<0.001
BH03	2.4	Wasteland Habitat Area	Crocidolite	Loose fibres	<0.001
BH04	0.3	Wasteland Habitat Area	Chrysotile & Amosite	Loose fibres	<0.001
BH05	0.3	Wasteland Habitat Area	Chrysotile	Loose fibres	<0.001
BH06	1.5	Ash Container Storage Yard	Chrysotile & Amosite	Loose fibres and loose fibrous debris	0.007
BH06	2.0	Ash Container Storage Yard	Chrysotile & Amosite	Loose fibres	<0.001
BH13	0.7	Maintenance Area	Chrysotile	Loose fibres and sheeting / board debris	0.015
TP02	0.5	Wasteland Habitat Area	Chrysotile	Loose fibres	<0.001
TP04	0.8	Wasteland Habitat Area	Chrysotile	Loose fibres	0.002
TP05	0.6	Wasteland Habitat Area	Chrysotile	Loose fibres	<0.001

TP06	0.3	Former Car Factory Car Park	Chrysotile	Loose fibrous debris	0.004

1. By gravimetric quantification

7.1.3 As described by **Table 7.1** above, eight of these positive detections of asbestos are located within Made Ground that forms the current "wasteland habitat area", with the remaining four positive detections located within the Made Ground beneath the current ash container storage yard (2 No. detections), the former car factory park (1 No. detection) and the maintenance area (1 No. detection).

7.2 Hydrocarbons - TPHCWG

Screening Results

7.2.1 20 No. samples of Made Ground and natural soils were submitted for aliphatic/aromatic split analysis for each of the defined TPHCWG fractions and the results did not indicate any exceedances of the respective adopted assessment criteria for human health in an industrial/commercial end-use scenario.

7.2.2 Of these results, four (BH08 @ 0.5 m, BH11 @ 0.5 m, BH13 @ 0.7 m and TP04 @ 0.8 m) recorded concentrations of above 1,000 mg/kg, with a maximum of 4,725 mg/kg from BH11 @ 0.50 m. All four of these samples were of Made Ground. The predominant fractions were Aromatic C35-C44 and Aromatic C21-C35.

7.2.3 The sample from BH11 @ 0.5 m depth was taken from material described by the contractor as "*Dark greyish brown gravelly fine to coarse SAND with medium cobble content. Gravel of angular to subangular fine to coarse red and yellow brick. Occasional subangular asphalt and concrete cobbles*". It is possible that the higher hydrocarbon concentration in this sample is reflective of the gravel-sized asphalt. This is consistent with the longer chain fractions (typically used in asphalt) being the predominant fractions in this sample.

7.2.4 The sample from BH13 @ 0.7 m depth was taken from material described by the contractor as "*Very soft to soft dark grey to black very sandy gravely CLAY. Sand is fine to coarse. Gravel is fine to coarse concrete. Occasional fragments of wood, metal wire, plastic, glass and ceramic tile. Hydrocarbon odour*". The hydrocarbons recorded within this sample are likely related to materials included within the Made Ground.

7.2.5 The sample from BH08 at 0.5 m depth was taken from material described by the contractor as "*Dark brown gravely slightly silty fine to coarse SAND with medium cobble content. Gravel is fine to coarse angular to subround of brick, concrete, occasional slag and ceramic tile. Cobbles are angular to subangular of brick*". The description of this sample does not suggest contamination by hydrocarbons, however it does directly underlie a layer of asphalt and so, similarly to the sample retrieved by Terraconsult from BH11, it is possible that the higher hydrocarbon concentration in this sample is reflective of some cross contamination from the asphalt above.

7.2.6 The sample from TP04 at 0.8 m depth was taken from material described by the contractor as "*Black ashy gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint. Rare gravel of slag and asphalt. Rare cables and rubber ducting. Rotten egg odour"*. The hydrocarbons recorded within this sample are likely related to the many extraneous materials included within the Made Ground in this area. The rotten egg odour may be a result of the decay of the rubber ducting.

7.3 Hydrocarbons – PAHs

Screening Results

7.3.1 27 No. samples of both Made Ground and natural soils were submitted for individual USEPA 16 PAH testing and the results did not indicate any exceedances of the respective adopted assessment criteria for human health in an industrial/commercial end-use scenario (**Appendix 2**).

7.4 Hydrocarbons – VOCs and SVOCs

7.4.1 8 No. samples of both Made Ground and natural soils were submitted for analysis of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs).

7.4.2 The results did not indicate the presence of any VOCs in excess of the laboratory Limit of Detection.

7.4.3 SVOCs in excess of the limit of detection were encountered as follows (where the SVOC in question is the same as one of the USEPA 16 PAHs, it has been omitted from this list):

- 2-Methylnaphthalene – BH13 @ 0.70 m = 1.1 mg/kg, BH06 @ 2.0m = 1.0 mg/kg
- Dibenzofuran – BH13 @ 0.70 m = 0.6 mg/kg, BH06 @ 2.0m = 2.1 mg/kg
- Butyl benzyl phthalate – BH13 @ 0.70 m = 2.8 mg/kg
- Carbazole – BH06 @ 2.0 m = 0.7 mg/kg

7.4.4 Within the adopted assessment criteria (**Appendix 2**), assessment values protective of human health are available only for Butyl benzyl phthalate. Comparison with this value indicates no exceedances of the assessment criteria in a commercial/industrial end-use scenario.

7.5 Metals

Screening Results

7.5.1 40 No. samples of both Made Ground and natural soils were submitted for individual metals and heavy metals testing and the results did not indicate any exceedances of the respective adopted assessment criteria for human health in an industrial/commercial end-use scenario (**Appendix 2**).

7.6 pH

7.6.1 The pH is generally neutral to alkaline, with an average of pH 8.8. One sample has a very alkaline pH of greater than 11 (BH06 at 0.5 m depth = 11.6).

8 Data Review – Ground and Surface Waters

8.1.1 A summary table of the results of the geoenvironmental waters information is presented in **Appendix 5**.

8.1.2 Technical guidance on the adopted assessment approach and individual assessment tools utilised is presented in **Appendices 1, 2 & 11**.

8.2 Introduction

8.2.1 28 No. water samples have been collected, eighteen of which are of groundwater from the Secondary A Aquifers (River Terrace Deposits and Harwich Formation), three of which are from the surface water ditch on the site's western boundary, three of which are from the surface water ditch on the site's southern boundary, two of which are from the River Thames to the east of the site and two of which are from the River Thames to the west of the site.

8.3 Chloride & Sodium

8.3.1 Chloride results were, as anticipated given the site's proximity to the tidal River Thames, elevated within both the groundwater and the River Thames. Within these water bodies chloride results ranged from 75 µg/L (BH02) to 5400µg/L (BH08). Within the surface water dykes adjacent to the REP site chloride results ranged from 68 µg/L to 490 µg/L.

8.3.2 Sodium results were correspondingly elevated within both the surface water (River Thames and dykes) and the groundwater with concentrations up to 3100 µg/L

Adoption of Assessment Criteria

8.3.3 The results described above indicate that the conditions within both the River Thames and the groundwater beneath the site are saline (i.e. the groundwater is comparable to seawater). As such, an assessment against drinking water standards has not been undertaken and the geoenvironmental laboratory results have been assessed against either the adopted assessment criteria (**Appendix 2**) for salt waters (samples from the River Thames and groundwater) or for fresh water (samples from surface water ditches).

Groundwater and River Thames

8.4 Metals

8.4.1 22 No. samples of groundwater and surface water from the River Thames were submitted for individual metals and heavy metals testing and the following exceedances of the Salt Water Environmental Quality Standards (EQS) were recorded:

- Arsenic – two exceedances of the criterion (25 µg/L), both in BH03, with a maximum concentration of 34 µg/L.
- Hexavalent Chromium – two exceedances (6.8 µg/L (BH03) and 17 µg/L (BH13)) of the laboratory limit of detection[2] (5 µg/L).

[2] Within the laboratory results provided it is noted that the laboratory limit of detection for hexavalent chromium was 5µg/L, in excess of the saltwater EQS of 0.6µg/L

8.4.2 An assessment using the simplified Metal Bioavailability Assessment Tool (M-BAT) has been undertaken to calculate the amounts of bioavailable copper, zinc, nickel and lead. The results of this assessment (**Appendix 6**) revealed no exceedances of the EQS for these determinands.

8.5 Petroleum Hydrocarbons

8.5.1 22 No. samples of groundwater and surface water from the River Thames were submitted for aliphatic/aromatic split analysis for each of the defined TPHCWG fractions. All samples recorded concentrations below the reportable limit of detection for each of the bands and thus the results did not indicate any exceedances of the Salt Water Environmental Quality Standards (EQS).

8.6 Polycyclic Aromatic Hydrocarbons (PAHs)

8.6.1 22 No. samples of groundwater and surface water from the River Thames were submitted for individual USEPA PAH testing. All samples recorded concentrations below the reportable limit of detection for each of the PAHs analysed.

8.6.2 It is noted that the laboratory limits of detection for fluoranthene (0.01 µg/L), benzo(a)pyrene (0.01 µg/L) and benzo(g,h,i)perylene (0.01 µg/L) were in excess of the EQS for these determinands.

8.6.3 For the PAHs not listed above, the testing results did not indicate any exceedances of the Salt Water Environmental Quality Standards (EQS) were recorded. For the remaining USEPA 16 PAHs, it is considered that, in the apparent absence of hydrocarbon contamination, exceedances of the Salt Water Environmental Quality Standards (EQS) are unlikely.

VOCs and SVOCs

8.6.4 22 No. samples of groundwater and surface water from the River Thames were submitted for analysis of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs). Concentrations of these compounds in excess of the Limit of Detection were not identified.

8.7 pH

8.7.1 22 No. samples of groundwater and surface water from the River Thames were submitted for pH testing and the results indicate generally neutral to slightly alkaline pH with all samples (from both surface water and groundwater) having a pH of between 6.8 and 8.0.

Surface Water Ditches

8.8 Metals

8.8.1 6 No. samples of surface water from the ditches adjacent to the REP site were submitted for individual metals and heavy metals testing and the results did not indicate any exceedances of the Fresh Water Environmental Quality Standards (EQS).

8.8.2 An assessment using the simplified Metal Bioavailability Assessment Tool (M-BAT) has been undertaken to calculate the amounts of bioavailable copper, zinc, nickel and lead. The results of this assessment (**Appendix 6**) revealed no exceedances of the EQS for these determinands.

8.8.3 It is noted that the laboratory limit of detection for hexavalent chromium was 5 µg/L, this is in excess of the fresh water EQS of 3.4 µg/L.

8.9 Petroleum Hydrocarbons

8.9.1 6 No. samples of surface water from the ditches adjacent to the REP site were submitted for aliphatic/aromatic split analysis for each of the defined TPHCWG fractions. All samples recorded concentrations below the reportable limit of detection for each of the bands and thus the results did not indicate any exceedances of the Fresh Water Environmental Quality Standards (EQS).

8.10 Polycyclic Aromatic Hydrocarbons (PAHs)

8.10.1 6 No. samples of surface water from the ditches adjacent to the REP site were submitted for individual USEPA PAH testing. All samples recorded concentrations below the reportable limit of detection for each of the PAHs analysed.

8.10.2 It is noted that the laboratory limits of detection for benzo(b)fluoranthene (0.01 µg/L), benzo(a)pyrene (0.01 µg/L), benzo(g,h,i)perylene (0.01 µg/L) were in excess of the Fresh Water EQS for these determinands.

8.10.3 For the PAHs not listed above, the testing results did not indicate any exceedances of the Fresh Water Environmental Quality Standards (EQS). For the remaining USEPA 16 PAHs, it is considered that, in the apparent absence of hydrocarbon contamination, exceedances of the Fresh Water Environmental Quality Standards (EQS) are unlikely.

VOCs and SVOCs

8.10.4 6 No. samples of surface water from the ditches adjacent to the REP site were submitted for analysis of Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs). Concentrations of these compounds in excess of the Limit of Detection were not identified.

8.11 pH

8.11.1 6 No. samples of surface water from the ditches adjacent to the REP site were submitted for pH testing and the results indicate generally neutral to slightly alkaline pH with all samples (from both surface water and groundwater) having a pH of between 7.2 and 7.8.

9 Tier 2 Human Health Risk Assessment

9.1 Approach, Assessment Criteria & Tools

9.1.1 Technical guidance on the adopted assessment approach and individual assessment tools utilised is presented in **Appendices 1, 2 & 11**.

9.2 Asbestos

9.2.1 The presence of asbestos was identified within the crushed demolition rubble used to create the wasteland habitat area, with eight of the twelve positive detections occurring within this material, and comprising multiple types of asbestos.

9.2.2 Outside of wasteland habitat area there appears to be little spatial relation in the distribution of positive asbestos detections.

9.2.3 For the situation where Made Ground may become disturbed during redevelopment, PBA have run the CL:AIRE (Contaminated Land Applications in Real Environments)/Joint Industry Working Group (JIWG) Asbestos in Soil and Construction & Demolition Materials Decision Support Tool (DST) (**Appendix 7**). This assessment has been undertaken on the 'worst-case' area of the site with regards to asbestos, being the current "wasteland habitat area".

9.2.4 The DST indicates that (using site-specific input criteria) both the Hazard Ranking and Exposure Ranking in this area are 'Medium' and therefore the combined Hazard and Exposure Ranking is also Medium.

9.2.5 As the samples of ACM were very small and the majority were not visibly identifiable, and therefore could not be reliably removed by hand, the Made Ground across the site is likely to be considered as asbestos containing soil (ACS) and any planned disposal of this material as part of the redevelopment works will need to consider the asbestos content.

9.2.6 Based on these results, future redevelopment of this area would not require a license under the Control of Asbestos Regulations (CAR). However, excavation works that could potentially disturb this material are indicated as requiring EN149 type FFP3 disposable Respiratory Protective Equipment (RPE), with manual/localised dust suppression and 'Localised and basic personal decontamination facilities'. It is recommended however that once the precise development and engineering works to this area are better defined that further investigation and sampling should be undertaken to confirm this preliminary assessment.

9.3 Hydrocarbons - TPHCWG

9.3.1 The results of the testing undertaken did not indicate any exceedances of the respective adopted assessment criteria for human health in an industrial/commercial end-use scenario.

Hazard Index

9.3.2 The calculated Hazard Index (HI) did not exceed unity (1) when in a commercial end use in any of the 20 No. samples tested. This indicates an absence of a potential human health risk associated with these samples.

Statistical Assessment

9.3.3 The data set for soil samples from the Made Ground and tested for TPHs comprises 14 No. samples and the data set for soil samples from the Alluvium and tested for TPHs comprises 6 No. samples.

9.3.4 As shown on the appended Statistical Calculator Outputs (**Appendix 8**) in a commercial end use context, there is a 95% or greater evidence level for the rejection of the Null hypothesis for all TPHs.

9.3.5 Consequently, TPHs in soils are not identified as human health hazards in the context of a proposed industrial/commercial end-use.

9.4 Hydrocarbons – PAHs

9.4.1 The results of the testing undertaken did not indicate any exceedances of the respective adopted assessment criteria for human health in an industrial/commercial end-use scenario.

BAP as a Surrogate Marker

9.4.2 BaP is considered a suitable surrogate marker because, following removal of results at or below the laboratory Limit of Detection (LOD) on the basis that "*The PAH profile may be significantly influenced in samples where the concentration of one or more of the genotoxic PAHs (particularly BaP) is below the method limit of detection… careful consideration should be given to such samples before including them within this spreadsheet*" (LQM, PAH Profiling Tool Background and Instructions) - all except four samples are within +/-2.5x the mean of the Culp data, confirming that BaP is considered a suitable surrogate marker.

9.4.3 Output plots describing the above are presented in **Appendix 9**.

9.4.4 Application of the BaP results against the Coal Tar assessment criteria does not indicate a risk to Human Health from Coal Tar in an industrial/commercial end-use scenario.

Double Ratio Plots

9.4.5 All 27 No. samples from both the Made Ground and natural soils plot as combustion/pyrogenic source with grass/wood/coal combustion and coal tar/creosote signatures. The benz[a]anthracene vs. chrysene plot suggests a carbonisation and coke oven tar signature and the benz[a]anthracene vs. benzo[a]pyrene & chrysene vs/ benzo[a]pyrene plots suggest an urban background signature.

9.4.6 The outputs from the assessment tool are presented in **Appendix 10**.

Statistical Assessment

9.4.7 The data set for soil samples from the Made Ground and tested for PAHs comprises 19 No. samples and the data set for soil samples from the Alluvium and tested for PAHs comprises eight samples.

9.4.8 As shown on the appended Statistical Calculator Outputs (**Appendix 8**) in a commercial end use context, there is a 95% or greater evidence level for the rejection of the Null hypothesis for all compounds.

9.4.9 Consequently, PAHs in soils are not identified as human health hazards in the context of a proposed industrial/commercial end-use.

9.5 Metals

9.5.1 The results of the testing undertaken did not indicate any exceedances of the respective adopted assessment criteria for human health in an industrial/commercial end-use scenario.

Statistical Assessment

9.5.2 The data set for soil samples from the Made Ground and tested for metals comprises 21 No. samples and the data set for soil samples from the Alluvium and tested for metals comprises 19 No. samples.

9.5.3 As shown on the appended Statistical Calculator Outputs (**Appendix 8**) in a commercial end use context, there is a 95% or greater evidence level for the rejection of the Null hypothesis for all compounds.

9.5.4 Consequently, metals in soils are not identified as human health hazards in an industrial/commercial end-use scenario.

9.6 Summary of Soil Risk Assessment

9.6.1 Whilst outliers have been identified within the datasets statistically analysed and presented in **Appendix 8,** no further investigation or statistical analysis has been undertaken regarding these outlier results, because, whilst it is possible that this is indicative of a “hot spot”, the outliers remain below the critical concentration for risk to Human Health in a commercial end-use context.

9.6.2 The double ratio plot assessment identified the source of the PAHs as pyrogenic and typically plotted as either grass/wood/coal combustion and coal tar/creosote signatures or urban background signatures. This is consistent with the known historic usage of the site, which included the use of coal fired boilers and the storage of coal.

9.6.3 Within the samples tested, hydrocarbons and metals have not been identified at concentrations which could cause human health impacts in a commercial/industrial context.

9.6.4 Asbestos is retained as a human health hazard having been found as various types (chrysotile, amosite, crocidolite), in various forms (loose fibres, fibrous debris, sheeting / board debris) and in concentrations up to 0.015%. The positive detections of asbestos were generally clustered within the fill material used to create the wasteland habitat area, but also were encountered site-wide in the various forms of Made Ground. Further sampling and analysis to investigate the presence of asbestos within the Made Ground is recommended.

9.6.5 On the basis of an industrial/commercial end-use scenario and on the basis of the absence of elevated concentrations of contamination (excluding asbestos), generally within the Made Ground the risks to Human Health (Current Users, Future Users and Neighbours) have been assessed as **Low**. However, given the recorded presence of asbestos within the Made Ground, the risk to Human Health (Current Users, Future Users and Neighbours) has been assessed as **High.**

9.6.6 The ground conditions at the REP site have not been identified as potentially hazardous to ecological systems (Crossness Nature Reserve) or to property (animals and crops).

9.7 Potential to Impact Property – Buildings

9.7.1 The above assessment has not identified any risks to this receptor from anthropogenic contamination. However, naturally aggressive ground conditions may be present and advice should be sought from the geotechnical designer in this regard.

10 Tier 2 Controlled Water Risk Assessment

Groundwater and River Thames

10.1.1 On the basis of the geoenvironmental laboratory results from the 2018 investigation (**Appendices 4 & 6**), groundwater beneath the REP site and the surface waters within the River Thames do not appear to be impacted by hydrocarbons (TPHs & PAHs).

10.1.2 As described above, two exceedances of the Salt Water EQS for arsenic and two exceedances of the Salt Water EQS for Hexavalent Chromium were recorded during the 2018 ground investigation. Both exceedances of Arsenic (33.4 µg/L and 34 µg/L) and one of the exceedances of Hexavalent Chromium occurred within groundwater samples recovered from the same borehole (BH03) on the northern edge of the wasteland habitat area. The remaining exceedance of Hexavalent Chromium was recorded within BH13 in the south of the REP site.

10.1.3 Given that groundwater samples from boreholes surrounding BH03 (e.g. BH02, BH05) did not record similar exceedances it is considered that these minor elevated concentrations represent an effect local to BH03. Similarly, groundwater samples from boreholes surrounding BH13 (e.g. BH05, BH12) did not record similar exceedances it is considered that these minor elevated concentrations represent an effect local to BH13.

10.1.4 Additionally, samples of surface water recovered from the River Thames both downgradient and upgradient of the site did not record similarly elevated concentrations of Arsenic and Hexavalent Chromium and on this basis it is concluded that the recorded concentrations are not significantly affecting the River Thames.

10.1.5 Based on the above assessment a need to undertake further work for the protection of controlled waters (groundwater and the River Thames) has not been identified.

10.1.6 As such, the risk to groundwater and the River Thames is considered to be **Very Low**.

10.1.7 It is noted that the proposed development will include a substantial area of hardstanding compared to the current situation and this will reduce the potential for infiltration and mobilisation of contaminants.

Surface Water Ditches

10.1.8 The results of the geoenvironmental laboratory testing undertaken upon samples of surface water from the ditches adjacent to the REP site do not indicate the presence of potential contaminants of concern (metals, TPHs, PAHs, VOCs, SVOCs) at concentrations of concern with regards to impacts upon controlled waters.

10.1.9 Based on the above assessment a need to undertake further work for the protection of surface waters (not including the River Thames) has not been identified.

10.1.10 As such, the risk to Surface Waters (not including the River Thames) is considered to be **Very Low**.

11 Gas Data Review and Assessment

11.1 Introduction

11.1.1 Gas and vapour sources are identified as being derived from:

- Natural Alluvium – peat and organic content;
- Made Ground – degradation of putrescible matter;
- Made Ground – degradation of hydrocarbons (oils and fuels); and/or
- Groundwater – degradation of hydrocarbons (oils and fuels)

11.1.2 As described in **Section 6.3.1**, layers of peat were encountered during the 2018 Terraconsult Ground Investigation.

11.1.3 Putrescible materials were not encountered within the Made Ground encountered within the REP site.

11.1.4 As described in **Section 10**, the results of the laboratory testing undertaken by the contractor did not identify the presence of a level of hydrocarbons (TPH, PAH, VOC and SVOC) of concern to controlled waters within the groundwater beneath the REP site and within the surface waters adjacent to the REP site.

11.1.5 A limited hydrocarbon presence (TPH, PAH, VOC and SVOC) below a level of concern with regards to human health, was locally identified within the Made Ground beneath the REP site.

11.2 Ground Gas Risk Assessment

11.2.1 On the basis of the known presence of peat beneath the REP site, the gas generation potential is considered to be (3) Moderate (**Appendix 1 Table 1**).

11.2.2 To date, ground gas monitoring visits have been undertaken on three occasions on 30th May 2018, 11th June 2018 and 28th June 2018.

11.2.3 The monitoring results are presented in the TerraConsult Factual Report and the results from the wells within which an installation designed specifically for ground gas monitoring purposes are summarised in **Table 11.2** below.

Table 11.2 – Summary of Ground Gas Monitoring Results

Borehole	Steady-State CH_4 (%v/v)	Steady-State CO_2 (%v/v)	Steady-State O_2 (%v/v)	Steady-State Flow (l/hr)
BH02	<LOD*	0.3 - 0.7	19.8 – 20.5	-3.0 – 7.0
BH03	<LOD – 0.3	2.0 – 3.7	16.0 – 17.0	0.0 – 1.3
BH11	<LOD – 0.1	2.3 – 3.4	16.8 – 18.9	-5.5 – 0.0
BH13	<LOD – 10.9	3.6 – 5.7	11.7 – 18.8	-5.8 – 22.3

*LOD = Limit of Detection, typically 0.1%v/v

11.2.4 It is noted that the atmospheric/meteorological conditions that occurred during the monitoring period are not considered to be representative of worst-case conditions due to the prolonged period of hot, dry weather during that occurred during this time (Summer 2018).

11.2.5 For the purposes of ground gas risk assessment, given the knowledge that the groundwater table appears to be tidally influenced, negative flow rates have been considered as being able to be equally positive. It is further considered that the action of tidal pumping is likely to be a greater driver of flow rate than a differential between borehole and atmospheric pressure.

11.2.6 Additionally, for the purposes of ground gas risk assessment, measurements recorded as less than the Limit of Detection of the monitoring instrument have been taken as 100% of the Limit of Detection (0.1% for gas concentrations or 0.1l/hr for flow).

11.2.7 Following the methodology outlined in section 6.3.4 of BS8485:2015 borehole hazardous gas flow rates (Q_{hg}) have been defined for both CH_4 (methane) and CO_2 (carbon dioxide) for each monitoring position for each monitoring event in each strata (highest values of 0.56 l/hr and 0.80 l/hr respectively).

11.2.8 As per section 6.3.7.2 of BS8485:2015 "*Where the dataset is representative and comprehensive, the GSV* [Gas Screening Value] *should be the maximum* Q_{hg} *measured for all the monitoring events*" and "*The data set should only be considered representative and comprehensive if it captures temporal variation*". The available data is not considered to be temporally comprehensive or representative of the worst-case conditions (see Section 11.2.4 above). As such, it is not recommended to use the maximum derived Q_{hg} values as the GSVs.

11.2.9 As advised by Section 6.3.7.3 of BS8485:2015, in a limited dataset, data can be combined from more than one monitoring standpipe location, across different monitoring rounds. Furthermore, as advised by Section 6.3.7.4 of BS8485:2015 a worst-case check should be undertaken to determine if the derived Q_{hg} values are representative of the potential worst-case. By combining the highest flow rate and highest concentrations of CH_4 and CO_2 encountered within any of the PBA specified standpipes, Q_{hg} values for CH_4 and CO_2 of 2.43 l/hr and 1.27 l/hr respectively are calculated.

11.2.10 The worst-case Q_{hg} values represent a worse-case and thus at this stage, should conservatively be adopted, pending further investigation and monitoring.

11.2.11 By adopting the worst-case Q_{hg} values for CH_4 and CO_2 (2.43 l/hr and 1.27 l/hr respectively) as the GSVs under the hazard classification system outlined in Table 2 of BS8485:2015 the REP site would be classified as Characteristic Situation 3 (CS3 - GSV range from 0.7 l/hr to 3.5 l/hr).

11.2.12 On the basis of these results, the hazard potential in relation to ground gas is considered to be **Moderate**, and further investigation and monitoring will be required to confirm this preliminary assessment.

11.3 Limitations

11.3.1 The following limitations apply to the above ground gas risk assessment:

- Within the boreholes available to PBA for the installation of monitoring standpipes, Made Ground (a potential source of ground gases) was not encountered to a sufficient thickness to allow a response zone to be sealed within the Made Ground. However within boreholes not available for PBA to install monitoring wells during the 2018 ground investigation, Made Ground was encountered to a maximum thickness of 2.8m.

- Whilst groundwater was not struck within the alluvial deposits within which the response zones of the ground gas monitoring standpipes were targeted, the groundwater monitoring records indicate groundwater levels above the response zones (as described in **Table 11.3**

below) and, as per BS8485:2015 Section 6.3.6 "*The response zone of the gas monitoring standpipe should be wholly or partly above groundwater level to provide valid data*" and "*Gas standpipes with flooded response zones might exhibit measurements of elevated methane or carbon dioxide. This could be due to dissolved gases or presence of biodegradable material in the groundwater*".

Table 11.3 – Comparison of Response Zone Depths with Water Levels During Monitoring

Location	Depth of Response Zone (m bgl)	Water Level (m bgl) 30/05/2018	Water Level (m bgl) 11/06/20118	Water Level (m bgl) 28/06/18
BH02	3.0 – 8.5	1.32	1.37	1.40
BH03	3.5 – 8.5	2.37	2.39	2.38
BH11	1.0 – 9.0	0.60	0.63	0.64
BH13	2.0 – 8.0	0.69	0.79	0.55

- As described above, the atmospheric/meteorological conditions that occurred during the monitoring period are not considered to be representative of worst-case conditions due to the prolonged period of hot, dry weather during that occurred during this time.

11.3.2 It is considered that, in order to provide a BS8485:2015 compliant ground gas risk assessment, further information will be required.

11.4 Vapour Risk Assessment

11.4.1 Comparison of the groundwater geoenvironmental laboratory testing results with the screening criteria for groundwater vapour generation hazard (**Appendix 2 Table 7**) indicates that concentrations of vapour generating contaminants above the screening levels are not recorded and thus the risk to Human Health from vapours is considered to be **Very Low**.

12 Outline Remedial Strategy – Addressing Contamination

12.1 Introduction

12.1.1 The technical options for risk management include one or more of the following: -

- Modification of the source – remediation as treatment of soil and/or groundwater;
- Modification of the exposure pathway – referred to as mitigation measures; and,
- Modification of the receptor – changes to the nature or location of the end-use.

12.1.2 The preferred option is to manage exposure pathways.

12.2 Legislative Compliance and Permits/Licenses

12.2.1 The Principal Contractor (PC) will have responsibility for ensuring legislative compliance and obtaining all permits/licenses as required. The following are highlighted but should not be considered the only aspects to addressed.

Control of Asbestos Regulations (CAR) 2012

12.2.2 The PC will undertake a risk assessment to determine whether, or not, the works are required to comply with CAR.

Soil Excavation – Re-Use and Disposal

12.2.3 If it is intended to re-use excavated arisings then the PC will need to undertake an assessment regarding suitability and demonstrate that the material is not a waste using the Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011). The Code of Practice sets out good practice for the development industry to use when assessing whether excavated materials are classified as waste or not. It also allows the determination, on a site-specific basis, when treated excavated waste can cease to be waste for a particular use. Further it describes an auditable system to demonstrate that this Code of Practice has been adhered to.

12.2.4 Off-site disposal of arisings will require compliance with the Waste Duty of Care Code of Practice March 2016 which requires the following:

- Prevent unauthorised or harmful deposit, treatment or disposal of waste (see section 4.1).
- Prevent a breach (failure) by any other person to meet the requirement to have an environmental permit, or a breach of a permit condition (see section 4.2).
- Prevent the escape of waste from your control (see section 4.3).
- Ensure that any person you transfer the waste to has the correct authorisation.
- Provide an accurate written description of the waste when it is transferred to another person. For controlled waste that is classified as ‘non-hazardous’ this will be a waste transfer note and for waste classified as ‘hazardous’ this will be a consignment note. In both cases the record will require a waste code and classification.

12.2.5 Failure to comply with the duty of care requirements is a criminal offence and could lead to prosecution.

Unexpected Contamination

12.2.6 Earlier investigations and remedial works within the REP site encountered significant contamination, including inflows of a tarry substance from broken underground pipework (which is noted to not have been removed, but bunged up to prevent further inflows) and whole sheets of asbestos board. The remediation works often failed to meet their own remedial criteria (500 mg/kg), allowing elevated levels of TPHs (in excess of 1,000 mg/kg) to remain.

12.2.7 The recent Terraconsult investigation did not record similarly elevated concentrations.

12.2.8 In this situation, it is considered likely that during the enabling works (demolition, site strip etc.) and construction works (excavation of waste bunker etc.) unexpected contamination will be encountered.

12.2.9 If previously unidentified areas of potential contamination are encountered, they will be dealt with in line with an agreed protocol. Works in the affected area will be halted and soil will either be sampled in-situ in the ground (and left undisturbed while the samples are tested and the results interpreted) or excavated and stockpiled in an appropriate manner while verification testing for potential contamination is carried out. The storage area will be contained to ensure that contamination does not migrate and affect other areas of the site.

12.2.10 Once the nature, location and extent of the contamination has been identified appropriate mitigation measures should be adopted. Although these cannot be identified at this time, the main emphasis will be on methods of isolating or treating these materials. If such measures are unlikely to be practical or effective in mitigating the risk from the identified contamination, consideration will be given to excavating and removing the contaminated soil from site for disposal at a suitably licensed landfill or treatment facility.

12.2.11 Where remediation of previously unidentified sources of contamination is required, an implementation and verification process will be established to identify the remediation activities required and to confirm that the remediation has been undertaken correctly. As part of this process, remediation objectives will be identified and remediation criteria selected for measuring compliance against these objectives in consultation with the Local Authority and other statutory consultees.

Dewatering of Excavations

12.2.12 The groundwater beneath the site is tidal and has been recorded within 1m of the surface. The available information indicates that the water is not grossly contaminated and although it might be acceptable to be discharged to ground, subject to regulatory approval, there is potential for discharge to a sewer to be required.

12.2.13 Discharge to a sewer may be possible subject to the utility provider approval. It should be noted that if any unforeseen contamination is found to be present then further assessment prior to discharge to sewer might be necessary. Alternatively, it might be necessary to contain all arisings and tanker the liquid(s) for off-site disposal.

12.2.14 In addition, whilst none of the investigations to date have revealed the presence of hydrocarbons, it would be recommended that should any excavations encounter groundwater and free product is encountered, that the use of hydrophilic blankets and booms are utilised to control and minimise the potential for any uncontrolled releases of contaminants.

12.3 Protection of Human Health – End-User as Commercial/Industrial & Neighbours

Inhalation – Asbestos Fibres

12.3.1 It is recommended that any proposed soft-landscaped areas are isolated from any Made Ground that is to remain using a standard cover system comprising:

- In areas where Made Ground is to remain, the overlying development materials should be underlain by a geotextile marker layer to record the possible presence of contaminated soils below. The presence of this marker layer should be recorded within the site Health and Safety file.
- A cover of 300 mm of clean suitable inert materials including at least 150 mm of a suitable growing medium and 150 mm granular anti-dig layer at the base.

Direct Contact (End-User only)

12.3.2 Cover system as above.

Inhalation – Ground Gases

12.3.3 Based upon the existing data (which is subject to a number of limitations as outlined above) the REP Site has been classified as having a gas regime commensurate with Characteristic Situation CS3, subject to further investigation, data collection and analysis.

12.3.4 BS8485:2015 Table 4 indicated that the structures associated with commercial/industrial end use are defined as either Type C or Type D requiring scores of 3.0 and 2.5 respectively. Any smaller rooms within Type D would have to provide protection as per Type C and therefore mitigation options include the use of some (a minimum of two), or all of the following.

- A Structural barrier (BS84852015 Table 5) to physically prevent ingress of ground gases – score of up to 2.5.
- A system that includes a pressure relief (a preferential pathway to atmosphere) for gases which might otherwise build up under the building footprint. (BS84852015 Table 6, excluding option E) – score of up to 2.5
- Membrane - a gas resistant membrane that satisfies all the criteria of BS8485 Table 7 – score of 2.

12.3.5 Further ground gas monitoring and gas sampling and laboratory analysis will be required to confirm a robust characterisation of the ground gas regime at the REP site in light of the recognised limitations and to allow refinement of the mitigation measures outlined above.

12.4 Protection of Human Health – Construction Workers

12.4.1 On the basis of the existing information, respiratory protection measures as outlined in Section 9.1.6 will be required as a minimum for construction workers undertaking works in the Made Ground across the site. It is recommended however that once the precise development and engineering works to this area are better defined that further investigation and sampling should be undertaken to confirm this preliminary assessment.

12.4.2 On the basis of the existing gas monitoring data, specific personal protection measures for ground gases (e.g. safe working protocols, personal gas monitors etc) may be required for construction workers to protect against the risks of ground gases during construction in any

areas where ground gases could accumulate. This will require confirmation through additional investigation and assessment.

12.5 Protection of Property – Buildings

12.5.1 As per **Sections 12.3.3** and **12.3.4** gas protection measures will be required within the proposed building for the protection of Human Health. These protection measures will also serve to mitigate the risk of damage to the proposed structure as a result of ground gas ingress and as such, no additional measures on top of those previously outlined are recommended.

12.5.2 On the basis of the existing information mitigation measures (e.g. use of an appropriate concrete class) may be required to protect against naturally aggressive ground conditions. Advice should be sought from the geotechnical designer in this regard.

12.5.3 The presence of elevated concentration of hydrocarbons at levels in excess of those listed in Table 1 (Pipe Selection Risk Assessment Summary) of the "*Contaminated Land Assessment Guidance*" supplementary guidance published in January 2014 by Water UK and the Home Builders Federation indicates that protective barrier pipework may be required for water supply pipework. However, the advice of the water provider should be sought in this regard.

12.6 Protection of Property – Animal and Crop

12.6.1 The above assessment has not identified any risks to this receptor.

12.7 Ecological systems

12.7.1 The above assessment has not identified any risks to this receptor.

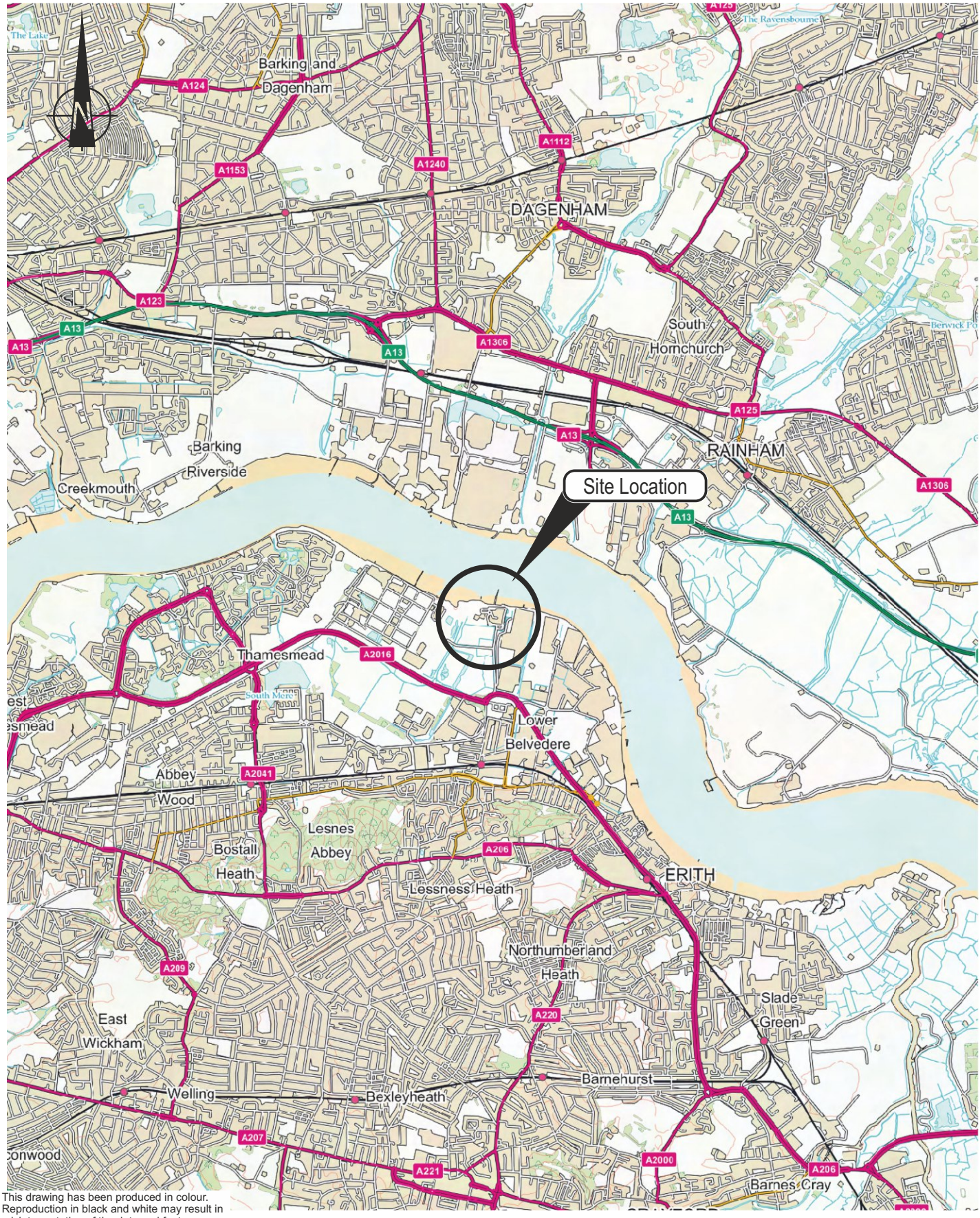
12.8 Protection of Controlled Waters

12.8.1 A need for remedial work to reduce the risk to/provide protection of controlled waters has not been identified.

12.8.2 In addition, the choice of pile/foundation design and installation technique will seek to minimise the potential for creation of preferential pathways.

12.8.3 The proposed development will include a substantial area of hardstanding compared to the current situation and this will reduce the potential for infiltration and mobilisation of contaminants. Significant volumes of perched water are unlikely to be released from the site. Further, redevelopment presents the opportunity to manage surface water drainage such that any perched water component becomes negligible and does not adversely affect the surface water system thus avoiding the requirement for remediation.

Figures



This drawing has been produced in colour. Reproduction in black and white may result in misinterpretation of the data and features being presented.

Site Grid Ref: TQ 497 806

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Client: Cory Riverside Environmental Holdings Ltd

RIVERSIDE ENERGY PARK

SITE LOCATION PLAN

Date	29.03.2018
A4 Scale	1:50 000
Drawn by	davco
Checked by	NH
Revision	0

FIGURE 1

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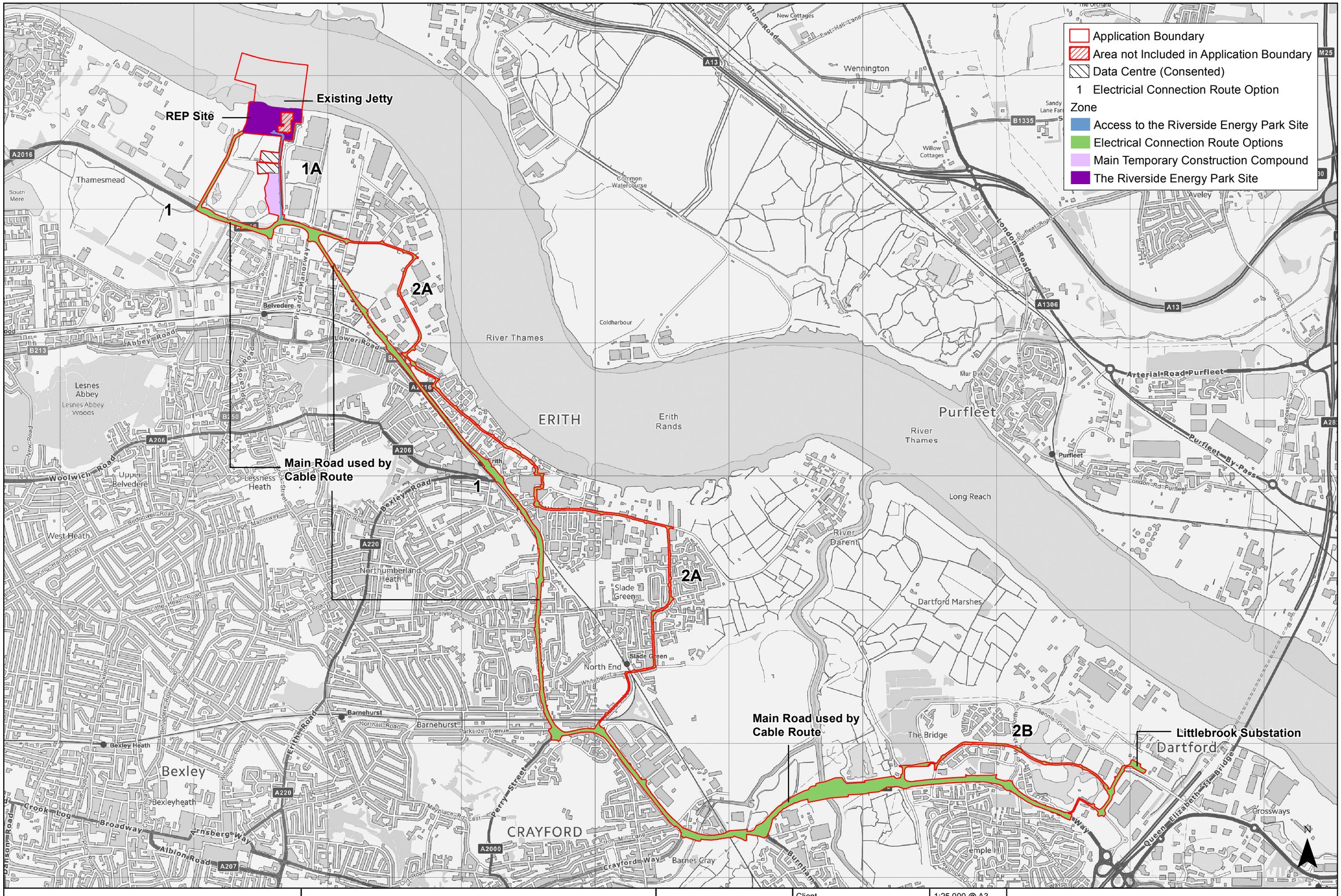

RIVERSIDE ENERGY PARK

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Client: CORY RIVERSIDE ENERGY

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Drawn: HG/CM

Checked: JM

Application Boundary

Figure 2 | Rev 0

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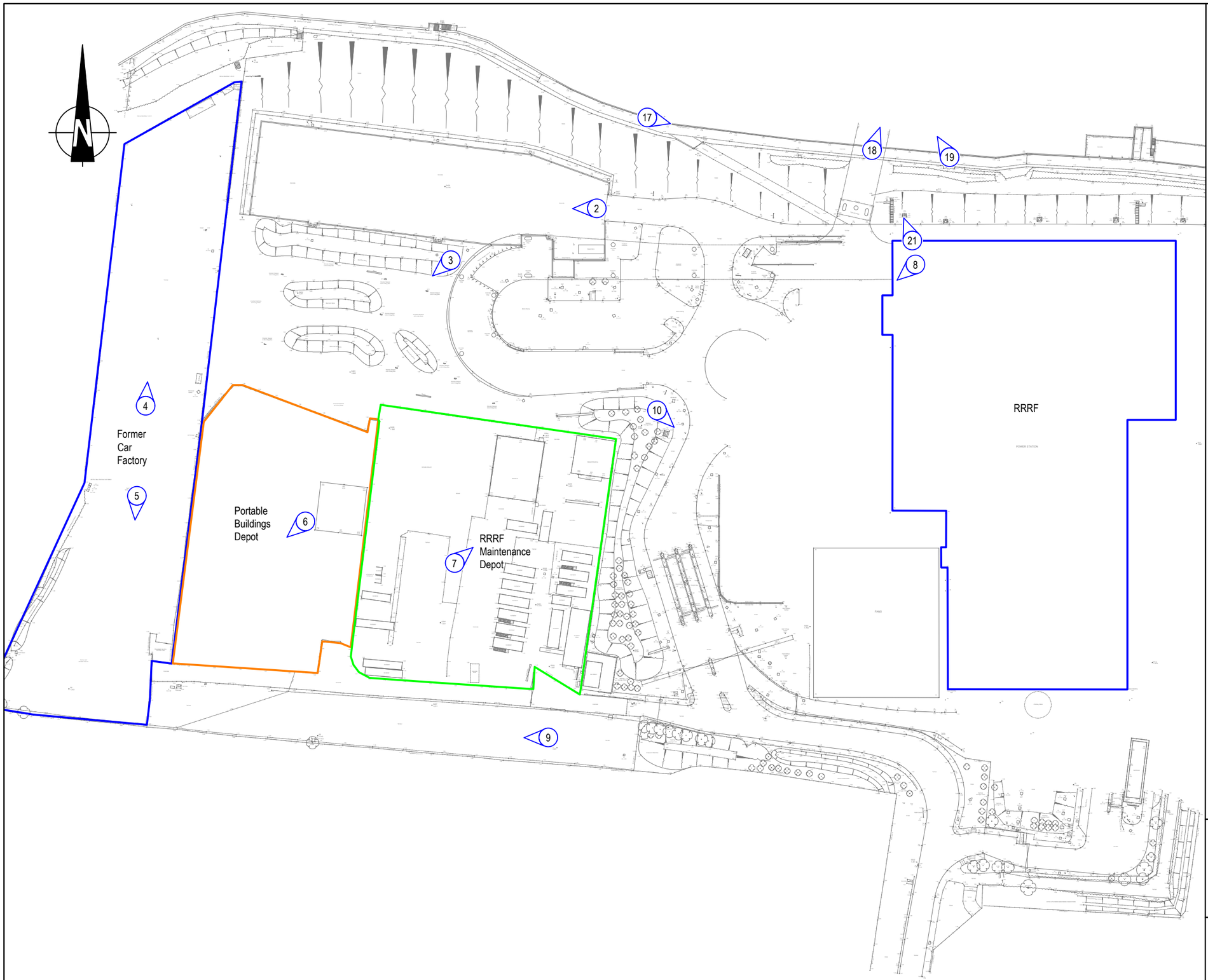

Key

2 Photograph Location

RIVERSIDE ENERGY PARK

SITE LAYOUT PLAN - REP SITE

Client

Cory Riverside Environmental Holdings Ltd

Date of 1st Issue	Drawn by
29.03.2018	davco
A3 Scale	Checked by
1:1250	NH

Figure Number

3

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Appendix 1 PBA Methodology for Assessing Land Contamination in England

1 Introduction

This document defines the approach adopted by PBA in relation to the assessment of land contamination in England. The aim is for the approach to (i) be systematic and objective, (ii) provide for the assessment of uncertainty and (iii) provide a rational, consistent, transparent framework.

When preparing our methodology, we have made reference to various technical guidance documents and legislation referenced in Section 7 of which the principal documents are (i) Contaminated Land Statutory Guidance (Defra 2012), (ii) the Model Procedures for the Management of Contamination (CLR 11) (EA 2004), (iii) Contaminated land risk assessment: A guide to good practice (C552) (CIRIA 2001) (iv) National Planning Policy Framework (NPPF, 2012 and 2018) and (v) BS 10175 Investigation of potentially contaminated sites - Code of Practice (BSI 2017).

2 Dealing with Land Contamination

Government policy on land contamination aims to prevent new contaminated land from being created and promotes a risk based approach to addressing historical contamination. With regard to historical contamination, regulatory intervention is held in reserve for land that meets the legal definition and cannot be dealt with through any other means, including through planning. Land is only considered to be "contaminated land" in the legal sense if it poses an unacceptable risk.

UK legislation on contaminated land is principally contained in Part 2A of the Environmental Protection Act, 1990 (which was inserted into the 1990 Act by section 57 of the Environment Act 1995). Part 2A was introduced in England on 1 April 2000 and provides a risk-based approach to the identification and remediation of land where contamination poses an unacceptable risk to human health or the environment. In 2004 the Model Procedures for the Management of Contamination (CLR 11) were published providing guidance on how the statutory requirements were to be delivered. The approach, concepts and principles for land contamination management promoted by CLR 11 are applied to the determination of planning applications.

Other legislative regimes may also provide a means of dealing with land contamination issues, such as the regimes for waste, water, environmental permitting, and environmental damage. Further, the law of statutory nuisance may result in contaminants being unacceptable to third parties whilst not attracting action under Part 2A or other environmental legislation.

2.1 Part 2A

The Regulations and Statutory Guidance that accompanied the Act, including the Contaminated Land (England) Regulations 2006, has been revised with the issue of The Contaminated Land (England) (Amendment) Regulations 2012 (SI 2012/263) and the Contaminated Land Statutory Guidance for England 2012.

Part 2A defines contaminated land as "*land which appears to the Local Authority in whose area it is situated to be in such a condition that, by reason of substances in, on or under the land that significant harm is being caused, or there is a significant possibility that such significant harm (SPOSH) could be caused, or significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution (SPOSP) being caused*".

Harm is defined as "*harm to the health of living organisms or other interference with the ecological systems of which they form part, and in the case of man, includes harm to his property*".

Part 2A provides a means of dealing with unacceptable risks posed by land contamination to human health and the environment, and under the guidance enforcing authorities should seek to find and deal with such land. It states that "*under Part 2A the starting point should be that land is not contaminated land unless there is reason to consider otherwise. Only land where unacceptable risks are clearly identified, after a risk assessment has been undertaken in accordance with the Guidance, should be considered as meeting the Part 2A definition of contaminated land"*. Further, the guidance makes it clear that *"regulatory decisions should be based on what is reasonably likely, not what is hypothetically possible".*

The overarching objectives of the Government's policy on contaminated land and the Part 2A regime are:

"(a) To identify and remove unacceptable risks to human health and the environment.
(a) To seek to ensure that contaminated land is made suitable for its current use.
(b) To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of sustainable development".

The enforcing authority may need to decide whether and how to act in situations where decisions are not straight forward, and where there is uncertainty. "*In so doing, the authority should use its judgement to strike a reasonable balance between: (a) dealing with risks raised by contaminants in land and the benefits of remediating land to remove or reduce those risks; and (b) the potential impacts of regulatory intervention including financial costs to whoever will pay for remediation, health and environmental impacts of taking action, property blight, and burdens on affected people".* The authority is required to "*take a precautionary approach to the risks raised by contamination, whilst avoiding a disproportionate approach given the circumstances of each case".* The aim is "*that the regime produces net benefits, taking account of local circumstances*".

The guidance recognises that *"normal levels of contaminants in soils should not be considered to cause land to qualify as contaminated land, unless there is a particular reason to consider otherwise".*

Normal levels are quoted as:

"a) natural presence of contaminants' such as from underlying geology *'that have not been shown to pose an unacceptable risk to health and the environment*
b) …low level diffuse pollution, and common human activity…"

Similarly the guidance states that significant pollution or significant possibility of significant pollution of controlled waters is required for land to be considered contaminated and the "*fact that substances are merely entering water"* or "*where discharge from land is not discernible at a location immediately downstream"* does not constitute contaminated land.

To help achieve a more targeted approach to identifying and managing contaminated land in relation to the risk (or possibility) of harm to human health, the revised Statutory Guidance presented a new four category system for considering land under Part 2A, ranging from Category 4, where there is no risk that land poses a significant possibility of significant harm (SPOSH), or the level of risk is low, to Category 1, where the risk that land poses a significant possibility of significant harm (SPOSH) is unacceptably high.

For land that cannot be readily placed into Categories 1 or 4 further assessment is required. If there is a sufficiently strong case that the risks are of sufficient concern to cause significant harm or have the significant possibility of significant harm the land is to be placed into Category 2. If the concern is not met land is considered Category 3.

The technical guidance clearly states that the currently published SGV and GAC's represent *"cautious estimates of level of contaminants in soils"* which should be considered *"no risk to health or, at most, a minimal risk"*. These values do not represent the boundary between categories 3 and 4 and "*should be considered to be comfortably within Category 4".*

At the end of 2013 technical guidance in support of Defra's revised Statutory Guidance (SG) was published and then revised in 2014 (CL:AIRE 2014) which provided:
• A methodology for deriving C4SLs for four generic land-uses comprising residential, commercial, allotments and public open space; and
• A demonstration of the methodology, via the derivation of C4SLs for six substances – arsenic, benzene, benzo(a)pyrene, cadmium, chromium (VI) and lead.

With regards controlled waters the revised Statutory Guidance states that the following types of pollution should be considered to constitute significant pollution of controlled waters:

"(a) Pollution equivalent to "environmental damage" to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but which cannot be dealt with under those Regulations.
(b) Inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use.
(c) A breach of a statutory surface water Environment Quality Standard, either directly or via a groundwater pathway.
(d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC)".

The guidance also states that, in some circumstances, significant concentrations at a compliance point (in groundwater or surface water) may constitute pollution of controlled waters.

As with SPOSH for human health the revised Statutory Guidance presents a four category system for SPOSP for controlled waters. Category 1 covers land where there is a strong and compelling case for SPOSH, for example where significant pollution would almost certainly occur if no action was taken to avoid it. Category 4 covers land where there is no risk or the risk is low, for example, where the land contamination is having no discernible impact on groundwater or surface water quality. Category 2 is for land where the risks posed to controlled waters are not high enough to consider the land as Category 1 but nonetheless are of sufficient concern to constitute SPOSP, Category 3 is for land where the risks posed to controlled waters are higher than low but not of sufficient concern to constitute SPOSP.

2.2 Planning

The Local Planning Authority (LPA) is responsible for the control of development, and in doing so it has a duty to take account of all material considerations, including contamination.

The principal planning objective is to ensure that any unacceptable risks to human health, buildings and other property and the natural and historical environment from the contaminated condition of the land are identified so that appropriate action can be considered and taken to address those risks.

The National Planning Policy Framework (NPPF, 2012) has been revised in July 2018 (NPPF, 2018).

Paragraph 118 states that planning policies and decisions should "*(c) give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land*."

Paragraph 179 states "*Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner*".

Paragraph 170 states "*planning policies and decisions should contribute to and enhance the natural and local environment by:*

> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans*; *and*
>
> *f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate."*

Paragraph 178 describes the policy considerations the Government expects LPA's to have in regard to land

affected by contamination when preparing policies for development plans and in taking decisions on applications. have been replaced by paragraphs 178 and 180 respectively.

Paragraph 178 states "*planning policies and decisions should ensure that:*

> *a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);*
>
> *b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*
>
> *c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.*"

Paragraph 183 states "*The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.*"

The Glossary in Annex 2 provides the following:

***Brownfield land registers**: Registers of previously developed land that local planning authorities consider to be appropriate for residential development, having regard to criteria in the Town and Country Planning (Brownfield Land Registers) Regulations 2017. Local planning authorities will be able to trigger a grant of permission in principle for residential development on suitable sites in their registers where they follow the required procedures.*

***Competent person (to prepare site investigation information)**: A person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation.*

***Previously developed land**: Land which is or was occupied by a permanent structure, including the curtilage of the developed land (although it should not be assumed that the whole of the curtilage should be developed) and any associated fixed surface infrastructure. This excludes: land that is or was last occupied by agricultural or forestry buildings; land that has been developed for minerals extraction or waste disposal by landfill, where provision for restoration has been made through development management procedures; land in built-up areas such as residential gardens, parks, recreation grounds and allotments; and land that was previously developed but where the remains of the permanent structure or fixed surface structure have blended into the landscape.*

***Site investigation information**: Includes a risk assessment of land potentially affected by contamination, or ground stability and slope stability reports, as appropriate. All investigations of land potentially affected by contamination should be carried out in accordance with established procedures (such as BS10175 Investigation of Potentially Contaminated Sites – Code of Practice).* This in turn links to procedures in CLR11 which PBA adopt.

PBA adopt the principle that a Phase 1 desk study is the minimum assessment requirement for planning applications.

The level at which contamination is deemed to be unacceptable, or, gives rise to adverse effects under a planning context has not been identified but is envisaged to be more precautionary than the level required to detrmine land as contaminated under Part 2A.

2.3 Building Control

The building control department of the local authority or private sector approved inspectors are responsible for the operation and enforcement of the Building Regulations (DCLG 2010) to protect the health, safety and welfare of people in and around buildings. Approved Document C requires the protection of buildings and associated land from the effects of contamination, to be applied (non-exclusively) in all changes of use from commercial or industrial premises, to residential property.

3 Approach

CLR 11 recommends a phased or tiered approach to risk assessment with the three tiers being:-

- Tier 1 - preliminary – a qualitative assessment forming part of a Phase 1 report,
- Tier 2 - generic - a quantitative assessment using published criteria to screen site specific ground condition data forming part of a Phase 2 report
- Tier 3 - detailed – a quantitative assessment involving the generation of site specific assessment criteria

Each tier of risk assessment comprises the following four stages:-

1. Hazard Identification – identifying potential contaminant sources on and off site;
2. Hazard Assessment – assessing the potential for unacceptable risks by identifying what pathways and receptors could be present, and what pollutant linkages could result (forming the Conceptual Site Model (CSM));
3. Risk Estimation – estimating the magnitude and probability of the possible consequences (what degree of harm might result to a defined receptor and how likely); and
4. Risk Evaluation – evaluating whether the risk needs to be, and can be, managed.

A PBA Phase 1 report normally comprises a desk study, walkover and Tier 1 risk assessment (the project specific proposal defines the actual scope of work). At Tier 1 the PBA approach to risk estimation involves identifying the magnitude of the potential consequence

(taking into account both the potential severity of the hazard and the sensitivity of the receptor) and the magnitude of the likelihood i.e. the probability (taking into account the presence of the hazard and the receptor and the integrity of the pathway). This approach is promoted in current guidance such as R&D 66 (NHBC 2008).

The PBA approach is that if a pollution linkage is identified then it represents a potential risk which requires further consideration and either (1) remediation / direct risk management or (2) further tiers of assessment.

A PBA preliminary Phase 2 report comprises an intrusive investigation to collect site specific information, a Tier 2 quantitative generic risk assessment and a refinement of the CSM using the site specific data. Depending on the findings further investigation and/or progression to Tier 3 risk assessment and the generation of site specific assessment criteria may be required.

4 Identification of Pollutant Linkages and Conceptual Site Model (CSM)

For all Tiers of Risk Assessment the underlying principle to ground condition assessment is the identification of *pollutant linkages* in order to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences. A pollutant linkage consists of the following three elements:-

- A source/hazard – a substance or situation which has the potential to cause harm or pollution;
- A pathway – a means by which the hazard moves along / generates exposure; and
- A receptor/target – an entity which is vulnerable to the potential adverse effects of the hazard.

The *Conceptual Site Model* identifies the types and locations of potential contaminant sources/hazards and potential receptors and potential migration/transportation pathway(s). The CSM is refined as the assessment progresses through the Tiers.

4.1 Hazard Identification

A hazard is a substance or situation that has the potential to cause harm. Hazards may be chemical, biological or physical.

At Tier 1 the potential for hazards to be present is determined from consideration of the previous or ongoing activities on or near to the site in accordance with the criteria presented in the **Table 1**.

Based on the land use information Contaminants of Potential Concern (COPC) are identified. The COPC direct the scope of the collection of site specific data and the analytical testing selected for subsequent Tiers.

At Tier 2 the site specific data is screened using appropriate published assessment criteria (refer to PBA document entitled Rationale for the Selection of Tier 2 Assessment Criteria). In general, published criteria have been developed using highly conservative assumptions and therefore if the screening criterion is not exceeded (and assuming that sufficient samples from appropriate locations have been analysed) then the COPC is eliminated as a potential Hazard. It should be noted that exceedance does not necessarily indicate that a site is contaminated and/or unsuitable for use only that the COPC is retained as a potential Hazard. Published criteria are generated using models based on numerous and complex assumptions. Whether or not these assumptions are appropriate in a site-specific context requires confirmation on a project by project basis and would normally form part of a Tier 3 assessment.

When reviewing or assessing site specific data PBA utilise published guidance on comparing contamination data with a critical concentration (CL:AIRE/CIEH 2008) which presents a structured process for employing statistical techniques for data assessment purposes. The benefit of the statistical tool is uncertainty in estimating the representative exposure/source concentration) is quantified and decisions are made knowing the strength of the evidence. Correct decision probability is a function of sample size, difference in the mean and the critical concentration, variation in measured values and the significance level.

4.2 Receptor and Pathway Identification

For all Tiers the potential receptors (for both on site and adjoining land) that will be considered are:

- Human Health – including current and future occupiers, construction and future maintenance workers, and neighbouring properties/third parties;
- Ecological Systems; *1
- Controlled Waters *2 – including surface water and groundwater;
- Property - Animal or Crop (including timber; produce grown domestically, or on allotments, for consumption; livestock; other owned or domesticated animals; wild animals which are the subject of shooting or fishing rights); and
- Property - Buildings (including archaeological sites and ancient monuments).

*1 International or nationally designated sites (as defined in the statutory guidance (Defra Circular 04/12)) "in the local area" will be identified as potential ecological receptors. A search radius of 1, 2 or 5km will be utilised depending on the site specific circumstances (see also pathway identification). The Environment Agency has published an ecological risk assessment framework (EA 2008) which promotes (as opposed to statutorily enforces) consideration of additional receptors to include locally protected sites and protected or notable species. These additional potential receptors will only be considered if a Phase 1 habitat survey, undertaken in accordance with guidance (JNCC 1993), is commissioned and the data provided to PBA. It should be noted that without such a survey the Tier 1 risk assessment may conclude that the identification of potential ecological receptors is inconclusive (refer to PBA Specification for Phase 1).

*2 the definition of "pollution of controlled water" was amended by the introduction of Section 86 of the Water Act 2003. For the purposes of Part 2A groundwater does not include waters above the saturated zone and our assessment does not therefore address perched water other than where development causes a pathway to develop.

If a receptor is taken forward for further assessment it will be classified in terms of its sensitivity, the criteria for which are presented in **Table 2**. Table 2 has been generated using descriptions of environmental receptor

importance/value given in various guidance documents including R&D 66 (NHBC 2008) and Transport Analysis Guidance (based on DETR 2000). Human health and buildings classifications have been generated by PBA using the attribute description for each class.

The exposure pathway and modes of transport that will be considered are presented in **Table 3**.

4.3 Note regarding Ecological Systems

The Environment Agency (EA) has developed an ecological risk assessment framework which aims to provide a structured approach for assessing the risks to ecology from chemical contaminants in soils (EA 2008). In circumstances where contaminants in water represent a potential risk to aquatic ecosystems then risk assessors will need to consider this separately.

The framework consists of a three tiered process:-

- Tier 1 is a screening step where the site soils chemical data is compared to a soil screening value (SSV)
- Tier 2 uses various tools (including surveys and biological testing) to gather evidence for any harm to the ecological receptors
- Tier 3 seeks to attribute the harm to the chemical contamination

Tier 1 is preceded by a desk study to collate information about the site and the nature of the contamination to assess whether pollutant linkages are feasible. The framework presents ten steps for ecological desk studies and development of a conceptual site model as follows.

1 Establish Regulatory Context
2 Collate and Assess Documentary Information
3 Summarise Documentary Information
4 Identify Contaminants of Potential Concern
5 Identify Likely Fate Transport of Contaminants
6 Identify Potential Receptors of Concern
7 Identify Potential Pathways of Concern
8 Create a Conceptual Site Model
9 Identify Assessment and Measurement Endpoints
10 Identify Gaps and Uncertainties

The information in a standard PBA Phase 1 report covers Steps 1 to 4 inclusive. Step 5 considers fate and transport of contaminants and it should be noted that our standard report adopts a simplified approach considering only transport mechanisms. A simplified approach has also been adopted in respect of Steps 6 and 7 receptors (a detailed review of the ecological attributes has not been undertaken) and pathways (a food chain assessment has not been undertaken). Step 9 is outside the scope of our standard Phase 1 report.

It should be noted that the Tier 1 assessment for ecological systems (i.e. where designated sites are identified) as part of a Phase 1 report will assess the viability of the mode of transport given the site specific circumstances and not specific pathways.

The Tier 1 risk assessment may conclude that the risk to potential ecological receptors is inconclusive (see PBA Specification for Phase 1).

4.4 Note regarding Controlled Waters

Controlled Waters are rivers, estuaries, coastal waters, lakes and groundwaters, but not perched waters.

The EU Water Framework Directive (WFD) 2000/60/EC provides for the protection of sub-surface, surface, coastal and territorial waters through a framework of river basin management. The EU Updated Water Framework Standards Directive 2014/101/EU amended the EU WFD to update the international standards therein; it entered into force on 20 November 2014 with the requirements for its provisions to be transposed in Member State law by 20 May 2016. Other EU Directives in the European water management framework include:

- the EU Priority Substances Directive 2013/39/EU;
- EU Groundwater Pollutants Threshold Values Directive 2014/80/EU amending the EU Groundwater Directive 2006/118/EC; and
- EU Biological Monitoring Directive 2014/101/EU.

The Ground Water Daughter Directive (GWDD) was enacted by the Groundwater Regulations (2009), which were subsumed by the Environmental Permitting Regulations (2010) which provide essential clarification including on the four objectives specifically for groundwater quality in the WFD: -

- Achieve ‘Good’ groundwater chemical status by 2015, commonly referred to as ‘status objective’;
- Achieve Drinking Water Protected Area Objectives;
- Implement measures to reverse any significant and sustained upward trend in groundwater quality, referred to as ‘trend objective’; and
- Prevent or limit the inputs of pollutants into groundwater, commonly referred to as ‘prevent or limit’ objectives

The Water Act 2003 (Commencement No.11) Order 2012 amends the test for 'contaminated land' which relates to water pollution so that pollution of controlled waters must now be "significant" to meet the definition of contaminated land.

River Basin Management Plans (RBMP) have been developed for the 11 River Basin Districts in England and Wales. These were released by Defra in 2009 (Defra 2009) and these were updated in 2015.

These RBMP’s establish the current status of waters within the catchments of the respective Districts and the current status of adjoining waters identified. As part of a Tier 2 risk assessment water quality data is screened against the WFD assessment criteria. Comparison with the RBMP’s current status of waters for the catchment under consideration would form part of a Tier 3 assessment.

5 Risk Estimation

Risk estimation classifies what degree of harm might result to a receptor (defined as consequence) and how likely it is that such harm might arise (probability).

At Tier 1 the consequence classification is generated by multiplying the hazard classification score and the receptor sensitivity score. This approach follows that presented in the republished R&D 66 (NHBC 2008).

The criteria for classifying probability are set out in **Table 4** and have been taken directly from Table 6.4 CIRIA C552 (CIRIA 2001). Probability considers the integrity of the exposure pathway.

The consequence classifications detailed in **Table 5** have been adapted from Table 6.3 presented in C552 and R&D 66 (Annex 4 Table A4.3).

The Tier 1 risk classification is estimated for each pollutant linkage using the matrix given in **Table 6** which is taken directly from C552 (Table 6.5).
Subsequent Tiers refine the CSM through retention or elimination of potential hazards and pollutant linkages.

6 Risk Evaluation

Risk evaluation is used to determine whether the risk is acceptable or not. It includes consideration of the risk estimation and associated uncertainties.

The PBA Tier 1 methodology provides an estimate of the level of risk, but does not identify a risk level at which the risk is considered "significant" and/or "unacceptable" as this is dependent on the view of the individual / stakeholder. For example; to a risk adverse stakeholder even a risk level of "very low" may be considered unacceptable and as such this stakeholder may require risk management options to be implemented.

In order to put the Tier 1 risk classification into context the likely actions are described in **Table 7** which is taken directly from C552 (Table 6.6). Subsequent Tiers identify potential risk management options through remediation and/or mitigation measures.

7 References

BSI 2007 BS 8485 Code of Practice for characterisation and remediation from ground gas in affected developments.
BSI 2017 BS 10175:2011+A2:2017 Investigation of potentially contaminated sites - Code of Practice

CIRIA 2001: Contaminated land risk assessment – a guide to good practice C552.

CIRIA 2008: Assessing risks posed by hazardous ground gases to buildings C655

CL:AIRE/EIH 2008 Guidance on Company Soil Contamination Data with a Critical Concentration. Published by Contaminated Land: Applications in Real Environments (CL:AIRE)

CL:AIRE 2013 SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. Final Project Report published by Contaminated Land: Applications in Real Environments (CL:AIRE) 20th December 2013

DCLG 2010 Building Regulations 2010 Approved Document C Site preparation and resistance to contaminants and moisture.

NPPF, 2012 National Planning Policy Framework. (2012). 1st ed. [ebook] London: Department for Communities and Local Government.

NPPF 2018 National Planning Policy Framework (2018). 2nd ed. London: Ministry of Housing, Communities and Local Government.

DETR 2000 Methodology for Multi Modal Studies. Volume 2 Section 4. The Environmental Objective.

Defra Circular 01/2006

Defra Circular 04/2012 Environmental Protection Act 1990: Part 2A. Contaminated Land Statutory Guidance.

DEFRA, 2006 The Contaminated Land (England) Regulations 2006.

DEFRA, 2012 The Contaminated Land (England) (Amendment) Regulations 2012 (SI2012/263).

DEFRA, 2012 Environmental Protection Act 1990: Part 2A. Contaminated Land Statuary Guidance. April 2012.

DEFRA, 2013 Environmental Damage (Prevention and Remediation) Regulations 2009: Guidance for England and Wales

Defra '2009 Water for Life and Livelihoods. River Basin Management Plan. (11 Districts: Anglia, Dee, Humber, Northumbria, Northwest, Severn, Solway and Tweed, Southeast, Thames, Western Wales) December 2009

EA 2004: The Model Procedures for the Management of Land Contamination CRL 11 published by the Environment Agency (EA).

EA 2008 Ecological Risk Assessment Science Report Series SC070009 published by the Environment Agency (EA).

JNCC 1993 Handbook for Phase 1 Habitat Survey – A Technical for Environmental Audit prepared by the Joint Nature Conservancy Council (JNCC)

NHBC/EA/CIEH 2008: R&D Publication 66 Guidance for the safe development of housing on land affected by contamination.

Table 1: Criteria for Classifying Hazards / Potential for Generating Contamination

Classification/Score	Potential for generating contamination/gas based on land use
Very Low 1	Land Use: Greenfield Contamination: None. Gas generation potential : Inert Made Ground
Low 2	Land Use: Residential, retail or office use, recent small scale industrial. Contamination: None or locally slightly elevated concentrations. Gas generation potential : Shallow thickness of alluvium
Moderate 3	Land Use: Railway yards, collieries, scrap yards, light industry, engineering works. Contamination: Locally elevated concentrations. Gas generation potential : Dock silt and substantial thickness of organic alluvium/peat
High 4	Land Use: Gas works, chemical works, heavy industry, non-hazardous landfills. Contamination: Possible widespread elevated concentrations. Gas generation potential : Shallow mine workings Pre 1960's landfill
Very High 5	Land Use: Hazardous waste landfills. Contamination: Likely widespread elevated concentrations. Gas generation potential: Domestic landfill post 1960

"Greenfield" is land which has not been developed.. This can include land only used for agriculture but it should be recognised there is a potential for localised contamination of buried animal pits and diffuse pollution and this possibility should be considered in the risk assessment.

Table 2: Criteria for Classifying Receptor Sensitivity/Value

Classification/Score	Definition
Very Low 1	Receptor of limited importance Groundwater: Non aquifer Surface water: Water body within 25m or eliminate Ecology: No local designation Buildings: Replaceable Human health: Unoccupied/limited access
Low 2	Receptor of local or county importance with potential for replacement Groundwater: Secondary B aquifer or Secondary Undifferentiated Surface water: Tertiary water body immediately adjacent Ecology: local habitat resources Buildings: Local value Human health: Minimum score 4 where human health identified as potential receptor
Moderate 3	Receptor of local or county importance with potential for replacement Groundwater: Secondary A aquifer Surface water: Secondary water body immediately adjacent Ecology: County wildlife sites, Areas of Outstanding Natural Beauty (AONB) Buildings: Area of Historic Character Human health: Minimum score 4 where human health identified as potential receptor
High 4	Receptor of county or regional importance with limited potential for replacement Groundwater: Principal aquifer Surface water: Primary water body immediately adjacent Ecology: SSSI, National or Marine Nature Reserve (NNR or MNR) Buildings: Conservation Area Human health: Minimum score 4 where human health identified as potential receptor
Very High 5	Receptor of national or international importance Groundwater: Source Protection Zone Surface water: Primary water body on site Ecology: Special Areas of Conservation (SAC and candidates), Special Protection Areas (SPA and potentials) or wetlands of international importance (RAMSAR) Buildings: World Heritage site Human health: Residential, open spaces and uses where children are present

Table 3: Exposure Pathway and Modes of Transport

Receptor	Pathway	Mode of transport
Human health	Ingestion	Fruit or vegetable leaf or roots
		Contaminated water
		Soil/dust indoors
		Soil/dust outdoors
	Inhalation	Particles (dust / soil) – outdoor
		Particles (dust / soil) - indoor
		Vapours – outdoor - migration via natural or anthropogenic pathways
		Vapours - indoor - migration via natural or anthropogenic pathways
	Dermal absorption	Direct contact with soil
		Direct contact with waters (swimming / showering)
		Irradiation
Groundwater	Leaching	Gravity / permeation
	Migration	Natural – groundwater as pathway Anthropogenic (e.g. boreholes, culverts, pipelines etc.)
Surface Water	Direct	Runoff or discharges from pipes
	Indirect	Recharge from groundwater
	Indirect	Deposition of wind blown dust
Buildings	Direct contact	Sulphate attack on concrete, hydrocarbon corrosion of plastics
	Gas ingress	Migration via natural or anthropogenic paths
Ecological systems	See Notes	Runoff/discharge to surface water body
	See Notes	Windblown dust
	See Notes	Groundwater migration
	See Notes	At point of contaminant source
Animal and crop	Direct	Wind blown or flood deposited particles / dust / sediments
	Indirect	Plants via root up take or irrigation. Animals through watering
	Inhalation	By livestock / fish - gas / vapour / particulates / dust
	Ingestion	Consumption of vegetation / water / soil by animals

Table 4: Classification of Probability

Classification	Definition
High likelihood	There is a pollution linkage and an event either appears very likely in the short-term and almost inevitable over the long-term, or there is already evidence at the receptor of harm / pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter-term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.

Table 5: Classification of Consequence (score = magnitude of hazard Table 1 and sensitivity of receptor Table 2)

Classification / Score	Examples
Severe **17-25** **(3 out of 25 outcomes)**	Human health effect - exposure likely to result in "significant harm" as defined in the Defra (2012) Part 2A Statutory Guidance [1]. Controlled water effect - short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Equivalent to EA Category 1 incident (persistent and/or extensive effects on water quality leading to closure of potable abstraction point or loss of amenity, agriculture or commercial value. Major fish kill. Ecological effect - short-term exposure likely to result in a substantial adverse effect. Catastrophic damage to crops, buildings or property
Medium **10-16** **(7 out of 25 outcomes)**	Human health effect - exposure could result in "significant harm" [1]. Controlled water effect - equivalent to EA Category 2 incident requiring notification of abstractor Ecological effect - short-term exposure may result in a substantial adverse effect. Damage to crops, buildings or property
Mild **5-9** **(7 out of 25 outcomes)**	Human health effect - exposure may result in "significant harm" [1]. Controlled water effect - equivalent to EA Category 3 incident (short lived and/or minimal effects on water quality). Ecological effect - unlikely to result in a substantial adverse effect. Minor damage to crops, buildings or property. Damage to building rendering it unsafe to occupy (for example foundation damage resulting in instability).
Minor **1-4** **(8 out of 25 outcomes)**	No measurable effect on humans. Protective equipment is not required during site works. Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems. Repairable effects to crops, buildings or property. The loss of plants in a landscaping scheme. Discolouration of concrete.

Note: 1. Significant harm includes death, disease, serious injury, genetic mutation, birth defects or impairment of reproductive function. The local authority may also consider other health effects to constitute significant harm such as physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. Whether or not these would constitute significant harm would depend on the seriousness of harm including impact on health, quality of life and scale of impact.

Table 6: Classification of Risk (Combination of Consequence Table 5 and Probability Table 4)

	Consequence			
Probability	***Severe***	***Medium***	***Mild***	***Minor***
High likelihood	Very high	High	Moderate	Low
Likely	High	Moderate	Moderate/	Low
Low likelihood	Moderate	Moderate	Low	Very low
Unlikely	Low	Low	Very low	Very low

Table 7: Description of Risks and Likely Action Required

Risk Classification	Description
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation is likely to be required in the short term.
High risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer-term.
Moderate risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Appendix 2 PBA Rationale for Selection of Criteria Used in Tier 2 (Generic) Risk Assessment (England)

1 Introduction

The aim of this document is to present an explanation for the selection of the assessment criteria routinely used by PBA when undertaking a Tier 2 (generic) contamination risk assessment.

A Tier 2 assessment is a quantitative assessment using published criteria to screen the site-specific contamination testing data and identify potential hazards to specific receptors. Generic criteria are typically conservative in derivation and exceedance does not indicate that a site is statutorily contaminated and/or unsuitable for use in the planning context. These criteria are used to identify situations where further assessment and/or action may be required.

This document is divided into general introductory text and sections on soils, waters and gases.

2 General Notes

This document should be read in conjunction with another entitled "PBA Methodology for Assessment of Land Contamination" which summarises the legislative regime and our approach to ground contamination and risk assessment.

Any PBA interpretation of contamination test results is based on a scientific and engineering appraisal. The perceptions of, for example, banks, insurers, lay people etc are not taken into account.

Any tables included in this document are produced for ease of reference to the criteria, they do not in any way replace the documents of origin (which are fully referenced) and which should be read to ensure appropriate use and interpretation of the data.

Generic criteria provide an aid to decision-making, but they do not replace the need for sound professional judgement in risk assessment (EA, 2006). The criteria are based on numerous and complex assumptions. The appropriateness of these assumptions in a site-specific context requires confirmation on a project by project basis. Our interpretative report will comment on the appropriateness of the routine criteria for project objectives or ground conditions. In some cases the published criteria whilst typically conservative may in some circumstances not be suitable for the site being assessed, either because they do not address the identified pollutant linkages or because they may not be sufficiently precautionary in the context of the site. Under these circumstances it may be necessary to recommend deriving site-specifc assessment criteria. Any deviation from the routine criteria and/or selection of criteria for parameters not covered in this document will be described in the report text.

3 Criteria for Assessing Soil Results

3.1 Potential Harm to Human Health

The criteria routinely used by PBA as Tier 2 soil screening values for the protection of human health are:-

- LQM/CIEH Suitable 4 Use Levels (S4ULs) (Nathanail *et al*, 2015);
- CL:AIRE/EIC/AGS Generic Assessment Criteria (GAC) (CL:AIRE, 2010);
- Environment Agency Soil Guideline Values (SGVs) (EA, 2009a); and
- Defra Category 4 Screening Levels (C4SLs) (DEFRA, 2014);

These criteria have been generated using the Contaminated Land Exposure Assessment model (CLEA) and supporting technical guidance (EA, 2009b, 2009c, 2009d, 2009e). The CLEA model uses generic assumptions about the fate and transport of chemicals in the environment and a generic conceptual model for site conditions and human behaviour to estimate child and adult exposures to soil contaminants for those potentially living, working, and/or playing on contaminated sites over long time periods (EA, 2009c).

The S4ULs, SGVs and GAC are all based on use of minimal/tolerable risk Health Criteria Values (HCVs) as the toxicological benchmark whereas the C4SL are based on use of a "low level of toxicological concern" (LLTC) as the toxicological benchmark. The LLTC represents a slightly higher level of risk than the HCV.

An update to the software (1.071) was published on 04/09/2015 (handbook (EA 2009f) referring to version 1.05 is still valid). The update includes the library data sets from the DEFRA research project SP1010 (Development of Category 4 Screening Levels for assessment of land affected by contamination).

The CLEA model uses ten exposure pathways (Ingestion (outdoor soil, indoor dust, homegrown vegetables and soil attached to homegrown vegetables), Dermal Contact (outdoor soil and indoor dust) and Inhalation (outdoor dust, indoor dust, outdoor vapours and indoor vapours)). There are exposure pathways not included in the CLEA model such as the permeation of organics into plastic water supply pipes.

The presence and/or significance of each of the potential exposure pathways is dependent on the land use being considered. The model uses standard land use scenarios as follows:-

Residential – habitation of a dwelling up to two storeys high with various default material and design parameters, access to either private or nearby community open space with soil track back to form indoor dust. Assumes ingestion of

homegrown produce.

Allotments – the model has default parameters for use and consumption of vegetables but not animals or their products (eggs).

Industrial/Commercial – assumes office or light physical work in a permanent three storey structure with breaks taken outside and that the site is NOT covered in hardstanding.

Public Open Space – two public open space (POS) scenarios are considered: POS_{resi} is shared communal space within a residential development where tracking back of soil into the home is assumed to occur. POS_{park} is intended for a public park sufficiently distant from housing (i.e. not adjacent to housing) such that tracking back of soil into the home is negligible. Note that the POS assessment criteria may not be appropriate for assessing sports fields.

The assessment criteria generated using CLEA can be used as a conservative starting point for evaluating long-term risks to human health from chemicals in soil.

It is important to note that the model does not assess all the potential exposure scenarios, for example risk to workers in excavations (short term exposure) or diffusion of contaminants through drinking water pipes.

Recent guidance (DEFRA 2012) introduces a four stage classification system where Category 1 sites are clearly contaminated land and Category 4 sites are definitely not contaminated land as defined by EPA 1990. Outside of these categories further specific risk assessment is required to determine if the site should fall into Category 2 (contaminated land) or Category 3 (not contaminated land). Category 4 screening values are considered to be more pragmatic than the current published SGV/GAC criteria but still strongly precautionary with the aim of allowing rapid identification of sites where the risk is above minimal but still low/acceptable.

Category 4 Screening Levels (C4SLs)

At the end of 2013, technical guidance in support of DEFRA's revised Statutory Guidance (SG) was published and then revised in 2014 (CL:AIRE 2014) which provided:

- A methodology for deriving C4SLs for the standard land-uses and two new public open space scenarios using the updated assumptions relating to the modelling of human exposure to soil contaminants; and
- A demonstration of the methodology, via the derivation of C4SLs for six substances – arsenic, benzene, benzo(a)pyrene, cadmium, chromium (VI) and lead.

Following issue of an Erratum in December 2014 a Policy Companion Document was published (DEFRA 2014).

A letter from Lord de Mauley dated 3rd September 2014 provides more explicit direction to local authorities on the use of the C4SL in a planning context. The letter identifies four key points:

1) that the screening values were developed expressly with the planning regime in mind
2) their use is recommended in DCLG's planning guidance
3) soil concentrations below a C4SL limit are considered to be 'definitely not contaminated' under Part IIA of the 1990 Environmental Protection Act and pose at most a 'low level of toxicological concern' and
4) exceedance of a C4SL screening value does not mean that land is definitely contaminated land, just that further investigation may be warranted.

Table 1 summarises the C4SL (DEFRA 2014) for each of the six substances. PBA uses the criterion for lead and may use the other criteria, depending on site specific conditions.

Note that an industry led project to derive C4SL for a further 20 substances has commenced (CL:AIRE, 2018). The project is being project managed by CL:AIRE and is funded by the Soil and Groundwater Technology Association (SAGTA), the Society of Brownfield Briefing (SoBRA) and others. A dedicated streering group, made up of representatives from SAGTA, Defra, Welsh Government, Public Health England, Environment Agency, Natural Resources Wales, Food Standards Agency, Homes England and further Land Forum representatives, has been set up to oversee the project. The new C4SL will be added to this document as they are published.

Suitable 4 Use Levels (S4ULs)

In July 2009, Generic Assessment Criteria (GACs) for 82 substances were published by the Chartered Institute of Environmental Health (CIEH) (LQM and CIEH, 2009) using the then current version of the CLEA software v1.04 and replacing those generated in 2006 using the original version of the model CLEA UK *beta*. In 2015 S4ULs were published by LQM/CIEH (Nathanail *et al*, 2015) to replace the second edition GACs. Table 2 summarises the S4ULs which are reproduced with permission; Publication Number S4UL3202.

Soil Guideline Values (SGVs) and Generic Assessment Criteria (GAC)

In 2009, Soil Guideline Values (SGVs) were published by the Environment Agency for arsenic, cadmium, mercury, nickel, selenium, benzene, toluene, ethyl benzene, xylenes, phenol and dioxins, furans and dioxin-like PCBs. These were derived using the CLEA model for residential, allotments and commercial land-uses.

These SGVs have now largely been superceded by the C4SL and LQM/CIEH S4UL, with the exception of the SGVs for dioxins, furans and dioxin-like PCBs which have been adopted as the PBA Tier 2 assessment criteria and which are shown in Table 3.

In January 2010, Generic Assessment Criteria (GAC) derived using CLEA were published by CL:AIRE for 35 substances. These GAC are listed in Table 4.

Note that the SGVs for dioxins, furans and dioxin like PCBs and CL:AIRE GAC were derived using an older version of CLEA (v1.06) than used to derive the S4UL and C4SL (v1.07). This older version used slightly more conservative values for some exposure parameters and therefore the derived SGVs/GAC are still considered suitably precautionary for use as screening criteria.

Note on Mercury, Chromium and Arsenic Assessment The analytical testing routinely undertaken by PBA determines total concentration, however, the toxicity depends on the form of the contaminant.

If a source of Mercury, Chromium or Arsenic is identified or the total concentration exceeds the relevant worst case speciated criteria it will be desirable/necessary to undertake additional speciated testing and further assessment.

Note on Polycyclic Aromatic Hydrocarbons Polycyclic Aromatic Hydrocarbons (PAHs) are a family of hundreds of different congeners whose chemical structures contain 2 or more fused aromatic rings. Whilst it is recognised that there is an ongoing debate on the most appropriate method to assess health effects of PAH mixtures, in 2010 the Health Protection Agency recommended the use of benzo[a]pyrene (BaP) as a surrogate marker approach in the assessment of carcinogenic risks posed by PAHs in soils (HPA, 2010).

In most cases, BaP is chosen as the surrogate marker (SM) due to its ubiquitous nature and the vast amount of data available and has been used by various authoritative bodies to assess the carcinogenic risk of PAHs in food. The SM approach estimates the toxicity of a mixture of PAHs in an environmental matrix by using toxicity data for a PAH mixture for which the composition is known.

Exposure to the SM is assumed to represent exposure to all PAHs in that matrix therefore the toxicity of the SM represents the toxicity of the mixture. The SM approach relies on a number of assumptions (HPA, 2010).

- The SM (BaP) must be present in all the samples.
- The profile of the different PAH relative to BaP should be similar in all samples.
- The PAH profile in the soil samples should be sufficiently similar to that used in the pivotal toxicity study on which HBGV was based i.e. the Culp study (Culp et al. (1998)).

In order to justify the use of a surrogate marker assessment criterion (C4SL for benzo(a)pyrene and S4UL coal tar) the LQM PAH Profiling Tool is used by PBA to assess the similarity of the PAH profile in a soil sample to that of the toxicity study. The spreadsheet that calculates the relative proportions of the genotoxic PAHs and plots them on the two charts relative to composition of the two coal mixtures used by Culp et al. (the plus/minus an order of magnitude limits suggested by HPA).

Note on Total Petroleum Hydrocarbons

The S4UL for Total Petroleum Hydrocarbon (TPH) fractions are based on 'threshold' health effects. In accordance with Environment Agency guidance (EA, 2005) and the S4UL report (Nathanail *et al*, 2015) the potential for additivity of toxicological effects between fractions should be considered. Practically, to address this issue the hazard quotient (HQ) for each fraction should be calculated by dividing the measured concentration of the fraction by the GAC. The HQs are then added to form a hazard index (HI) for that sample. An HI greater than 1 indicates an exceedance.

Note on Dioxins, Furans and Dioxin-like PCBs

The SGVs for dioxins, furans and dioxin-like PCBs are based on an assumed congener profile for urban soils. The total measured concentration of dioxin, furan and dioxin-like PCB congeners listed in the SGV report (EA, 2009a) should be compared with the SGVs to make an initial assessment of risk. A more accurate assessment can be made using the Environment Agency's site specific worksheet for dioxins, furans and dioxin like PCBs available from https://www.claire.co.uk/useful-government-legislation-and-guidance-by-country/77-risk-assessment-info-ra/199-dioxins-site-specific-worksheets.

Note on Asbestos

Asbestos in soil and made ground is currently under review by a number of bodies. There are no current published guidance values for asbestos in soil other than the waste classification values given in the EA's Technical Guidance WM3, Hazardous Waste – Interpretation of the definition and classification of hazard waste (3rd Edition, EA, 2015). This guidance is only appropriate for soils that are being discarded as waste.

Testing for asbestos will be carried out on selected samples of made ground encountered during investigation, initially samples will be

subjected to an asbestos screen and, if asbestos is found to be present, subjected to quantification depending on the project specific requirements. The reader is directed to the report text for guidance on the approach adopted in respect to any asbestos found to be present.

Further guidance is also available in publication C733, Asbestos in soil and made ground: a guide to understanding and managing risks (CIRIA 2014).

Note on Soil Saturation Concentration

The soil saturation concentration is the concentration of an organic constituent in soil at which either the pore water or soil vapour has theoretically become saturated with the substance, i.e. the substance concentration has reached its maximum aqueous solubility or vapour pressure. The soil saturation concentration is related to the properties of the substance as well as the properties of the soil (including soil organic matter content).

The soil saturation concentrations are shown in Table 2 in brackets where exceeded by the assessment criteria and in Table 4 for all substances. Measured concentrations in excess of the soil saturation concentration have various potential implications as discussed below.

Firstly, where measured concentrations exceed the soil saturation concentration, the risk from vapour inhalation and/or consumption of produce may be limited. The CLEA model calculates the soil saturation concentration but it does not limit exposure where this concentration is exceeded. This adds an additional level of conservatism for CLEA derived assessment criteria where these exceed the calculated soil saturation concentration.

Secondly, the soil saturation concentration is sometimes used to flag the potential presence of non aqueous phase liquid (NAPL, a.k.a. free phase) in soil. The presence of NAPL is an important consideration in the Tier 2 assessment because, where present, the risks from NAPL may need to be considered separately. Theoretically, where a measured concentration exceeds the soil saturation concentration NAPL could be present. However, using theoretical saturation values is not always reliable for the following reasons:The soil saturation concentration is based on the aqueous solubility and vapour pressure of a pure substance and not a mixture, of which NAPLs are often comprised; and

The soil saturation concentration does not account for the sorption capacity of the soil. As a result, exceedance of the soil saturation concentration does not necessarily imply that NAPL is present. This is particularly the case for longer chain hydrocarbons such as PAHs which have low solubility and vapour pressure and hence a low soil saturation concentration but that are strongly sorbed to soil.

The PBA Tier 2 Assessment will compare measured concentrations with the soil saturation concentrations shown in Tables 2 and 4. Where exceeded PBA will use additional lines of evidence (such as visual evidence and concentration of total TPH) to determine whether or not NAPL is likely to be present. If the presence of NAPL is deemed plausible the implications will be considered in the risk assessment.

3.2 Potential Harm to the Built Environment

Land contamination can pose risks to buildings, building materials and services (BBM&S) in a number of ways. Volatile contaminants and gases can accumulate and cause explosion or fire. Foundations and buried services can be damaged by corrosive substances and contaminants such as steel slags can create unstable ground conditions through expansion causing structural damage.

PBA use the following primary guidance to assess the significance of soil chemistry with respect to its potential to harm the built environment.

i) Approved Document C - Site Preparation and Resistance to Contaminants and Moisture. (DCLG, 2013);

ii) Concrete in aggressive ground SD1 (BRE 2005);

iii) Guidance for the selection of water supply pipes to be used in brownfield sites (UKWIR 2011);

iv) Protocols published by agreement between Water UK and the Home Builders Federation providing supplementary guidance which includes the Risk Assessment for Water Pipes (the 'RA') (Water UK 2014).

v) Performance of Building Materials in Contaminated Land report BR255 (BRE 1994).

vi) Risks of Contaminated Land to Buildings, Building Materials and Services. A Literature Review - Technical Report P331 (EA, 2000).

vii) Guidance on assessing and managing risks to buildings from land contamination - Technical Report P5 035/TR/01 (EA, 2001).

3.3 Potential to Harm Ecosystems, Animals, Crops etc

The criteria routinely used by PBA as Tier 2 screening values to assess the potential of soil chemistry to harm ecosystems are taken from the following guidance and are summarised in Table 5.

i) Derivation and Use of Soil Screening Values for assessing ecological risks. Report – ShARE id26 by the Environment Agency, Bristol (EA, 2017a);

ii) The Restoration and Aftercare of Metalliferous Mining Sites for Pasture and Grazing (ICRCL 70/90, 1990);

iii) Sewage sludge on farmland: code of practice for England, Wales and Northern Ireland (Defra, 2017a); and

iv) BS 3882:2015 Specification for topsoil and requirements for use (BSI, 2015a).

Unless stated in the report the assessment is solely for phytotoxic parameters and additional assessment is required to determine suitability as a growing medium.

4 Criteria for Assessing Liquid Results

4.1 Potential Harm to Human Health via Ingestion

The Tier 2 water screening values routinely adopted by PBA for assessing the potential for harm to human health via ingestion (presented as Table 6) are taken from Statutory Instrument (S.I.) The Water Supply (Water Quality) Regulations (S.I. 2016/614).

It should be noted that some of the prescribed concentrations listed in the Water Supply Regulations have been set for reasons other than their potential to cause harm to human health. The concentrations of iron and manganese are controlled because they may taint potable water with an undesirable taste, odour or colour or may potentially deposit precipitates in water supply pipes.

4.2 Potential Harm to Human Health via Inhalation of Vapours

The Tier 2 water screening values adopted by PBA for assessing the potential for chronic human health risk from the inhalation of vapours from volatile contaminants in groundwater are presented in Table 7. These generic assessment criteria have been taken from a report published by the Society of Brownfield Risk Assessment (SoBRA) (SoBRA, 2017). The methodology adopted in their generation is considered compatable with the UK approach to deriving GAC and adopts a precautionary approach. As with all published GAC the suitability for use on the site being assessed has to be decided by the assessor based on a thorough understanding of the methodology and assumptions used in their derivation. Note, that the SoBRA groundwater vapour GAC are not intended for assessing risks to ground workers from short-term exposure.

Note that Table 7 shows the theoretical maximum aqueous solubility for each contaminant and indicates the GAC that exceed solubility. Measured concentrations in excess of solubility may be an indication that NAPL is present. As for the assessment of soils, if the presence of NAPL is deemed plausible the implications will be considered in the risk assessment.

4.3 Potential to Harm Controlled Waters

When assessing ground condition data and the potential to harm Controlled Waters PBA uses the approach presented in the groundwater protection position statements published 14.03.17 (EA, 2017b) which describe the Environment Agency's approach to managing and protecting groundwater. They update and replace Groundwater Protection: principles and practice (GP3). Controlled Waters are rivers, estuaries, coastal waters, lakes and groundwaters. Water in the unsaturated zone is not groundwater but does come within the scope of the term "ground waters" as used and defined in the Water Resources Act 1991. It will continue to be a technical decision for the Environment Agency to determine what is groundwater in certain circumstances for the purposes of the Regulations. As discussed in "PBA Methodology for Assessment of Land Contamination" perched water is not considered a receptor in PBA assessments.

The EU Water Framework Directive (WFD) 2000/60/EC provides for the protection of sub-surface, surface, coastal and territorial waters through a framework of river basin management.

The EU Updated Water Framework Standards Directive 2014/101/EU amended the EU WFD to update the international standards therein; it entered into force on 20 November 2014 with the requirement for its provisions to be transposed in Member State law by 20 May 2016.

Member States are required under the EU WFD to update their river basin management plans every six years. The first river basin management plans for England and Wales, Scotland and Northern Ireland were published in December 2009, and these were updated in 2015.

Other EU Directives in the European water management framework include:

- the EU Priority Substances Directive 2013/39/EU;
- EU Groundwater Pollutants Threshold Values Directive 2014/80/EU amending the EU Groundwater Daughter Directive (GWDD) 2006/118/EC; and
- the EU Biological Monitoring Directive 2014/101/EU.

The Priority Substances Directive set environmental quality standards (EQS) for the substances in surface waters (river, lake, transitional and coastal) and confirmed their designation as priority or priority hazardous substances (PS), the latter being a subset of particular concern. Environmental Quality Standards for PS are determined at the European level and apply to all Member States. Member States identify and develop standards for 'Specific

Pollutants'. Specific Pollutants (SP) are defined as substances that can have a harmful effect on biological quality.

The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 were issued by Defra to the Environment Agency as an associated document of the Water Environment (WFD) (England and Wales) Regulations 2015 (S.I. 2015/1623) and provide directions for the classification of surface water and groundwater bodies. Schedule 3 parts 2 and 3 relate to surface water standards for specific pollutants in fresh or salt water bodies and priority substances in inland (rivers, lakes and related modified/artificial bodies) or other surface waters respectively. Although Schedule 5 presents threshold values for groundwater the Direction specifically excludes their use as part of site specific investigations.

Table 6 presents the criteria routinely used by PBA as Tier 2 screening values. This table only presents a selection of the more commonly analysed parameters and the source documents should be consulted for other chemicals. For screening groundwater the criteria selected are the standards for surface water and/or human consumption as appropriate together with the following:-

For a **hazardous substance** PBA adopts the approach that, if the concentration in a discharge to groundwater is less than the Minimum Reporting Value (MRV), the input is regarded as automatically meeting the Article 2 (b) 'de-minimus' requirement of exemption 6 (3) (b) of the GWDD. PBA has selected hazardous substances from the latest list published by the Joint Agencies Groundwater Directive Advisory Group (JAGDAG, 2018). MRV is the lowest concentration of a substance that can be routinely determined with a known degree of confidence, and may not be equivalent to limit of detection. MRVs have been identified from DEFRA's guidance on Hazardous Substances to Groundwater: Minimum Reporting Values (DEFRA, 2017b), and are shown in Table 6.

Note that for land contamination assessments, where hazardous substances have already entered groundwater, remediation targets would typically be based on achieving appropriate water quality standards (e.g. drinking water standard or EQS) at a compliance point rather than an MRV. For this reason, when assessing measured groundwater or soil leachate concentrations, the values for human consumption, fresh water and salt water shown in Table 6 (whichever is appropriate for the context of the site) will be used as the Tier 2 assessment criteria rather than MRV. For hazardous substances with no water quality standard the laboratory method detection limit will be used as the assessment criteria.

For **non-hazardous substances** the GWDD requires that inputs be limited to avoid deterioration. UKTAG guidance equates deterioration with pollution. Non-hazardous substances are all substances not classified as hazardous. For PBA assessments the values for human consumption, fresh water and salt water shown in Table 6 (whichever is appropriate for the context of the site) are used as the assessment criteria for non hazardous substances.

5 Criteria for Assessing Gas Results

PBA use the following primary guidance on gas monitoring methods and strategy, the assessment of risk posed by soil gases (including Volatile Organic Compounds (VOCs)) and mitigation measures/risk reduction during site development.

i) BS 8576:2013 – Guidance on Ground Gas Investigations: Permanent gases and Volatile Organic Compounds (VOCs) (BSI, 2013);

ii) A pragmatic approach to Ground Gas Risk Assessment. CL:AIRE Research Bulletin RB17 (Card *et al*, 2012);

iii) The VOCs Handbook. C682 (CIRIA, 2009).

iv) Assessing risks posed by hazardous gases to buildings C665 (CIRIA, 2007);

v) Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present. (NHBC, 2007); and

vi) BS 8485:2015 - Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (BSI, 2015b).

Gas and borehole flow data are used to obtain the gas screening value (GSV) for methane and carbon dioxide. The GSV is used to establish the characteristic situation and to make recommendations for gas protection measures for buildings if required.

Radon

PBA use the following primary guidance to assess the significance of the radon content of soil gas.

i) Radon: guidance on protective measures for new dwellings. Report BR211 (BRE, 2015); and

ii) Indicative Atlas of Radon in England and Wales (HPA & BGS, 2007).

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Water UK (2014) Contaminated Land Assessment Guidance

Table 1: Category 4 Screening Levels (C4SL) – Table taken from SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (Department for Environment, Food and Rural Affairs December 2014)

	Residential (with home-grown produce)	Residential (without home-grown produce)	Allotments	Commercial	Public Open Space 1	Public Open Space 2
Arsenic	37	40	49	640	79	170
Benzene	0.87	3.3	0.18	98	140	230
Benzo(a)pyrene	5.0	5.3	5.7	77	10	21
Cadmium	22	150	3.9	410	220	880
Chromium VI	21	21	170	49	21	250
Lead	200	310	80	2300	630	1300

Units mg/kg dry weight
Public Open Space 1 – for grassed area adjacent to residential housing
Public Open Space 2 - Park Type Public Open Space Scenario
Based on a sandy loam with 6% soil organic matter (SOM) - Note that, with the exception of benzene, these C4SL are not SOM dependent

Table 2: Suitable 4 Use Levels (S4UL) - units are mg/kg Dry Weight

Determinand	Allotment	$R_{W}HP$	$R_{WO}HP$	Commercial/ Industrial	POSresi	POSpark
Metals						
Arsenic (**Inorganic**)[a, b, c]	43	37	40	640	79	170
Beryllium [a, b, d, e]	35	1.7	1.7	12	2.2	63
Boron [a, b, d]	45	290	11000	240000	21000	46000
Cadmium (**pH6-8**) [a, b, d, f]	1.9	11	85	190	120	560
Chromium (trivalent) [a, b, d, g]	18000	910	910	8600	1500	33000
Chromium (hexavalent) [a, b, c]	1.8[h]	6[i]	6[i]	33[i]	7.7[i]	220[i]
Copper [a, b, c]	520	2400	7100	68000	12000	44000
Mercury (elemental) [a, b, c, j]	21	1.2	1.2	58[vap] (25.8)	16	30[vap] (25.8)
Mercury (inorganic) [a, b, c]	19	40	56	1100	120	240
Methylmercury [a, b, c]	6	11	15	320	40	68
Nickel [a, b, c]	53[k]	130[e]	180[e]	980[e]	230[e]	800[k]
Selenium [a, b, c]	88	250	430	12000	1100	1800
Vanadium [a, b, c, i, j]	91	410	1200	9000	2000	5000
Zinc [a, b, c]	620	3700	40000	730000	81000	170000
BTEX Compounds (SOM 1%/ 2.5%/ 6%)						
Benzene [a, b, l, m]	0.017/0.034/ 0.075	0.087/0.17/ 0.37	0.38/0.7/1.4	27 / 47 / 90	72 / 72 / 73	90 / 100 / 110
Toluene [a, b, l, m]	22 / 51 / 120	130 / 290 / 660	880[vap] (869) /1900/3900	56000[vap] (869) / 110000[vap] (1920)/ 180000[vap] (4360)	56000 / 56000 / 56000	87000[vap](869)/ 95000[vap](1920)/ 100000[vap](4360)
Ethylbenzene [a, b, l, m]	16 / 39 / 91	47 / 110 / 260	83 / 190 / 440	5700[vap] (518) / 13000[vap] (1220) / 27000[vap] (2840)	24000 / 24000 / 25000	17000[vap] (518) / 22000[vap](1220) / 27000[vap] (2840)
O – Xylene [a, b, l, m, n]	28 / 67 / 160	60 / 140 / 330	88 / 210 / 480	6600[sol] (478) / 15000[sol] (1120) / 33000[sol] (2620)	41000 / 42000 / 43000	17000[sol] (478) / 24000[sol] (1120) / 33000[sol] (2620)
M – Xylene [a, b, l, m, n]	31 / 74 / 170	59 / 140 / 320	82 / 190 / 450	6200[vap] (625) / 14000[vap] (1470) / 31000[vap] (3460)	41000 / 42000 / 43000	17000[vap] (625) / 24000[vap](1470) / 32000[vap] (3460)
P – Xylene [a, b, l, m, n]	29 / 69 / 160	56 / 130 / 310	79 / 180 / 430	5900[sol] (576) / 14000[sol] (1350) / 30000[sol] (3170)	41000 / 42000 / 43000	17000[sol] (576) / 23000[sol] (1350) / 31000[sol] (3170)
Total xylenes [t]	28 / 67 / 160	56 / 130 / 310	79 / 180 / 430	5900[sol] (576) / 14000[sol] (1350) / 30000[sol] (3170)	41000 / 42000 / 43000	17000[sol] (576) / 23000[sol] (1350) / 31000[sol] (3170)
Polycyclic Aromatic Hydrocarbons (SOM 1%/ 2.5%/ 6%) [a, b, l, p]						
Acenaphthene	34 / 85 / 200	210 / 510 / 1100	3000[sol](57.0)/ 4700[sol] (141)/ 6000[sol] (336)	84000[sol] (57.0)/ 97000[sol] (141)/ 100000	15000 / 15000 / 15000	29000/ 30000/ 30000
Acenaphthylene	28 / 69 / 160	170 / 420 / 920	2900[sol](86.1)/ 4600[sol] (212)/ 6000[sol] (506)	83000[sol] (86.1)/ 97000[sol] (212)/ 100000	15000 / 15000 / 15000	29000 / 30000 / 30000
Anthracene	380 / 950 / 2200	2400 / 5400 / 11000	31000[sol](1.17) /35000/ 37000	520000/ 540000/ 540000	74000 / 74000 / 74000	150000 / 150000 / 150000
Benzo(a)anthracene	2.9 / 6.5 / 13	7.2 / 11 / 13	11 / 14 / 15	170 / 170 / 180	29 / 29 / 29	49 / 56 / 62
Benzo(a)pyrene (Bap) [u]	0.97 / 2.0 / 3.5	2.2 / 2.7 / 3.0	3.2 / 3.2 / 3.2	35 / 35 / 36	5.7 / 5.7 / 5.7	11 / 12 / 13
Benzo(b)fluoranthene	0.99 / 2.1 / 3.9	2.6 / 3.3 / 3.7	3.9 / 4.0 / 4.0	44 / 44 / 45	7.1 / 7.2 / 7.2	13 / 15 / 16
Benzo(g,h,i)perylene	290 / 470 / 640	320 / 340 / 350	360 / 360 / 360	3900 / 4000 / 4000	640 / 640 / 640	1400 / 1500 / 1600
Benzo(k)fluoranthene	37 / 75 / 130	77 / 93 / 100	110 / 110 / 110	1200 / 1200 /1200	190 / 190 / 190	370 / 410 / 440

Determinand	Allotment	R_WHP	R_{WO}HP	Commercial/ Industrial	POSresi	POSpark
Chrysene	4.1 / 9.4 / 19	15 / 22 / 27	30 / 31 / 32	350 / 350 / 350	57 / 57 / 57	93 / 110 / 120
Dibenzo(ah)anthracene	0.14 / 0.27 / 0.43	0.24 / 0.28 / 0.3	0.31 / 0.32 / 0.32	3.5 / 3.6 / 3.6	0.57 / 0.57 / 0.58	1.1 / 1.3 / 1.4
Fluoranthene	52 / 130 / 290	280 / 560 / 890	1500 / 1600 / 1600	23000 / 23000 / 23000	3100 / 3100 / 3100	6300 / 6300 / 6400
Fluorene	27 / 67 / 160	170 / 400 / 860	2800[sol] (30.9) /3800[sol] (76.5) /4500[sol] (183)	63000[sol] (30.9) / 68000 / 71000	9900 / 9900 / 9900	20000 / 20000 / 20000
Indeno(1,2,3-cd)pyrene	9.5 / 21 / 39	27 / 36 / 41	45 / 46 / 46	500 / 510 / 510	82 / 82 / 82	150 / 170 / 180
Naphthalene [q]	4.1 / 10 / 24	2.3 / 5.6 / 13	2.3 / 5.6 / 13	190[sol] (76.4) / 460[sol] (183) / 1100[sol] (432)	4900/ 4900/ 4900	1200[sol] (76.4) / 1900[sol] (183) / 3000
Phenanthrene	15 / 38 / 90	95 / 220 / 440	1300[sol](36.0) / 1500 / 1500	22000 / 22000 / 23000	3100 / 3100 / 3100	6200 / 6200 / 6300
Pyrene	110 / 270 / 620	620 / 1200 / 2000	3700 / 3800 / 3800	54000 / 54000 / 54000	7400 / 7400 / 7400	15000 / 15000 / 15000
Coal Tar (Bap as surrogate marker) [u]	0.32 / 0.67 / 1.2	0.79 / 0.98 / 1.1	1.2 / 1.2 / 1.2	15 / 15 / 15	2.2 / 2.2 / 2.2	4.4 / 4.7 / 4.8
Explosives [a, b, l, p]						
2, 4, 6 Trinitrotoluene	0.24 / 0.58 / 1.40	1.6 / 3.7 / 8.0	65 / 66 / 66	1000 / 1000 / 1000	130 / 130 / 130	260 / 270 / 270
RDX (Royal Demolition Explosive $C_3H_6N_6O_6$)	17 / 38 / 85	120 / 250 / 540	13000 / 13000 / 13000	210000 / 210000 / 210000	26000 / 26000 / 27000	49000[sol] (18.7) / 51000 / 53000
HMX (High Melting Explosive $C_4H_8N_8O_8$)	0.86 / 1.9 / 3.9	5.7 / 13 / 26	6700 / 6700 / 6700	110000 / 110000 / 110000	13000 / 13000 / 13000	23000[vap] (0.35) /23000[vap] (0.39) /24000[vap] (0.48)
Petroleum Hydrocarbons (SOM 1%/ 2.5%/ 6%) [a, b, l, m]						
Aliphatic EC 5-6	730 / 1700 / 3900	42 / 78 / 160	42 / 78 / 160	3200[sol] (304) / 5900[sol] (558) / 12000[sol] (1150)	570000[sol](304) 590000 / 600000	95000[sol] (304) / 130000[sol] (558)/ 180000[sol](1150)
Aliphatic EC >6-8	2300 / 5600 / 13000	100 / 230 / 530	100 / 230 / 530	7800[sol] (144) / 17000[sol] (322) / 40000[sol] (736)	600000 / 610000 / 620000	150000[sol] (144) 220000[sol] (322)/ 320000[sol] (736)
Aliphatic EC >8-10	320 / 770 / 1700	27 / 65 / 150	27 / 65 / 150	2000[sol] (78) / 4800[vap] (190) / 11000[vap] (451)	13000 / 13000 / 13000	14000[sol] (78) / 18000[vap] (190) / 21000[vap] (451)
Aliphatic EC >10-12	2200 / 4400 / 7300	130v[ap] (48) / 330[vap] (118) / 760[vap] (283)	130v[ap] (48) / 330[vap] (118) / 770[vap] (283)	9700[sol] (48) / 23000[vap] (118) / 47000[vap] (283)	13000 / 13000 / 13000	21000[sol] (48) / 23000[vap] (118) / 24000[vap] (283)
Aliphatic EC >12-16	11000 / 13000 / 13000	1100[sol] (24) / 2400[sol] (59) / 4300[sol] (142)	1100[sol] (24) / 2400[sol] (59) / 4400[sol] (142)	59000[sol] (24) / 82000[sol] (59) / 90000[sol] (142)	13000 / 13000 / 13000	25000[sol] (24) / 25000[sol] (59) / 26000[sol] (142)
Aliphatic EC >16-35 [o]	260000 / 270000 / 270000	65000[sol](8.48 92000[sol] (21) 110000	65000[sol] (8.48 92000[sol] (21) 110000	1600000 / 1700000 / 1800000	250000 / 250000 / 250000	450000 / 480000 / 490000
Aliphatic EC >35-44 [o]	260000 / 270000 / 270000	65000[sol](8.48 92000[sol] (21) / 110000	65000[sol](8.48 92000[sol] (21) 110000	1600000 / 1700000 / 1800000	250000 / 250000 / 250000	450000 / 480000 / 490000
Aromatic EC 5-7 (benzene)	13 / 27 / 57	70 / 140 / 300	370 / 690 / 1400	26000[sol] (1220) / 46000[sol] (2260) / 86000[sol] (4710)	56000 / 56000 / 56000	76000[sol] (1220) /84000[sol](2260)/ 92000[sol] (4710)
Aromatic EC >7-8 (toluene)	22 / 51 / 120	130 / 290 / 660	860 / 1800 / 3900	56000[vap] (869)/ 110000[sol] (1920)/ 180000[vap] (4360)	56000 / 56000 / 56000	87000[vap](869) / 95000[sol] (1920)/ 100000[vap](4360)
Aromatic EC >8-10	8.6 / 21 / 51	34 / 83 / 190	47 / 110 / 270	3500[vap] (613) / 8100[vap] (1500) / 17000[vap] (3580)	5000 / 5000 / 5000	7200[vap](613) / 8500[vap] (1500) / 9300[vap] (3580)
Aromatic EC >10-12	13 / 31 / 74	74 / 180 / 380	250 / 590 / 1200	16000[sol] (364) / 28000[sol] (899) / 34000[sol] (2150)	5000 / 5000 / 5000	9200[sol] (364) / 9700[sol] (899) / 10000
Aromatic EC >12-16	23 / 57 / 130	140 / 330 / 660	1800 / 2300[sol] (419) / 2500	36000[sol] (169) / 37000 / 38000	5100 / 5100 / 5000	10000 / 10000 / 10000
Aromatic EC >16-21 [o]	46 / 110 / 260	260 / 540 / 930	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7600 / 7700 / 7800
Aromatic EC >21-35 [o]	370 / 820 / 1600	1100 / 1500 / 1700	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7800 / 7800 / 7900
Aromatic EC >35-44 [o]	370 / 820 / 1600	1100 / 1500 / 1700	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7800 / 7800 / 7900
Aliphatic+Aromatic EC >44-70 [o]	1200 / 2100 / 3000	1600 / 1800 / 1900	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7800 / 7800 / 7900
Chloroalkanes & Chloroalkenes (SOM 1%/ 2.5%/ 6%) [a, b, l, p]						
1,2-Dichloroethane	0.0046 / 0.0083 / 0.016	0.0071 / 0.011 / 0.019	0.0092 / 0.013 / 0.023	0.67 / 0.97 / 1.7	29 / 29 / 29	21 / 24 / 28
1,1,1 Trichloroethane (TCA)	48 / 110 / 240	8.8 / 18 / 39	9.0 / 18 / 40	660 / 1300 / 3000	140000 / 140000 / 140000	57000[vap](1425) 76000[vap](2915)/ 100000[vap](6392)
1,1,1,2 Tetrachloroethane	0.79 / 1.9 / 4.4	1.2 / 2.8 / 6.4	1.5 / 3.5 / 8.2	110 / 250 / 560	1400 / 1400 / 1400	1500 / 1800 / 2100
1,1,2,2 Tetrachloroethane	0.41 / 0.89 / 2.0	1.6 / 3.4 / 7.5	3.9 / 8.0 / 17	270 / 550 / 1100	1400 / 1400 / 1400	1800 / 2100 / 2300

Determinand	Allotment	R_WHP	$R_{WO}HP$	Commercial/ Industrial	POSresi	POSpark
Tetrachloroethene (PCE)	0.65 / 1.5 / 3.6	0.18 / 0.39 / 0.90	0.18 / 0.4 / 0.92	19 / 42 / 95	1400 / 1400 / 1400	810[sol](424)/1100 [sol] (951)/1500
Tetrachloromethane (Carbon Tetrachloride)	0.45 / 1.0 / 2.4	0.026 / 0.056 / 0.13	0.026 / 0.056 / 0.13	2.9 / 6.3 / 14	890 / 920 / 950	190 / 270 / 400
Trichloroethene (TCE)	0.041 / 0.091 / 0.21	0.016 / 0.034 / 0.075	0.017 / 0.036 / 0.080	1.2 / 2.6 / 5.7	120 / 120 / 120	70 / 91 / 120
Trichloromethane (Chloroform)	0.42 / 0.83 / 1.7	0.91 / 1.7 / 3.4	1.2 / 2.1 / 4.2	99 / 170 / 350	2500 / 2500 / 2500	2600 / 2800 / 3100
Chloroethene (Vinyl Chloride)	0.00055/ 0.001/ 0.0018	0.00064 / 0.00087/ 0.0014	0.00077 / 0.001 / 0.0015	0.059 / 0.077 / 0.12	3.5 / 3.5 / 3.5	4.8 / 5.0 / 5.4
Phenol & Chlorophenols [a, b, l, p]						
Phenol	23 / 42 / 83	120 / 200 / 380	440 / 690 / 1200	440[dir] (26000) / 690[dir] (30000) / 1300[dir] (34000)	440[dir] (10000)/ 690[dir](10000) 1300[dir](10000)	440[dir] (7600) / 690[dir] (8300) / 1300[dir] (93000)
Chlorophenols (excluding PCP) [r]	0.13[s] / 0.3 / 0.7	0.87[s] / 2.0 / 4.5	94 / 150 / 210	3500 / 4000 / 4300	620 / 620 / 620	1100 / 1100 / 1100
Pentachlorophenol (PCP)	0.03 / 0.08 / 0.19	0.22/ 0.52 / 1.2	27[vap] (16.4) / 29 / 31	400 / 400 / 400	60 / 60 / 60	110 / 120 / 120
Other [a, b, l, p]						
Carbon Disulphide	4.8 / 10 / 23	0.14 / 0.29 / 0.62	0.14 / 0.29 / 0.62	11 / 22 / 47	11000 / 11000 / 12000	1300 / 1900 / 2700
Hexachlorobutadiene (HCBD)	0.25 / 0.61 / 1.4	0.29 / 0.7 / 1.6	0.32 / 0.78 / 1.8	31 / 66 / 120	25 / 25 / 25	48 / 50 / 51
Pesticides (SOM 1%/ 2.5%/ 6%) [a, b, l, p]						
Aldrin	3.2 / 6.1 / 9.6	5.7/ 6.6 /7.1	7.3 / 7.4 / 7.5	170 / 170 / 170	18 / 18 / 18	30 / 31 / 31
Atrazine	0.5 / 1.2 / 2.7	3.3 / 7.6 / 17.4	610 / 620 / 620	9300 / 9400 / 9400	1200 / 1200 / 1200	2300 / 2400 / 2400
Dichlorvos	0.0049 / 0.010 / 0.022	0.032 / 0.066 / 0.14	6.4 / 6.5 / 6.6	140 / 140 / 140	16 / 16 / 16	26 / 26 / 27
Dieldrin	0.17/0.41/0.96	0.97/ 2 / 3.5	7.0 / 7.3 / 7.4	170 / 170 / 170	18 / 18 / 18	30 / 30 / 31
Alpha - Endosulfan	1.2 / 2.9 / 6.8	7.4 / 18 / 41	160[vap] (0.003)/ 280[vap] (0.007)/ 410[vap] (0.016)	5600[vap] (0.003) / 7400[vap] (0.007) / 8400[vap] (0.016)	1200 / 1200 / 1200	2400 / 2400 / 2500
Beta - Endosulfan	1.1 / 2.7 / 6.4	7.0 / 17 / 39	190[vap](0.00007) /320[vap](0.0002) /440[vap](0.0004)	6300[vap](0.00007) /7800[vap](0.0002) / 8700	1200 / 1200 / 1200	2400 / 2400 / 2500
Alpha-Hexachlorocyclohexane	0.035/0.087/ 0.21	0.23/0.55 / 1.2	6.9 / 9.2 / 11	170 / 180 / 180	24 / 24 / 24	47 / 48 / 48
Beta - Hexachlorocyclohexane	0.013 / 0.032 / 0.077	0.085 / 0.2 / 0.46	3.7 / 3.8 / 3.8	65 / 65 / 65	8.1 / 8.1 / 8.1	15 / 15 / 16
Gamma – Hexachlorocyclohexane	0.0092 / 0.023 / 0.054	0.06 / 0.14 / 0.33	2.9 / 3.3 / 3.5	67 / 69 / 70	8.2 / 8.2 / 8.2	14 / 15 / 15
Chlorobenzenes [a, b, l, p]						
Chlorobenzene	5.9 / 14 / 32	0.46 / 1.0 / 2.4	0.46 / 1.0 / 2.4	56 / 130 / 290	11000 / 13000 / 14000	1300[sol](675)/ 2000[sol](1520)/ 2900
1,2-dichlorobenzene (1,2-DCB)	94 / 230 / 540	23 / 55 / 130	24 / 57 / 130	2000[sol] (571) / 4800[sol] (1370) / 11000[sol] (3240)	90000 / 95000 / 98000	24000[sol] (571) / 36000[sol] (1370) /51000[sol] (3240)
1,3-dichlorobenzene (1,3-DCB)	0.25 / 0.6 / 1.5	0.4 / 1.0 / 2.3	0.44 /1.1 / 2.5	30 / 73 / 170	300 / 300 / 300	390 / 440 / 470
1-4-dichlorobenzene (1,4-DCB)	15[i] / 37[i] / 88 [i]	61[q] / 150[q] /350 [q]	61[q] / 150[q] / 350[q]	4400[vap,q] (224) / 10000[vap,q] (540) / 25000[vap,q] (1280)	17000[i] / 17000[i] / 17000[i]	36000[vap,i] (224) 36000[vap, i](540)/ 36000[vap,i](1280)
1,2,3-Trichlorobenzene	4.7 / 12 / 28	1.5 / 3.6 / 8.6	1.5 / 3.7 / 8.8	102 / 250 / 590	1800 / 1800 / 1800	770[vap] (134) / 1100[vap] (330) / 1600[vap] (789)
1,2,4- Trichlorobenzene	55 / 140 / 320	2.6 / 6.4 / 15	2.6 / 6.4 / 15	220 / 530 / 1300	15000 / 17000 / 19000	1700[vap] (318) / 2600[vap] (786) / 4000[vap] (1880)
1,3,5- Trichlorobenzene	4.7 / 12 / 28	0.33 / 0.81 / 1.9	0.33 / 0.81 / 1.9	23 / 55 / 130	1700 / 1700 / 1800	380[vap] (36.7) / 580[vap] (90.8) / 860[vap] (217)
1,2,3,4-Tetrachlorobenzene	4.4 / 11 / 26	15 / 36 / 78	24 / 56 / 120	1700[vap] (122) / 3080[vap] (304) / 4400[vap] (728)	830 / 830 / 830	1500[vap] (122) / 1600 / 1600
1,2,3,5- Tetrachlorobenzene	0.38 / 0.90 / 2.2	0.66 / 1.6 / 3.7	0.75 / 1.9 / 4.3	49[vap] (39.4) / 120[vap] (98.1) / 240[vap] (235)	78 / 79 / 79	110[vap] (39.4) / 120 / 130
1,2,4,5- Tetrachlorobenzene	0.06 / 0.16 / 0.37	0.33 / 0.77 / 1.6	0.73 / 1.7 / 3.5	42[sol] (19.7) / 72[sol] (49.1) / 96	13 / 13 / 13	25 / 26 / 26
Pentachlorobenzene (P_ECB)	1.2 / 3.1 / 7.0	5.8 / 12 / 22	19 / 30 / 38	640[sol] (43.0) / 770[sol] (107) / 830	100 / 100 / 100	190 / 190 / 190
Hexachlorobenzene (HCB)	0.47 / 1.1 / 2.5	1.8[vap] (0.20) / 3.3[vap] (0.5) / 4.9	4.1[vap] (0.20) / 5.7[vap] (0.5) / 6.7[vap] (1.2)	110[vap] (0.20) / 120 / 120	16 / 16 / 16	30 / 30 / 30

R_WHP Residential with homegrown produce
$R_{WO}HP$ Residential without homegrown produce
POSresi public open spaces near residential housing
POSpark public open space for recreational use but not dedicated sports pitches

SOM Soil Organic Matter – ***the S4UL for all organic compounds will vary according to SOM***
a Based on a sandy loam soil as defined in SR3 (Environment Agency, 2009b) and 6% soil organic matter (SOM)
b Figures rounded to two significant figures
c Based only on a comparison of oral and dermal soil exposure with oral Index Dose
d The background ADE is limited to being no larger than the contribution from the relevant soil ADE
e Based on comparison of inhalation exposure with inhalation TDI only
f Based on a lifetime exposure via the oral, dermal and inhalation pathways
g Based on localised effects comparing inhalation exposure with inhalation ID only
h Based on comparison of inhalation exposure with inhalation ID
i Based on comparison of oral and dermal exposure with oral TDI
j Based on comparison of oral, dermal and inhalation exposure with inhalation TDI
k Based on comparison of all exposure pathways with oral TDI
l S4ULs assume that free phase contamination is not present
m S4ULs based on a sub-surface soil to indoor air correction factor of 10
n The HCV applied is based on the intake of total Xylene and therefore exposure should not consider an isomer in isolation
o Oral, dermal and inhalation exposure compared with oral HCV
p S4ULs based on a sub-surface soil to indoor air correction factor of 1
q Based on a comparison of inhalation exposure with the inhalation TDI for localised effects
r Based on 2,4-dichlorophenol unless otherwise stated
s Based on 2,3,4,6-tetrachlorophenol
t Based on lowest GAC for all three xylene isomers
u. Measured concentrations of benzo(a)pyrene should be compaed to the S4UL for benzo(a)pyrene as a single compound and to the S4UL for benzo(a)pyrene as a surrogare marker of genotoxic PAHs.
vap S4UL presented exceeded the vapour saturation limit, which is presented in brackets
sol S4UL presented exceeds the solubility saturation limit, which is presented in brackets
dir S4ULs based on a threshold protective of direct skin contact, guideline in brackets based on the health effects following long term exposure provided for illustration only

Table 3: Soil Guideline Values (SGVs) for dioxins, furans and dioxin like PCBs

Determinand	Residential with consumption of homegrown produce	Residential without consumption of homegrown produce	Allotments	Commercial
Sum of PCDDs, PCDFs and dioxin-like PCBs	0.008	0.008	0.008	0.24

Units are mg/kg Dry Weight

Table 4: EIC/AGS/CL:AIRE Generic Assessment Criteria (GAC)

Determinand	Residential with consumption of homegrown produce	Residential without consumption of homegrown produce	Allotments	Commercial	Soil Saturation Concentration
Metals					
Antimony	ND	550	ND	7500	NA
Barium	ND	1300	ND	22000	NA
Molybdenum	ND	670	ND	17000	NA
Organics (SOM 1%/ 2.5%/ 6%)					
1,1,2 Trichloroethane	0.6 / 1.2 / 2.7	0.88 / 1.8 / 3.9	0.28 / 0.61 / 1.4	94 / 190 / 400	4030 / 8210 / 18000
1,1-Dichloroethane	2.4 / 3.9 / 7.4	2.5 / 4.1 / 7.7	9.2 / 17 / 35	280 / 450 / 850	1830 / 2960 / 5600
1,1-Dichloroethene	0.23 / 0.4 / 0.82	0.23 / 0.41 / 0.82	2.8 / 5.6 / 12	26 / 46 / 92	2230 / 3940 / 7940
1,2,4-Trimethylbenzene	0.35 / 0.85 / 2	0.41 / 0.99 / 2.3	0.38 / 0.93 / 2.2	42 / 99 / 220	557 / 1360 / 3250
1,2-Dichloropropane	0.024 / 0.042 / 0.084	0.024 / 0.042 / 0.085	0.62 / 1.2 / 2.6	3.3 / 5.9 / 12	1190 / 2110 / 4240
2,4-Dimethylphenol	19 / 43 / 97	210 / 410 / 730	3.1 / 7.2 / 17	16000 / 24000 / 30000	1380 / 3140 / 7240
2,4-Dinitrotoluene	1.5 / 3.2 / 7.2	170 / 170 / 170	0.22 / 0.49 / 1.1	3700 / 3700 / 3800	141 / 299 / 669
2,6-Dinitrotoluene	0.78 / 1.7 / 3.9	78 / 84 / 87	0.12 / 0.27 / 0.61	1900 / 1900 / 1900	287 / 622 / 1400
2-Chloronaphthalene	3.7 / 9.2 / 22	3.8 / 9.3 / 22	40 / 98 / 230	390 / 960 / 2200	114 / 280 / 669
Biphenyl	66 / 160 / 360	220 / 500 / 980	14 / 35 / 83	18000 / 33000 / 48000	34.4 / 84.3 / 201
Bis (2-ethylhexyl) phthalate	280 / 610 / 1100	2700 / 2800 / 2800	47 / 120 / 280	85000 / 86000 / 86000	8.68 / 21.6 / 51.7
Bromobenzene	0.87 / 2 / 4.7	0.91 / 2.1 / 4.9	3.2 / 7.6 / 18	97 / 220 / 520	853 / 1970 / 4580
Bromodichloromethane	0.016 / 0.03 / 0.061	0.019 / 0.034 / 0.07	0.016 / 0.032 / 0.068	2.1 / 3.7 / 7.6	1790 / 3220 / 6570
Bromoform	2.8 / 5.9 / 13	5.2 / 11 / 23	0.95 / 2.1 / 4.6	760 / 1500 / 3100	2690 / 5480 / 12000
Butyl benzyl phthalate	1400 / 3300 / 7200	42000 / 44000 / 44000	220 / 550 / 1300	940000 / 940000 / 950000	26.3 / 64.7 / 154
Chloroethane	8.3 / 11 / 18	8.4 / 11 / 18	110 / 200 / 380	960 / 1300 / 2100	2610 / 3540 / 5710
Chloromethane	0.0083 / 0.0098 / 0.013	0.0085 / 0.0099 / 0.013	0.066 / 0.13 / 0.23	1 / 1.2 / 1.6	1910 / 2240 / 2990
Cis 1,2 Dichloroethene	0.11 / 0.19 / 0.37	0.12 / 0.2 / 0.39	0.26 / 0.5 / 1	14 / 24 / 47	3940 / 6610 / 12900
Dichloromethane	0.58 / 0.98 / 1.7	2.1 / 2.8 / 4.5	0.1 / 0.19 / 0.34	270 / 360 / 560	7270 / 9680 / 15300
Diethyl Phthalate	120 / 260 / 570	1800 / 3500 / 6300	19 / 41 / 94	150000 / 220000 / 290000	13.7 / 29.1 / 65
Di-n-butyl phthalate	13 / 31 / 67	450 / 450 / 450	2 / 5 / 12	15000 / 15000 / 15000	4.65 / 11.4 / 27.3
Di-n-octyl phthalate	2300 / 2800 / 3100	3400 / 3400 / 3400	940 / 2100 / 3900	89000 / 89000 / 89000	32.6 / 81.5 / 196
Hexachloroethane	0.2 / 0.48 / 1.1	0.22 / 0.54 / 1.3	0.27 / 0.67 / 1.6	22 / 53 / 120	8.17 / 20.1 / 48.1
Isopropylbenzene	11 / 27 / 64	12 / 28 / 67	32 / 79 / 190	1400 / 3300 / 7700	390 / 950 / 2250

Determinand	Residential with consumption of homegrown produce	Residential without consumption of homegrown produce	Allotments	Commercial	Soil Saturation Concentration
Methyl tert-butyl ther	49 / 84 / 160	73 / 120 / 220	23 / 44 / 90	7900 / 13000 / 24000	20400 / 33100 / 62700
Propylbenzene	34 / 82 / 190	40 / 97 / 230	34 / 83 / 200	4100 / 9700 / 21000	402 / 981 / 2330
Styrene	8.1 / 19 / 43	35 / 78 / 170	1.6 / 3.7 / 8.7	3300 / 6500 / 11000	626 / 1440 / 3350
Total Cresols (2-, 3- and 4-methylphenol)	80 / 180 / 400	3700 / 5400 / 6900	12 / 27 / 63	160000 / 180000 / 180000	15000 / 32500 / 73300
Trans 1,2 Dichloroethene	0.19 / 0.34 / 0.7	0.19 / 0.35 / 0.71	0.93 / 1.9 / 4	22 / 40 / 81	3420 / 6170 / 12600
Tributyl tin oxide	0.25 / 0.59 / 1.3	1.4 / 3.1 / 5.7	0.042 / 0.1 / 0.24	130 / 180 / 200	41.3 / 101 / 241

Units are mg/kg Dry Weight

Table 5: Tier 2 Criteria for the Assessment of Soils – Protection of Ecological Systems

Parameter	ICRCL 70/90 [a]		SSVs [b]	Code of Practice for Agricultural Use of Sewage Sludge [c]	BS 3882:2015 Specification for topsoil and requirements for use
	Maximum				Phytotoxic contaminants
	Livestock	Crop Growth			
	mg/kgDW	mg/kgDW	mg/kgDW	mg/kgDW	mg/kgDW
Antimony			37		
Arsenic	500	1000		50	
Cadmium	30	50	0.6	3	
Chromium				400	
Cobalt			4.2		
Copper	500	250	35.1	80/ 100/ 135/ 200 [d]	<100/<135/<200 [e]
Fluoride	1000			500	
Lead	1000			300	
Mercury				1	
Molybdenum			5.1	4	
Nickel			28.2	50/ 60/ 75/ 110 [d]	<60/<75/<110 [e]
Selenium				3	
Silver			0.3		
Vanadium			2.0		
Zinc	3000	1000	35.6	200/200/200/300 [d]	<200/<200/<300 [e]
Benzo(a)pyrene			0.15		
Bis(2-ethylhexyl) phthalate			13		
Hexachlorobenzene			0.002		
Pentachlorobenzene					
Pentachlorophenol			0.6		
Perfluorooctanoic acid			0.022		
Perfluorooctane sulfonate			0.014		
Polychlorinated alkanes (medium chain)			11.9		
Tetrachloroethene					
Toluene					
Triclosan			0.13		
Tris(2-chloroethyl)phosphate			1.1		
Tris(2-chloro-1-methylethyl) phosphate			1.8		

a. Interdepartmental Committee on the Redevelopment of Contaminated Land (ICRCL) 70/90 Restoration and

Aftercare of Metalliferous Mining Sites for Pasture and Grazing 1st edition 1990.

b. Soil screening values for assessing ecological risks, EA 2017a
c. Report – ShARE id26Maximum permissible concentration of potentially toxic elements from the Code of Practice for Agricultural Use of Sewage Sludge. Second Edition. DOE 2006.
d. Where four values are presented, concentrations are for soils with pH values 5.0-5.5/ 5.5-6.0/ 6.0-7.0/ >7.0
e. Where three values are presented, concentrations are for soils with pH values <6.0/ 6.0-7.0/ >7.0

Table 6: Tier 2 Criteria for Screening Liquids

	Screening Concentration (mg/l)			
	Minimum Reporting Value	Human Consumption	Fresh Water/Inland	Salt Water/Other
Metals				
Arsenic SP	-	0.01	0.05 (2)	0.025 (2)
Boron	-	1	-	-
Cadmium PS	0.0001	0.005	≤0.00008, 0.00008, 0.00009, 0.00015, 0.00025 (14)	0.0002
Chromium (total)	-	0.05	-	-
Chromium (III) SP	-	-	0.0047	-
Chromium (VI) SP	-	-	0.0034	0.0006
Copper SP	-	2	0.001 bioavailable	0.00376 bioavailable
Iron SP	-	0.2	1	1
Lead PS	-	0.01	0.0012 bioavailable	0.0013 bioavailable
Mercury compounds PS	0.00001	0.001	0.00007 max	0.00007 max
Manganese SP	-	0.05	0.123 bioavailable	-
Nickel PS	-	0.02	0.004 bioavailable	0.0086 bioavailable
Selenium	-	0.01	-	-
Zinc SP	-	5(3)	0.0109bioavailable(13)	0.0068bioavailable (13)
Chlorinated Compounds				
C10-13 chloroalkanes PS short chain chlorinated paraffins	-	-	0.0004	0.0004
Dichloromethane PS	-	-	0.02	0.02
1,2-Dichloroethane PS	0.001	0.003	0.01	0.01
Trichloroethene PS	0.0001	0.01(5)	0.01	0.01
1,1,1-Trichloroethane	0.0001	-	-	-
1,1,2-Trichloroethane	0.0001	-	-	-
Trichloromethanes PS	-	0.1(1)	0.0025	0.0025
1, 2, 4-Trichlorobenzene	0.00001			
Tetrachloroethene PS	0.0001	0.01(5)	0.01	0.01
Tetrachloromethane PS	0.0001	0.003	0.012	0.012
Tetrachloroethane SP	-		0.140	
Vinyl chloride	-	0.0005	-	-
Trichlorobenzene (TCB) PS	-	-	0.0004	0.0004
Chloroform	0.0001			
Chloronitrotoluenes(CNT)(11)	0.001	-	-	-
Hexachlorobutadiene PS	0.000005	-	0.0006 max	0.0006 max
Hexachlorocyclohexanes (HCH) PS	0.000001	-	0.00002	0.000002
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	-	-	-	-
Acenaphthylene	-	-	-	-
Anthracene PS	-	-	0.0001	0.0001
Benzo(a)anthracene	-	-	-	-
Benzo(b)fluoranthene PS	-	0.0001 (10)	0.000017 max (12)	0.000017 max (12)
Benzo(a)pyrene PS	-	0.00001	0.00000017	0.00000017
Benzo(k)fluoranthene PS	-	0.0001 (10)	0.000017 max (12)	0.000017 max (12)
Benzo(g,h,i)perylene PS	-	0.0001 (10)	0.0000082 max (12)	0.00000082 max (12)
Indeno(1,2,3-cd)pyrene PS	-	0.0001 (10)	- (12)	- (12)
Chrysene		-	-	-
Dibenzo(a,h)anthracene		-	-	-
Fluoranthene PS	-	-	0.0000063	0.0000063
Fluorene	-	-	-	-
Phenanthrene	-	-	-	-
Pyrene	-	-	-	-
Naphthalene PS	-	-	0.002	0.002

	Screening Concentration (mg/l)			
	Minimum Reporting Value	Human Consumption	Fresh Water/Inland	Salt Water/Other
Polycyclic Aromatic Hydrocarbons		0.0001(10)		
Petroleum hydrocarbons				
Total petroleum hydrocarbons	-	0.01(3)	-	-
Benzene PS	0.001	0.001	0.01	0.008
Toluene SP	0.004	0.7(9)	0.074	0.074
Ethylbenzene	-	0.3(9)	-	-
Xylenes	0.003(4)	0.5(9)		
Methyl tert-butyl ether (MTBE)	-	0.015(7)	-	-
Pesticides and Herbicides				
Alachlor PS	-	-	0.0003	0.0003
Aldrin PS	0.000003	0.00003	0.00001(8)	0.000005(8)
Dieldrin PS	0.000003	0.00003		
Endrin PS	0.000003	0.0006(9)		
Isodrin	0.000003	-	-	-
2,4 dichlorophenol SP	0.0001	-	0.0042	0.00042
2,4 D ester SP	0.0001	-	0.0003	0.0003
op and pp DDT (each) PS		0.001(6)	0.000025 (6)	0.000025 (6)
op and pp DDE (each)				
op and pp TDE (each)				
Dimethoate SP	0.00001	-	0.00048	0.00048
Endosulfan PS	0.000005	-	0.000005	0.0000005
Hexachlorobenzene PS	0.000001		0.00005 max	0.00005 max
Permethrin SP		-	0.000001	0.0000002
Atrazine PS	0.00003	-	0.0006	0.0006
Simazine PS	0.00003	-	0.001	0.001
Linuron SP		-	0.0005	0.0005
Mecoprop SP		-	0.018	0.018
Trifluralin PS	0.00001	-	0.00003	0.00003
Total pesticides		0.0005		
Miscellaneous				
Ammoniacal nitrogen (as NH4+)	-	0.5	0.26 16 0.39 17	-
Ammoniacal nitrogen (as N)	-	0.39	0.2 16 0.3 17	-
Unionised Ammonia (NH3) SP	-	-	-	0.021
Chloride	-	250		
Chlorine SP			0.002	0.01 max
Cyanide SP (hydrogen cyanide)	-	0.05	0.001	0.001
Nitrate (as NO_3)	-	50	-	-
Nitrite (as NO_2)	-	0.1	-	-
Phenol SP	-	0.5 (3)	0.0077	0.0077
Pentachlorophenol PS	0.0001	-	0.0004	0.0004
PCBs (individual congeners)	0.000001	-	-	-
Sodium	-	200	-	-
Sulphate	-	250		-
Tributyl and triphenyl tin compounds (each) PS	0.000001	-	0.0000002	0.0000002
Di(2-ethylhexyl)-phthalate PS	-	-	0.0013	0.0013

Substances highlighted in yellow are hazardous substances, PS = Priority Substances, SP = Specific Pollutants, '-' screening concentration is not available, 'max' – maximum allowable concentration used where no annual average provided

Notes:

1. Concentration for trihalomethanes is the sum of chloroform, bromoform, dibromochloromethane and bromodichloromethane.
2. Concentration is the dissolved fraction of a water sample obtained by filtration through a 0.45um filter.
3. Concentration is taken from Statutory Instrument 1989 No. 1147. The Water Supply (Water Quality) Regulations 1989, as amended.
4. Concentration for xylenes is 0.003mg/l each for o-xylene and m/p xylene.
5. Concentration is the Sum of TCE and PCE.
6. Concentration is for Total DDT. Para DDT on its own has a target concentration of 0.00001mg/l.
7. Concentration for MTBE is taken from Environment Agency guidance, dated 2006.

8. Concentration is the sum of aldrin, dieldrin, endrin.
9. Concentration is taken from WHO (2004) guidelines for drinking-water quality.
10. Sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene
11. Concentration is for 2,6-CNT, 4,2-CNT, 4,3-CNT, 2,4-CNT, 2,5-CNT
12. BAP can be considered as a marker of the other PAHs for comparison with the annual average
13. Concentration plus ambient background concentration (dissolved)
14. For cadmium and its compounds the EQS depends on the hardness of the water (Class 1: < 40 mg CaCO3/l, Class 2: 40 to < 50 mg CaCO3/l, Class 3: 50 to < 100 mg CaCO3/l, Class 4: 100 to < 200 mg CaCO3/l and Class 5: ≥ 200 mg CaCO3/l).
15. Manufactured and used in industrial applications, such as flame retardants and plasticisers, as additives in metal working fluids, in sealants, paints, adhesives, textiles, leather fat and coatings. Persistent, bioaccumulate and toxic to aquatic life (carcinogen in rat studies). Candidate Persistent Organic Pollutant (POP).
16. Acceptable 90th percentile concentration for a freshwater lake/river with "High" chemical quality standard and alkalinity (as mg/l CaCO3) < 50 mg/L or alkalinity < 200 mg/L where river elevation > 80 m above Ordnance Datum (mAOD). See the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 for further details.
17. Acceptable 90th percentile concentration for a freshwater lake/river with "High" chemical quality standard and alkalinity (as mg/l CaCO3) ≥ 50 mg/L where river elevation < 80 m mAOD or > 200 mg/l where river elevation > 80 mAOD. See the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 for further details.

Table 7: Tier 2 Criteria for Screening Groundwater Vapour Generation Hazard

Chemical	CAS	GAC_{gwvap}(µg/l)[1,2]		Aqueous Solubility (µg/l)
		Residential	Commercial	
Petroleum Hydrocarbons				
1,2,4-Trimethylbenzene	95-63-6	24	2,200	559,000
Benzene [3]	71-43-2	210	20,000	1,780,000
Ethylbenzene [3]	100-41-4	10,000	*960,000 (sol)*	180,000
Isopropylbenzene	98-82-8	850	*86,0000 (sol)*	56,000
Propylbenzene	103-65-1	2,700	*240,000 (sol)*	54,100
Styrene	100-42-5	8,800	*810,000 (sol)*	290,000
Toluene [3]	108-88-3	230,000	*21,000,000 (sol)*	590,000
TPH Aliphatic EC5-EC6 [3]		1,900	*190,000 (sol)*	35,900
TPH Aliphatic >EC6-EC8 [3]		1,500	*150,000 (sol)*	5,370
TPH Aliphatic >EC8-EC10 [3]		57	*5,700 (sol)*	427
TPH Aliphatic >EC10-EC12 [3]		37	*3,600 (sol)*	34
TPH Aromatic >EC5-EC7 [2,3]		210,000	*20,000,000 (sol)*	1,780,000
TPH Aromatic >EC7-EC8 [3]		220,000	*21,000,000 (sol)*	590,000
TPH Aromatic >EC8-EC10 [3]		1,900	*190,000 (sol)*	64,600
TPH Aromatic >EC10-EC12 [3]		6,800	*660,000 (sol)*	24,500
TPH Aromatic >EC12-EC16 [3]		39,000	*3,700,000 (sol)*	5,750
meta-Xylene [3,5]	108-38-3	9,500	*940,000 (sol)*	200,000
ortho-Xylene [3,5]	95-47-6	12,000	*1,100,000 (sol)*	173,000
para-Xylene [3,5]	106-42-3	9,900	*980,000 (sol)*	200,000
Polycyclic Aromatic Hydrocarbons (PAH)				
Acenaphthene	83-32-9	*170,000 (sol)*	*15,000,000 (sol)*	4,110
Acenaphthylene	208-96-8	*220,000 (sol)*	*20,000,000 (sol)*	7,950
Fluorene	86-73-7	*210,000 (sol)*	*18,000,000 (sol)*	1,860
Naphthalene	91-20-3	220	*23,000 (sol)*	19,000
Pesticides				
Aldrin	309-00-2	*47 (sol)*	*3,700 (sol)*	20
alpha-Endusulfan	959-98-8	*7,400 (sol)*	*590,000 (sol)*	530
beta-Endosulfan	33213-65-9	*7,500 (sol)*	*600,000 (sol)*	280
Halogenated Organics				
1,1,1,2-Tetrachloroethane	79-34-5	240	22,000	1,110,000
1,1,1-Trichloroethane	71-55-6	3,000	290,000	1,300,000

1,1,2,2-Tetrachloroethane	79-35-4	1,600	150,000	2,930,000
1,1,2-Trichloroethane	79-00-5	520	49,000	4,491,000
1,1-Dichloroethane	75-34-3	2,700	260,000	3,666,000
1,1-Dichloroethene	75-35-4	160	1,6000	3,100,000
1,2,3,4-Tetrachlorobenzene	634-66-2	240	*31,000 (sol)*	7,800
1,2,3,5-Tetrachlorobenzene	634-90-2	7.0	*600*	3,500
1,2,3-Trichlorobenzene	87-61-7	35	3,100	21,000
1,2,4,5-Tetrachlorobenzene	95-94-3	8.1	*700 (sol)*	600
1,2,4-Trichlorobenzene	120-82-1	68	7,200	41,400
1,2-Dichlorobenzene	95-50-1	2,000	*220,000 (sol)*	133,000
1,2-Dichloroethane	107-06-2	8.9	850	8,680,000
1,2-Dichloropropane	78-87-5	22	2,600	2,050,000
1,3,5-Trichlorobenzene	108-70-3	7.4	660	6,000
1,3-Dichlorobenzene	541-73-1	31	2,800	103,000
1,4-Dichlorobenzene	106-46-7	5,000	*460,000 (sol)*	51,200
Bromobenzene	108-86-1	220	20,000	388,040
Bromodichloromethane	75-27-4	17	1,600	3,000,000
Bromoform (Tribromomethane)	75-25-2	3,100	400,000	3,000,000
Chlorobenzene	108-90-7	98	15,000	387,000
Chloroethane	75-00-3	10,000	1,000,000	5,742,000
Chloroethene (Vinyl Chloride)	75-01-4	0.62	63	2,760,000
Chloromethane	74-87-3	14	1,400	5,350,000
cis-1,2-Dichloroethene	156-59-2	130	13,000	7,550,000
Dichloromethane	75-09-2	3,300	370,000	20,080,000
Hexachlorobenzene	118-74-1	*16 (sol)*	*1,400 (sol)*	10
Hexachlorobutadiene	87-68-3	1.7	230	4,800
Hexachloroethane	67-72-1	8.5	740	49,900
Pentachlorobenzene	608-93-5	140	*12,000 (sol)*	500
Tetrachloroethene	127-18-4	34	4,600	225,000
Tetrachloromethane (Carbon Tetrachloride)	56-23-5	5.3	770	846,000
trans-1,2-Dichloroethene	156-60-5	160	16,000	5,250,000
Trichloroethene	79-01-6	5.7	530	1,370,000
Trichloromethane (Chloroform)	67-66-3	790	85,000	8,950,000
Others (organic and inorganic)				
2-Chloronaphthalene	91-58-7	160	*14,000 (sol)*	11,700
Biphenyl (Lemonene)	92-52-4	*15,000 (sol)*	*1,300,000 (sol)*	4,060
Carbon Disulphide	75-15-0	56	5,600	2,100,000
Mercury, elemental	7439-97-6	1.1	*95 (sol)*	56
Methyl tertiary butyl ether (MTBE)	1634-04-4	83,000	7,800,000	48,000,000

Notes

1. GAC in *italics* with (sol) exceed aqueous solubility.
2. GAC rounded to two significant figures.
3. The GAC for these petroleum hydrocarbon contaminants have been calculated using a sub-surface soil to indoor air correction factor of 10 in line with the physical-chemical data sources.
4. The GAC for TPH fractions do not account for genotoxic mutagenic effects. Concentrations of TPH Aromatic >EC5-EC7 should therefore also be compared with the GAC for benzene to ensure that such effects are also assessed.
5. The Health Criteria Value used for each xylene isomer was for total xylene. If site specific additivity assessments are not completed, as a conservative measure the sum of isomer concentrations should be compared to the lowest xylene GAC (as is the case for soil GAC).

Appendix 3 Geoenvironmental Laboratory Testing Certificates

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Analytical Report Number : 18-80943

Project / Site name:	Riverside EfW	**Samples received on:**	04/04/2018
Your job number:	3765	**Samples instructed on:**	04/04/2018
Your order number:	PO-002715	**Analysis completed by:**	10/04/2018
Report Issue Number:	1	**Report issued on:**	10/04/2018
Samples Analysed:	4 soil samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 18-80943

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				936131	936132	936133	936134	
Sample Reference				BH11	BH11	BH12	BH12	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.00	0.40	1.00	
Date Sampled				27/03/2018	27/03/2018	27/03/2018	27/03/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	23	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	9.8	23	26	26	
Total mass of sample received	kg	0.001	NONE	2.0	1.7	1.7	1.7	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.9	8.0	7.7	8.1	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	280	510	860	380	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.14	0.26	0.43	0.19	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	141	257	429	191	
Organic Matter	%	0.1	MCERTS	4.0	2.4	5.8	1.7	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.91	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	0.39	0.27	1.5	0.30	
Pyrene	mg/kg	0.05	MCERTS	0.37	0.22	1.2	0.23	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.16	< 0.05	0.48	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	0.17	< 0.05	0.57	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.71	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.56	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.31	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.34	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.09	< 0.80	6.85	< 0.80	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	14	21	16	
Boron (water soluble)	mg/kg	0.2	MCERTS	7.5	16	29	49	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.5	< 0.2	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	37	33	36	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	18	30	12	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	47	56	730	53	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	0.5	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	24	26	24	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	34	68	72	84	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	180	760	95	

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				936131	936132	936133	936134	
Sample Reference				BH11	BH11	BH12	BH12	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.00	0.40	1.00	
Date Sampled				27/03/2018	27/03/2018	27/03/2018	27/03/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	-	-	
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	2300	32	720	41	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	8.9	-	-	-	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	27	-	-	-	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	280	-	-	-	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	920	-	-	-	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	320	-	-	-	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	1200	-	-	-	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.1	-	-	-	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	24	-	-	-	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	760	-	-	-	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	2700	-	-	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	790	-	-	-	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	3500	-	-	-	

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				936131	936132	936133	936134	
Sample Reference				BH11	BH11	BH12	BH12	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.00	0.40	1.00	
Date Sampled				27/03/2018	27/03/2018	27/03/2018	27/03/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				936131	936132	936133	936134	
Sample Reference				BH11	BH11	BH12	BH12	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.00	0.40	1.00	
Date Sampled				27/03/2018	27/03/2018	27/03/2018	27/03/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.91	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Fluoranthene	mg/kg	0.05	MCERTS	0.39	0.27	1.5	0.30	
Pyrene	mg/kg	0.05	MCERTS	0.37	0.22	1.2	0.23	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.16	< 0.05	0.48	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	0.17	< 0.05	0.57	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.71	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.56	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.31	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.34	< 0.05	

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Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
936131	BH11	None Supplied	0.50	Brown gravelly sand with stones.
936132	BH11	None Supplied	1.00	Brown clay.
936133	BH12	None Supplied	0.40	Brown clay.
936134	BH12	None Supplied	1.00	Brown clay.

Analytical Report Number : 18-80943

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

Analytical Report Number : 18-80943

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH11		S	18-80943	936131	c	Total cyanide in soil	L080-PL	c
BH11		S	18-80943	936132	c	Total cyanide in soil	L080-PL	c
BH12		S	18-80943	936133	c	Total cyanide in soil	L080-PL	c
BH12		S	18-80943	936134	c	Total cyanide in soil	L080-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-81153

Replaces Analytical Report Number : 18-81153, issue no. 1

Project / Site name:	Riverside EfW	**Samples received on:**	04/04/2018
Your job number:	3765	**Samples instructed on:**	05/04/2018
Your order number:	PO-002715	**Analysis completed by:**	17/04/2018
Report Issue Number:	2	**Report issued on:**	17/04/2018
Samples Analysed:	8 soil samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-81153

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				937197	937198	937199	937200	937201
Sample Reference				BH01	BH01	BH08	BH08	BH02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	4.00	0.50	1.00	0.50
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	29	41	14	29	2.1
Total mass of sample received	kg	0.001	NONE	1.4	1.2	1.4	1.6	1.7
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.4	7.7	9.0	8.3	9.2
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2300	1000	900	370	27
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.1	0.52	0.45	0.19	0.014
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1140	518	448	186	13.6
Organic Matter	%	0.1	MCERTS	3.1	4.8	3.9	2.7	0.1
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	1.0	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	-	0.20	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	-	1.9	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	-	1.7	-	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	1.0	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	-	0.84	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.0	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	0.79	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	1.1	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	0.68	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.17	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.88	-	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	11.3	-	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	25	15	25	8.4
Boron (water soluble)	mg/kg	0.2	MCERTS	19	34	10	26	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.8	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	42	53	24	38	9.4
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	13	64	32	7.2
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	28	380	94	6.8
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	0.5	0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	31	18	27	9.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	1.9	< 1.0	1.8	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	320	66	250	140	14

Analytical Report Number: 18-81153

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				937197	937198	937199	937200	937201
Sample Reference				BH01	BH01	BH08	BH08	BH02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	4.00	0.50	1.00	0.50
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	130	< 10	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	2.4	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	16	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	32	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	230	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	280	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	280	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	560	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	2.2	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	6.8	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	26	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	360	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	760	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	400	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	1200	< 10	< 10

Analytical Report Number: 18-81153

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				937202	937203	937204		
Sample Reference				BH02	BH09	BH09		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				2.00	0.25	1.00		
Date Sampled				04/04/2018	04/04/2018	04/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	28	5.8	25		
Total mass of sample received	kg	0.001	NONE	1.2	1.7	1.3		
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.2	8.9	7.9		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1200	48	120		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.58	0.024	0.059		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	584	23.8	58.5		
Organic Matter	%	0.1	MCERTS	3.1	1.1	1.6		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Phenanthrene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	< 0.80	-		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	7.9	24		
Boron (water soluble)	mg/kg	0.2	MCERTS	75	2.0	37		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.6	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	51	14	51		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	7.1	16		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	32	44	23		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	8.1	30		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.0	< 1.0	< 1.0		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	170	81	83		

Analytical Report Number: 18-81153

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				937202	937203	937204		
Sample Reference				BH02	BH09	BH09		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				2.00	0.25	1.00		
Date Sampled				04/04/2018	04/04/2018	04/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	< 1.0	-		
Toluene	µg/kg	1	MCERTS	-	< 1.0	-		
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-		
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-		
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-		
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	< 10	-	< 10		
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	10	-		
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	83	-		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	10	-		
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	94	-		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	-		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	41	-		
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	320	-		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	42	-		
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	370	-		

Analytical Report Number : 18-81153

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
937197	BH01	None Supplied	2.00	Brown clay and sand with gravel.
937198	BH01	None Supplied	4.00	Brown clay with gravel.
937199	BH08	None Supplied	0.50	Brown loam and sand with gravel and brick.
937200	BH08	None Supplied	1.00	Brown clay with gravel.
937201	BH02	None Supplied	0.50	Light brown sand with gravel.
937202	BH02	None Supplied	2.00	Brown clay and sand with vegetation and gravel
937203	BH09	None Supplied	0.25	Brown sandy gravel. **
937204	BH09	None Supplied	1.00	Light grey clay.

** Non MCERTS matrix.

Analytical Report Number : 18-81153

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-81926

Project / Site name:	Riverside EfW	**Samples received on:**	09/04/2018
Your job number:	3765	**Samples instructed on:**	12/04/2018
Your order number:	PO-002715	**Analysis completed by:**	19/04/2018
Report Issue Number:	1	**Report issued on:**	19/04/2018
Samples Analysed:	4 soil samples		

Signed: [redacted]
Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	9.9	23	16	23	
Total mass of sample received	kg	0.001	NONE	2.0	1.3	2.0	2.0	
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Detected	Not-detected	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.015	-	
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.015	-	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.9	8.2	9.2	9.0	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.032	0.28	0.34	0.20	
Organic Matter	%	0.1	MCERTS	1.4	2.6	3.0	2.6	
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.36	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	-	-	1.1	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	-	-	1.6	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	-	-	5.5	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	-	-	1.1	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	-	-	6.5	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	-	-	5.7	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	3.2	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	-	-	2.8	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	3.7	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.8	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	3.1	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	2.1	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.36	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	2.3	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	41.2	< 0.80	

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Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	22	190	18	
Boron (water soluble)	mg/kg	0.2	MCERTS	3.9	70	4700	160	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	10	29	30	38	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	16	93	14	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	58	50	2100	26	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.5	0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.1	20	23	25	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.1	1.8	1.1	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	85	610	66	
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	240	76	-	-	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	310	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	820	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	490	< 8.0	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	150	< 8.4	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	1600	< 10	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	1800	< 10	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	1.7	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	32	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	87	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	120	< 10	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	280	< 8.4	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	240	< 10	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	520	< 10	

Analytical Report Number: 18-81926

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Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Carbon Disulphide	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Dichloromethane	µg/kg	100	NONE	-	-	< 100	< 100	
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Pentachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	

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Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	ND	ND	
VOC % Match	%	N/A	NONE	-	-	-	-	
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
Ethyl-t-butyl ether (ETBE)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
Methyl-t-butyl ether (MTBE)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
t-amyl ethyl ether (TAEE)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	

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Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	< 0.2	
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	< 0.2	
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.36	< 0.05	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	1.1	< 0.1	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	-	-	1.1	< 0.05	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	0.6	< 0.2	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	< 0.3	
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Fluorene	mg/kg	0.05	MCERTS	-	-	1.6	< 0.05	
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Phenanthrene	mg/kg	0.05	MCERTS	-	-	5.5	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	-	-	1.1	< 0.05	
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Fluoranthene	mg/kg	0.05	MCERTS	-	-	6.5	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	-	-	5.7	< 0.05	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	2.8	< 0.3	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	3.2	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	-	-	2.8	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	3.7	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.8	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	3.1	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	2.1	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.36	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	2.3	< 0.05	

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,6,7-trimethyl-	ND	
SVOC % Match	%	N/A	NONE	-	-	98	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Azulene, 4,6,8-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	98	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzo[e]pyrene	-	
SVOC % Match	%	N/A	NONE	-	-	98	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Heptadecane	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Heneicosane	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Tetracosane	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,4-dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	96	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 2-methyl-	-	
SVOC % Match	%	N/A	NONE	-	-	95	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Nonacosane	-	
SVOC % Match	%	N/A	NONE	-	-	95	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Hexacosane	-	
SVOC % Match	%	N/A	NONE	-	-	95	-	

Environmental Forensics

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	

Analytical Report Number: 18-81926
Project / Site name: Riverside EfW
Your Order No: PO-002715

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
941652	BH13	0.70	161	Loose Fibres & Sheeting/Board Debris	**Chrysotile**	0.015	**0.015**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 18-81926

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
941650	BH10	None Supplied	0.20	Brown clay and gravel.
941651	BH10	None Supplied	0.80	Brown clay and sand.
941652	BH13	None Supplied	0.70	Brown clay and gravel with glass and rubble.
941653	BH13	None Supplied	1.20	Brown clay.

Analytical Report Number : 18-81926

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Oxygenates in soil by HS-GC-MS	Determination of oxygenates in soil by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE

Analytical Report Number : 18-81926

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TO - Chlorophenols in soil	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-81946

Project / Site name:	Riverside EfW	**Samples received on:**	04/04/2018
Your job number:	3765	**Samples instructed on:**	12/04/2018
Your order number:	PO-002715	**Analysis completed by:**	18/04/2018
Report Issue Number:	1	**Report issued on:**	18/04/2018
Samples Analysed:	1 soil sample		

Signed: [redacted]
Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-81946

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941718				
Sample Reference				BH01				
Sample Number				None Supplied				
Depth (m)				0.50				
Date Sampled				03/04/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	6.6				
Total mass of sample received	kg	0.001	NONE	1.7				
General Inorganics								
Organic Matter	%	0.1	MCERTS	0.5				

Analytical Report Number : 18-81946

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
941718	BH01	None Supplied	0.50	Light brown sand with gravel.

The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-81946

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-82198

Project / Site name:	Riverside EfW	**Samples received on:**	13/04/2018
Your job number:	3765	**Samples instructed on:**	13/04/2018
Your order number:	PO-002715	**Analysis completed by:**	20/04/2018
Report Issue Number:	1	**Report issued on:**	20/04/2018
Samples Analysed:	9 soil samples		

Signed: [redacted]
Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-82198

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				943185	943186	943187	943188	943189
Sample Reference				BH05	BH05	BH03	BH03	BH03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.00	0.60	1.00	2.40
Date Sampled				10/04/2018	10/04/2018	11/04/2018	11/04/2018	11/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	-	< 0.1
Moisture Content	%	N/A	NONE	14	27	23	-	22
Total mass of sample received	kg	0.001	NONE	1.4	1.2	1.1	-	0.89
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	Chrysotile	Chrysotile	Crocidolite
Asbestos in Soil	Type	N/A	ISO 17025	Detected	-	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	< 0.001	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	< 0.001	< 0.001	< 0.001
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.5	8.2	9.3	-	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	-	< 1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	350	1000	4400	-	780
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.18	0.52	2.2	-	0.39
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	177	516	2180	-	389
Organic Matter	%	0.1	MCERTS	2.6	6.8	1.8	-	6.4
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.90
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.30
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.29
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.46
Phenanthrene	mg/kg	0.05	MCERTS	0.85	0.30	0.61	-	5.0
Anthracene	mg/kg	0.05	MCERTS	0.26	< 0.05	< 0.05	-	0.77
Fluoranthene	mg/kg	0.05	MCERTS	1.7	0.61	1.0	-	7.1
Pyrene	mg/kg	0.05	MCERTS	1.5	0.51	0.79	-	5.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	0.43	0.55	-	4.2
Chrysene	mg/kg	0.05	MCERTS	1.1	0.50	0.46	-	3.3
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	0.75	0.56	-	4.5
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.61	0.29	0.21	-	1.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.1	0.70	0.73	-	5.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.54	0.29	< 0.05	-	2.0
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.30
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.54	0.27	< 0.05	-	1.9
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	11.4	4.65	4.91	-	43.7
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	230	45	37	-	55
Boron (water soluble)	mg/kg	0.2	MCERTS	1200	390	600	-	320
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	1.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	39	36	-	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	63	42	24	-	48
Lead (aqua regia extractable)	mg/kg	1	MCERTS	220	110	71	-	980
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.7	0.4	-	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	35	27	-	40
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.6	2.1	-	1.9
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	870	420	110	-	1100

Analytical Report Number: 18-82198

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				943185	943186	943187	943188	943189
Sample Reference				BH05	BH05	BH03	BH03	BH03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.00	0.60	1.00	2.40
Date Sampled				10/04/2018	10/04/2018	11/04/2018	11/04/2018	11/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	-	80	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	12	< 2.0	-	-	5.2
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	57	< 8.0	-	-	17
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	130	17	-	-	97
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	39	< 8.4	-	-	32
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	200	17	-	-	120
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	240	17	-	-	150
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	4.2	< 2.0	-	-	8.4
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	57	< 10	-	-	86
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	160	20	-	-	340
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	54	< 8.4	-	-	110
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	220	28	-	-	430
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	270	28	-	-	540

Analytical Report Number: 18-82198

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				943190	943191	943192	943193	
Sample Reference				BH03	BH04	BH04	BH04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.80	0.30	0.70	1.50	
Date Sampled				11/04/2018	11/04/2018	11/04/2018	11/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	24	15	18	26	
Total mass of sample received	kg	0.001	NONE	0.82	1.2	0.99	1.2	
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile & Amosite	-	-	
Asbestos in Soil	Type	N/A	ISO 17025	-	Detected	Not-detected	-	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-	-	
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-	-	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.2	10.3	8.3	7.9	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	520	4000	4600	1300	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.26	2.0	2.3	0.66	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	258	2010	2300	664	
Organic Matter	%	0.1	MCERTS	5.6	2.3	2.3	2.4	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	1.0	-	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.35	-	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	0.30	2.9	-	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	0.26	2.8	-	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.26	2.3	-	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	0.20	1.4	-	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.35	1.8	-	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.13	0.97	-	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.40	3.1	-	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.89	-	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.81	-	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.90	18.2	-	< 0.80	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	23	31	17	18	
Boron (water soluble)	mg/kg	0.2	MCERTS	300	180	120	210	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	23	29	34	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	40	26	17	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	61	88	44	19	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	< 0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29	21	24	27	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.9	1.4	< 1.0	1.5	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	130	67	52	

Analytical Report Number: 18-82198

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				943190	943191	943192	943193	
Sample Reference				BH03	BH04	BH04	BH04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.80	0.30	0.70	1.50	
Date Sampled				11/04/2018	11/04/2018	11/04/2018	11/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	-	< 10	< 10	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	7.7	-	-	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	18	-	-	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	22	100	-	-	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	70	-	-	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	22	130	-	-	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	22	200	-	-	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	4.0	-	-	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	29	-	-	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	18	130	-	-	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	9.7	140	-	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	23	170	-	-	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	33	310	-	-	

Analytical Report Number: 18-82198
Project / Site name: Riverside EfW
Your Order No: PO-002715

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
943185	BH05	0.30	156	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
943187	BH03	0.60	113	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
943188	BH03	1.00	118	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
943189	BH03	2.40	114	Loose Fibres	**Crocidolite**	< 0.001	**< 0.001**
943191	BH04	0.30	135	Loose Fibres	**Chrysotile & Amosite**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 18-82198

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
943185	BH05	None Supplied	0.30	Brown clay and sand with rubble and brick.
943186	BH05	None Supplied	1.00	Brown clay and sand.
943187	BH03	None Supplied	0.60	Light brown clay.
943188	BH03	None Supplied	1.00	-
943189	BH03	None Supplied	2.40	Brown clay and sand.
943190	BH03	None Supplied	2.80	Brown clay and sand.
943191	BH04	None Supplied	0.30	Brown clay and sand with gravel and vegetation.
943192	BH04	None Supplied	0.70	Brown clay with gravel.
943193	BH04	None Supplied	1.50	Brown clay.

Analytical Report Number : 18-82198

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE

Analytical Report Number : 18-82198

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-83760

Project / Site name:	Riverside EfW	**Samples received on:**	30/04/2018
Your job number:	3765	**Samples instructed on:**	30/04/2018
Your order number:	PO-002715	**Analysis completed by:**	04/05/2018
Report Issue Number:	1	**Report issued on:**	04/05/2018
Samples Analysed:	13 soil samples		

Signed: [redacted]
Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	0.93	27	24	10	9.7
Total mass of sample received	kg	0.001	NONE	1.4	1.4	1.9	2.0	0.51
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	Not-detected	Detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	11.2	8.2	10.6	9.0
Total Cyanide	mg/kg	1	MCERTS	-	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	540	1400	1600	3600
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.27	0.70	0.82	1.8
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	268	698	824	1800
Organic Matter	%	0.1	MCERTS	-	3.0	2.2	2.0	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.22	< 0.05	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	3.1	< 0.05	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	1.9	< 0.05	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	30	< 0.05	0.16	1.2	-
Anthracene	mg/kg	0.05	MCERTS	3.4	< 0.05	< 0.05	0.37	-
Fluoranthene	mg/kg	0.05	MCERTS	26	< 0.05	0.42	2.9	-
Pyrene	mg/kg	0.05	MCERTS	18	< 0.05	0.39	3.1	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.7	< 0.05	0.23	1.8	-
Chrysene	mg/kg	0.05	MCERTS	4.6	< 0.05	0.19	1.5	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.6	< 0.05	0.27	2.3	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.0	< 0.05	0.17	0.71	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.8	< 0.05	0.27	1.7	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.50	< 0.05	< 0.05	0.83	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.20	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	< 0.05	< 0.05	0.90	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	99.9	< 0.80	2.10	17.4	-
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	17	13	40	630
Boron (water soluble)	mg/kg	0.2	MCERTS	-	27	34	110	1600
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	33	25	23	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	18	39	35	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	40	54	88	130
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	26	24	17	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	85	68	130	230

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	1.6	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	9.7	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	27	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	13	120	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	110	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	13	160	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	13	270	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	10	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	22	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	< 10	66	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	< 10	260	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	350	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	< 10	360	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	< 10	700	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	NONE	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	NONE	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	-	-	-
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-
Carbon Disulphide	µg/kg	1	NONE	-	-	-	-	-
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	-	-	-
Dichloromethane	µg/kg	100	NONE	-	-	-	-	-
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-	-	-
Pentachlorobenzene	µg/kg	1	NONE	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/kg	0.1	NONE	-	-	-	-	-
Ethyl-t-butyl ether (ETBE)	mg/kg	0.1	NONE	-	-	-	-	-
Methyl-t-butyl ether (MTBE)	mg/kg	0.1	NONE	-	-	-	-	-
t-amyl ethyl ether (TAEE)	mg/kg	0.1	NONE	-	-	-	-	-
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	-	-	-
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	-	-	-

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

SVOCs TICs

SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-

Environmental Forensics

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	25	13	23	10
Total mass of sample received	kg	0.001	NONE	1.9	1.6	1.7	1.7	1.5
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Detected	-	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.002	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.002	-	< 0.001
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.1	8.3	8.9	8.2	9.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	3600	650	3600	400	2200
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.8	0.33	1.8	0.20	1.1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1780	326	1810	202	1080
Organic Matter	%	0.1	MCERTS	1.6	2.6	5.9	2.1	2.2
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	< 1.0	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	0.23	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	0.32	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	0.34	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.5	-	4.4	-	0.71
Anthracene	mg/kg	0.05	MCERTS	0.30	-	1.5	-	0.28
Fluoranthene	mg/kg	0.05	MCERTS	2.3	-	8.6	-	1.9
Pyrene	mg/kg	0.05	MCERTS	1.9	-	7.7	-	1.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.0	-	4.4	-	1.1
Chrysene	mg/kg	0.05	MCERTS	0.91	-	3.8	-	0.99
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	-	7.0	-	2.6
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.66	-	1.7	-	0.70
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.99	-	4.8	-	1.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.47	-	2.7	-	1.7
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.12	-	0.63	-	0.41
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.54	-	3.1	-	2.0
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	12.0	-	51.2	-	16.0
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	310	37	100	14	60
Boron (water soluble)	mg/kg	0.2	MCERTS	1700	170	1200	150	150
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	47	21	47	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	37	17	110	15	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	360	27	300	24	300
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.3	0.4	< 0.3	< 0.3	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	32	45	31	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.0	< 1.0	2.1	1.4
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	340	120	2100	92	210

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	< 10	-	< 10	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	2.3	-	< 1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	10	-	2.2	-	2.7
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	14	-	36	-	10
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	92	-	200	-	100
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	53	-	86	-	77
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	120	-	240	-	120
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	170	-	320	-	200
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	7.9	-	4.7	-	2.3
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	20	-	32	-	8.2
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	42	-	200	-	40
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	100	-	560	-	310
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	54	-	180	-	290
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	170	-	800	-	360
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	230	-	970	-	650

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	-
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
Carbon Disulphide	µg/kg	1	NONE	-	-	< 1.0	-	-
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Dichloromethane	µg/kg	100	NONE	-	-	< 100	-	-
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
Pentachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	ND	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
Ethyl-t-butyl ether (ETBE)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
Methyl-t-butyl ether (MTBE)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
t-amyl ethyl ether (TAEE)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	< 0.10	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.23	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	0.32	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	0.34	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	4.4	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	1.5	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	8.6	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	7.7	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	4.4	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	3.8	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	7.0	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.7	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	4.8	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	2.7	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.63	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	3.1	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzo[e]pyrene	-	-
SVOC % Match	%	N/A	NONE	-	-	98	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,6,7-trimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	97	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	3,4:9,10-Dibenzopyrene	-	-
SVOC % Match	%	N/A	NONE	-	-	97	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Phenanthrene, 4-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Pyrene, 1-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benz[j]aceanthrylene, 3-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzo[b]triphenylene	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 2,7-dimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 2,6-dimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benz[a]anthracene, 7-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-

Environmental Forensics

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	< 0.10	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	25	16	23		
Total mass of sample received	kg	0.001	NONE	1.4	1.6	1.2		
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-		
Asbestos in Soil	Type	N/A	ISO 17025	-	Detected	-		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.004	-		
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.004	-		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.3	8.3	7.6		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1400	190	190		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.71	0.097	0.094		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	713	96.8	94.1		
Organic Matter	%	0.1	MCERTS	3.0	2.0	2.0		
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	-		
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-		
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-		
Fluorene	mg/kg	0.05	MCERTS	-	-	-		
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-		
Anthracene	mg/kg	0.05	MCERTS	-	-	-		
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Pyrene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Chrysene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	27	21	16		
Boron (water soluble)	mg/kg	0.2	MCERTS	440	5.1	43		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	48	32	47		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	37	14		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	220	19		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	25	33		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.0	2.0		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	290	96		

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	< 1.0	-		
Toluene	µg/kg	1	MCERTS	-	< 1.0	-		
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-		
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-		
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-		
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	< 10	-	< 10		
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	5.9	-		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	62	-		
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	54	-		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	76	-		
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	130	-		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	5.8	-		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	15	-		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	43	-		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	180	-		
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	160	-		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	250	-		
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	400	-		

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Project / Site name: Riverside EfW
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Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-		
Chloroethane	µg/kg	1	NONE	-	-	-		
Bromomethane	µg/kg	1	ISO 17025	-	-	-		
Vinyl Chloride	µg/kg	1	NONE	-	-	-		
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-		
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-		
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-		
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-		
Trichloromethane	µg/kg	1	MCERTS	-	-	-		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-		
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-		
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-		
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-		
Benzene	µg/kg	1	MCERTS	-	-	-		
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-		
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-		
Trichloroethene	µg/kg	1	MCERTS	-	-	-		
Dibromomethane	µg/kg	1	MCERTS	-	-	-		
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-		
Toluene	µg/kg	1	MCERTS	-	-	-		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-		
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-		
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-		
Tetrachloroethene	µg/kg	1	NONE	-	-	-		
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-		
Chlorobenzene	µg/kg	1	MCERTS	-	-	-		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-		
Ethylbenzene	µg/kg	1	MCERTS	-	-	-		
p & m-Xylene	µg/kg	1	MCERTS	-	-	-		
Styrene	µg/kg	1	MCERTS	-	-	-		
Tribromomethane	µg/kg	1	NONE	-	-	-		
o-Xylene	µg/kg	1	MCERTS	-	-	-		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-		
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-		
Bromobenzene	µg/kg	1	MCERTS	-	-	-		
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-		
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-		
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-		
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-		
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-		
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-		
Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-		
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-		

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Project / Site name: Riverside EfW
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Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	-		
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	-		
Carbon Disulphide	µg/kg	1	NONE	-	-	-		
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	-		
Dichloromethane	µg/kg	100	NONE	-	-	-		
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-		
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-		
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-		
Pentachlorobenzene	µg/kg	1	NONE	-	-	-		

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Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	-		
VOC % Match	%	N/A	NONE	-	-	-		
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/kg	0.1	NONE	-	-	-		
Ethyl-t-butyl ether (ETBE)	mg/kg	0.1	NONE	-	-	-		
Methyl-t-butyl ether (MTBE)	mg/kg	0.1	NONE	-	-	-		
t-amyl ethyl ether (TAEE)	mg/kg	0.1	NONE	-	-	-		
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	-		
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	-		

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Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-		
Phenol	mg/kg	0.2	ISO 17025	-	-	-		
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-		
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-		
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-		
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-		
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-		
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-		
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-		
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-		
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-		
4-Methylphenol	mg/kg	0.2	NONE	-	-	-		
Isophorone	mg/kg	0.2	MCERTS	-	-	-		
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-		
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-		
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-		
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-		
Naphthalene	mg/kg	0.05	MCERTS	-	-	-		
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-		
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-		
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-		
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-		
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-		
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-		
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-		
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-		
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-		
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-		
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-		
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-		
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-		
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-		
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-		
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-		
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-		
Fluorene	mg/kg	0.05	MCERTS	-	-	-		
Azobenzene	mg/kg	0.3	MCERTS	-	-	-		
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-		
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-		
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-		
Anthracene	mg/kg	0.05	MCERTS	-	-	-		
Carbazole	mg/kg	0.3	MCERTS	-	-	-		
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-		
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-		
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Pyrene	mg/kg	0.05	MCERTS	-	-	-		
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Chrysene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-		

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Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	-		

Analytical Report Number: 18-83760
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Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
951941	TP02	0.50	185	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
951945	TP04	0.80	169	Loose Fibres	**Chrysotile**	0.002	**0.002**
951947	TP05	0.60	164	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
951949	TP06	0.30	159	Loose Fibrous Debris	**Chrysotile**	0.004	**0.004**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
951938	TP01	None Supplied	1.45	Black tar with gravel. **
951939	TP01	None Supplied	1.65	Brown clay and sand with brick.
951940	TP01	None Supplied	2.55	Grey sandy clay with rubble.
951941	TP02	None Supplied	0.50	Brown sandy loam with rubble and vegetation.
951942	TP02	None Supplied	0.80	Brown sandy clay with crystalline material.
951943	TP02	None Supplied	0.90	Brown sand with gravel.
951944	TP02	None Supplied	1.30	Brown clay and sand.
951945	TP04	None Supplied	0.80	Brown sand with gravel and clinker
951946	TP04	None Supplied	1.50	Brown clay.
951947	TP05	None Supplied	0.60	Light brown sand with gravel and rubble.
951948	TP05	None Supplied	1.30	Brown clay and loam with vegetation.
951949	TP06	None Supplied	0.30	Light brown sandy clay with gravel.
951950	TP06	None Supplied	0.70	Brown clay.

** Non MCERTS matrix.

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Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Oxygenates in soil by HS-GC-MS	Determination of oxygenates in soil by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE

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Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TO - Chlorophenols in soil	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-88953

Replaces Analytical Report Number : 18-88953, issue no. 1

Project / Site name:	Riverside EfW	**Samples received on:**	12/06/2018
Your job number:	3765	**Samples instructed on:**	14/06/2018
Your order number:	PO-002715	**Analysis completed by:**	20/06/2018
Report Issue Number:	2	**Report issued on:**	12/07/2018
Samples Analysed:	4 soil samples		

Signed: [redacted]
Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	6.6	14	21	25	
Total mass of sample received	kg	0.001	NONE	1.6	1.5	1.5	1.4	
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile & Amosite	Chrysotile & Amosite	-	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Detected	Not-detected	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.007	< 0.001	-	
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.007	< 0.001	-	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	11.6	9.6	9.3	7.7	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.22	2.2	2.2	0.56	
Organic Matter	%	0.1	MCERTS	1.6	2.3	2.9	2.8	
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	1.0	-	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.27	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.24	4.1	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.7	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	1.9	1.0	11	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	0.43	0.20	3.0	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	3.2	1.5	6.8	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	2.8	1.3	4.9	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.6	0.67	1.5	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	1.5	0.78	1.2	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.8	1.2	1.3	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.91	0.35	0.54	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.6	0.84	1.1	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.68	0.45	0.43	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.90	0.66	0.52	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	17.3	9.16	39.2	< 0.80	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	27	98	76	31	
Boron (water soluble)	mg/kg	0.2	MCERTS	37	120	270	170	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	1.0	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	24	19	52	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	56	53	56	25	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	100	180	150	100	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	18	17	36	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.9	< 1.0	1.8	2.5	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	230	180	3400	
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	440	210	780	< 10	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	2.3	-	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	7.5	-	28	-	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	20	-	64	-	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	100	-	170	-	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	30	-	84	-	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	130	-	270	-	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	160	-	350	-	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	7.4	-	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.8	-	78	-	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	29	-	140	-	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	170	-	180	-	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	81	-	150	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	200	-	400	-	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	280	-	560	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	-	
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	-	
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	-	
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	-	
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	
Carbon Disulphide	µg/kg	1	NONE	-	-	< 1.0	-	
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	
Dichloromethane	µg/kg	100	NONE	-	-	< 100	-	
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	
Pentachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	ND	-	
VOC % Match	%	N/A	NONE	-	-	-	-	
Oxygenates by headspace GC-MS								
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	< 0.10	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	1.0	-	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	0.27	-	
Acenaphthene	mg/kg	0.05	MCERTS	-	-	4.1	-	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	2.1	-	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Fluorene	mg/kg	0.05	MCERTS	-	-	2.7	-	
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Phenanthrene	mg/kg	0.05	MCERTS	-	-	11	-	
Anthracene	mg/kg	0.05	MCERTS	-	-	3.0	-	
Carbazole	mg/kg	0.3	MCERTS	-	-	0.7	-	
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Fluoranthene	mg/kg	0.05	MCERTS	-	-	6.8	-	
Pyrene	mg/kg	0.05	MCERTS	-	-	4.9	-	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	1.5	-	
Chrysene	mg/kg	0.05	MCERTS	-	-	1.2	-	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.3	-	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	0.54	-	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	1.1	-	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	0.43	-	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.52	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,6,7-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	98	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,5-dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,4-dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,4,6-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 2,3,6-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	1H-Cyclopropa[l]phenanthrene,1a,9b-dihydro-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Pyrene, 1-methyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,6-dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	96	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Dibenzothiophene	-	
SVOC % Match	%	N/A	NONE	-	-	96	-	

Environmental Forensics

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	< 0.10	-	

Analytical Report Number: 18-88953
Project / Site name: Riverside EfW
Your Order No: PO-002715

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
981345	BH06	1.50	127	Loose Fibres & Loose Fibrous Debris	**Chrysotile & Amosite**	0.007	**0.007**
981346	BH06	2.00	129	Loose Fibres	**Chrysotile & Amosite**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 18-88953

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
981344	BH06	None Supplied	0.50	Brown sand with rubble.
981345	BH06	None Supplied	1.50	Grey sandy clay with rubble.
981346	BH06	None Supplied	2.00	Grey clay and sand with rubble and vegetation.
981347	BH06	None Supplied	3.00	Brown clay.

Analytical Report Number : 18-88953

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Oxygenates in soil by HS-GC-MS	Determination of oxygenates in soil by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE

Analytical Report Number : 18-88953

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TO - Chlorophenols in soil	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-85315

Project / Site name:	Riverside EfW	**Samples received on:**	11/05/2018
Your job number:	3765	**Samples instructed on:**	15/05/2018
Your order number:	PO-002715	**Analysis completed by:**	22/05/2018
Report Issue Number:	1	**Report issued on:**	22/05/2018
Samples Analysed:	10 water samples		

Signed: [redacted]
Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.2	6.9	7.1	7.0	6.8
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	990	11000	17000	14000	14000
Sulphate as SO_4	µg/l	45	ISO 17025	125000	209000	760000	695000	460000
Sulphate as SO_4	mg/l	0.045	ISO 17025	125	209	760	695	460
Chloride	mg/l	0.15	ISO 17025	80	3200	5500	4900	4800
Total Phosphate as P	µg/l	20	ISO 17025	< 20	990	180	1500	48
Fluoride	µg/l	50	ISO 17025	570	260	540	460	220
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	1500	24000	16000	17000	21000
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	9.71	54.0	7.69	10.7	11.3
Nitrate as N	mg/l	0.01	ISO 17025	2.30	0.32	0.04	0.05	0.02
Nitrite as N	µg/l	1	ISO 17025	67	20	8.4	< 1.0	< 1.0
Alkalinity	mgCaCO3/l	3	ISO 17025	480	2400	460	500	150
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	22	110	110	77	86
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	2.4	0.3	< 0.3	< 0.3	< 0.3
Total Suspended Solids	mg/l	2	NONE	25	56	110	26	34
Dissolved Oxygen	mg/l	1	NONE	5.8	3.2	4.6	3.0	4.1
Ionic Balance	+/-	-100	NONE	-18	-8.0	-9.2	-6.5	1.1
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	7.6	80	15	17
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.74	33.4	1.04	0.49	0.50
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	98	430	240	230	420
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.3	0.6	0.5	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	2.3	3.3	0.6	1.5	1.5
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.3	< 0.2	< 0.2	< 0.2
Magnesium (dissolved)	mg/l	0.005	ISO 17025	21	270	330	310	290
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.8	4.1	1.1	< 0.5	< 0.5
Potassium (dissolved)	mg/l	0.025	ISO 17025	8.2	34	110	83	69
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.9	28	40	34	35
Sodium (dissolved)	mg/l	0.01	ISO 17025	76	1700	2500	2400	2400
Zinc (dissolved)	µg/l	0.5	ISO 17025	7.2	5.1	0.8	3.0	3.0

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TAME (Tertiary amyl methyl ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	< 100
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
SVOC % Match	%	N/A	NONE	-	-	-	-	-
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.9	7.2	7.7	7.8	7.8
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	14000	1000	1800	8500	12000
Sulphate as SO_4	µg/l	45	ISO 17025	181000	27400	30900	354000	628000
Sulphate as SO_4	mg/l	0.045	ISO 17025	181	27.4	30.9	354	628
Chloride	mg/l	0.15	ISO 17025	3700	74	400	2400	3600
Total Phosphate as P	µg/l	20	ISO 17025	27	36	340	910	710
Fluoride	µg/l	50	ISO 17025	2900	960	730	320	400
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	25000	1800	250	33	180
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	46.8	16.4	21.5	4.71	3.53
Nitrate as N	mg/l	0.01	ISO 17025	0.26	0.05	0.07	5.55	4.36
Nitrite as N	µg/l	1	ISO 17025	< 1.0	14	3.4	44	23
Alkalinity	mgCaCO3/l	3	ISO 17025	2300	640	620	200	180
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	210	48	48	23	37
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	< 0.3	< 0.3	< 0.3	5.6	4.4
Total Suspended Solids	mg/l	2	NONE	360	68	14	22	52
Dissolved Oxygen	mg/l	1	NONE	3.7	4.0	5.6	8.7	7.5
Ionic Balance	+/-	-100	NONE	-1.8	-19	-13	3.9	-1.3
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	9.3	< 1.0	< 1.0	6.1	13
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	2.22	5.70	5.25	1.47	1.14
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	470	100	110	120	140
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	0.2	0.5	0.5	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	2.6	0.9	3.7	5.1	3.7
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	< 0.2	0.2	1.9	0.6
Magnesium (dissolved)	mg/l	0.005	ISO 17025	240	28	37	170	250
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	3.3	1.4	3.3	1.9	1.3
Potassium (dissolved)	mg/l	0.025	ISO 17025	41	11	19	61	95
Selenium (dissolved)	µg/l	0.6	ISO 17025	34	3.1	5.7	21	29
Sodium (dissolved)	mg/l	0.01	ISO 17025	2400	68	220	1500	2000
Zinc (dissolved)	µg/l	0.5	ISO 17025	7.0	7.5	16	9.3	3.8

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TAME (Tertiary amyl methyl ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	< 100
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

VOCs TICs

VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-

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Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
SVOC % Match	%	N/A	NONE	-	-	-	-	-
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 18-85315

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Ionic Balance in water	Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L032	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE

Analytical Report Number : 18-85315

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
TAME (Tertiary amyl methyl ether)	In house method by HS-GC-MS	In house method	L036-PL	W	NONE
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TO - Chlorophenols in water	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total oxidised nitrogen in water	Calculation from nitrate and nitrite.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L078-PL	W	NONE
Total Phosphate as P in water	Determination of ortho phosphate in water by addition of ammonium molybdate, potassium antimonyl tartrate and ascorbic acid followed by colorimetry.Accredited matrices: SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton, analysis by discreet analyser.	L082-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02		W	18-85315	960223	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH02		W	18-85315	960223	c	Dissolved Oxygen in water	L086-PL	c
BH02		W	18-85315	960223	c	Electrical conductivity at 20oC of water	L031-PL	c
BH02		W	18-85315	960223	c	pH at 20oC in water (automated)	L099-PL	c
BH03		W	18-85315	960224	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH03		W	18-85315	960224	c	Dissolved Oxygen in water	L086-PL	c
BH03		W	18-85315	960224	c	Electrical conductivity at 20oC of water	L031-PL	c
BH03		W	18-85315	960224	c	pH at 20oC in water (automated)	L099-PL	c
BH05		W	18-85315	960225	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH05		W	18-85315	960225	c	Dissolved Oxygen in water	L086-PL	c
BH05		W	18-85315	960225	c	Electrical conductivity at 20oC of water	L031-PL	c
BH05		W	18-85315	960225	c	pH at 20oC in water (automated)	L099-PL	c
BH08		W	18-85315	960226	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH08		W	18-85315	960226	c	Dissolved Oxygen in water	L086-PL	c
BH08		W	18-85315	960226	c	Electrical conductivity at 20oC of water	L031-PL	c
BH08		W	18-85315	960226	c	pH at 20oC in water (automated)	L099-PL	c
BH12		W	18-85315	960227	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH12		W	18-85315	960227	c	Dissolved Oxygen in water	L086-PL	c
BH12		W	18-85315	960227	c	Electrical conductivity at 20oC of water	L031-PL	c
BH12		W	18-85315	960227	c	pH at 20oC in water (automated)	L099-PL	c
BH13		W	18-85315	960228	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH13		W	18-85315	960228	c	Dissolved Oxygen in water	L086-PL	c
BH13		W	18-85315	960228	c	Electrical conductivity at 20oC of water	L031-PL	c
BH13		W	18-85315	960228	c	pH at 20oC in water (automated)	L099-PL	c
DS		W	18-85315	960232	c	Ammoniacal Nitrogen as N in water	L082-PL	c
DS		W	18-85315	960232	c	Dissolved Oxygen in water	L086-PL	c
DS		W	18-85315	960232	c	Electrical conductivity at 20oC of water	L031-PL	c
DS		W	18-85315	960232	c	pH at 20oC in water (automated)	L099-PL	c
S DITCH		W	18-85315	960230	c	Ammoniacal Nitrogen as N in water	L082-PL	c
S DITCH		W	18-85315	960230	c	Dissolved Oxygen in water	L086-PL	c
S DITCH		W	18-85315	960230	c	Electrical conductivity at 20oC of water	L031-PL	c
S DITCH		W	18-85315	960230	c	pH at 20oC in water (automated)	L099-PL	c
US		W	18-85315	960231	c	Ammoniacal Nitrogen as N in water	L082-PL	c
US		W	18-85315	960231	c	Dissolved Oxygen in water	L086-PL	c
US		W	18-85315	960231	c	Electrical conductivity at 20oC of water	L031-PL	c
US		W	18-85315	960231	c	pH at 20oC in water (automated)	L099-PL	c
W DITCH		W	18-85315	960229	c	Ammoniacal Nitrogen as N in water	L082-PL	c
W DITCH		W	18-85315	960229	c	Dissolved Oxygen in water	L086-PL	c
W DITCH		W	18-85315	960229	c	Electrical conductivity at 20oC of water	L031-PL	c
W DITCH		W	18-85315	960229	c	pH at 20oC in water (automated)	L099-PL	c

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Analytical Report Number : 18-88577

Replaces Analytical Report Number : 18-88577, issue no. 1

Project / Site name:	Riverside EfW	**Samples received on:**	08/06/2018
Your job number:	3765	**Samples instructed on:**	12/06/2018
Your order number:	PO-002715	**Analysis completed by:**	05/07/2018
Report Issue Number:	2	**Report issued on:**	06/07/2018
Samples Analysed:	6 water samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.0	7.1	7.0	6.9
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1000	11000	15000	14000	11000
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	-	-	-
Sulphate as SO_4	µg/l	45	ISO 17025	213000	294000	882000	763000	495000
Sulphate as SO_4	mg/l	0.045	ISO 17025	213	294	882	763	495
Chloride	mg/l	0.15	ISO 17025	120	3200	820	5400	3900
Total Phosphate as P	µg/l	20	ISO 17025	30	250	50	28	200
Fluoride	µg/l	50	ISO 17025	500	270	560	450	280
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	600	23000	16000	16000	18000
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	6.16	44.6	6.42	7.33	10.4
Nitrate as N	mg/l	0.01	ISO 17025	2.14	0.56	0.63	0.33	0.30
Nitrite as N	µg/l	1	ISO 17025	60	22	16	16	17
Alkalinity	mgCaCO3/l	3	ISO 17025	230	2300	530	540	710
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	20	200	170	140	120
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	2.2	0.6	0.6	0.4	0.3
Total Suspended Solids	mg/l	2	NONE	8.0	150	150	64	110
Dissolved Oxygen	mg/l	1	NONE	8.6	8.3	9.1	9.0	8.6
Ionic Balance	+/-	-100	NONE	1.1	-8.3	56	-4.4	-3.2
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	7.5	14	10	6.5
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.82	34.0	4.67	1.25	1.13
Boron (dissolved)	µg/l	10	ISO 17025	9400	9400	-	-	-
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	150	450	270	270	270
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	-	-	-
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.1	0.5	0.5	0.8
Copper (dissolved)	µg/l	0.5	ISO 17025	3.0	1.3	< 0.5	0.5	0.6
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.7	0.4	0.4	0.4
Magnesium (dissolved)	mg/l	0.005	ISO 17025	15	260	400	350	240
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.7	4.4	< 0.5	< 0.5	< 0.5
Potassium (dissolved)	mg/l	0.025	ISO 17025	11	35	110	95	63
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.4	17	29	25	21
Sodium (dissolved)	mg/l	0.01	ISO 17025	85	1700	3100	2700	2100
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.3	3.6	0.7	< 0.5	1.8
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	< 100
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Ethyl-t-butyl ether (ETBE)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Methyl-t-butyl ether (MTBE)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
t-amyl ethyl ether (TAEE)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
t-amyl methyl ether (TAME)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
t-butylalcohol (TBA)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

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Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
SVOC % Match	%	N/A	NONE	-	-	-	-	-
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.9				
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	13000				
Total Cyanide	µg/l	10	ISO 17025	-				
Sulphate as SO_4	µg/l	45	ISO 17025	64400				
Sulphate as SO_4	mg/l	0.045	ISO 17025	64.4				
Chloride	mg/l	0.15	ISO 17025	4500				
Total Phosphate as P	µg/l	20	ISO 17025	71				
Fluoride	µg/l	50	ISO 17025	2300				
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	24000				
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	72.7				
Nitrate as N	mg/l	0.01	ISO 17025	0.79				
Nitrite as N	µg/l	1	ISO 17025	27				
Alkalinity	mgCaCO3/l	3	ISO 17025	2500				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	310				
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	0.8				
Total Suspended Solids	mg/l	2	NONE	520				
Dissolved Oxygen	mg/l	1	NONE	7.4				
Ionic Balance	+/-	-100	NONE	-12				
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	11				
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01				
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16				

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Project / Site name: Riverside EfW

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Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	4.16				
Boron (dissolved)	µg/l	10	ISO 17025	-				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.02				
Calcium (dissolved)	mg/l	0.012	ISO 17025	460				
Chromium (hexavalent)	µg/l	5	ISO 17025	-				
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5				
Copper (dissolved)	µg/l	0.5	ISO 17025	1.3				
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5				
Magnesium (dissolved)	mg/l	0.005	ISO 17025	260				
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05				
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.1				
Potassium (dissolved)	mg/l	0.025	ISO 17025	39				
Selenium (dissolved)	µg/l	0.6	ISO 17025	27				
Sodium (dissolved)	mg/l	0.01	ISO 17025	2200				
Zinc (dissolved)	µg/l	0.5	ISO 17025	5.3				
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10				

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Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0				
Chloroethane	µg/l	1	ISO 17025	< 1.0				
Bromomethane	µg/l	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/l	1	NONE	< 1.0				
Trichlorofluoromethane	µg/l	1	NONE	< 1.0				
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloromethane	µg/l	1	ISO 17025	< 1.0				
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
Benzene	µg/l	1	ISO 17025	< 1.0				
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloroethene	µg/l	1	ISO 17025	< 1.0				
Dibromomethane	µg/l	1	ISO 17025	< 1.0				
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0				
Chlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-Xylene	µg/l	1	ISO 17025	< 1.0				
Styrene	µg/l	1	ISO 17025	< 1.0				
Tribromomethane	µg/l	1	ISO 17025	< 1.0				
o-Xylene	µg/l	1	ISO 17025	< 1.0				
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0				
Bromobenzene	µg/l	1	ISO 17025	< 1.0				
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0				
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	< 100				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND				
VOC % Match	%	10	NONE	-				
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/l	0.1	NONE	< 0.10				
Ethyl-t-butyl ether (ETBE)	mg/l	0.1	NONE	< 0.10				
Methyl-t-butyl ether (MTBE)	mg/l	0.1	NONE	< 0.10				
t-amyl ethyl ether (TAEE)	mg/l	0.1	NONE	< 0.10				
t-amyl methyl ether (TAME)	mg/l	0.1	NONE	< 0.10				
t-butylalcohol (TBA)	mg/l	0.1	NONE	< 0.10				

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05				
Phenol	µg/l	0.05	NONE	< 0.05				
2-Chlorophenol	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05				
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05				
2-Methylphenol	µg/l	0.05	NONE	< 0.05				
Hexachloroethane	µg/l	0.05	NONE	< 0.05				
Nitrobenzene	µg/l	0.05	NONE	< 0.05				
4-Methylphenol	µg/l	0.05	NONE	< 0.05				
Isophorone	µg/l	0.05	NONE	< 0.05				
2-Nitrophenol	µg/l	0.05	NONE	< 0.05				
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05				
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05				
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05				
4-Chloroaniline	µg/l	0.05	NONE	< 0.05				
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05				
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05				
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05				
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05				
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05				
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05				
Dimethylphthalate	µg/l	0.05	NONE	< 0.05				
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05				
Dibenzofuran	µg/l	0.05	NONE	< 0.05				
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05				
Diethyl phthalate	µg/l	0.05	NONE	< 0.05				
4-Nitroaniline	µg/l	0.05	NONE	< 0.05				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Azobenzene	µg/l	0.05	NONE	< 0.05				
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05				
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Carbazole	µg/l	0.05	NONE	< 0.05				
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05				
Anthraquinone	µg/l	0.05	NONE	< 0.05				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01				

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND				
SVOC % Match	%	N/A	NONE	-				
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05				

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 18-88577

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Ionic Balance in water	Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L032	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 18-88577

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Oxygenates in water by HS-GC-MS	Determination of oxygenates in water by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TO - Chlorophenols in water	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total oxidised nitrogen in water	Calculation from nitrate and nitrite.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L078-PL	W	NONE
Total Phosphate as P in water	Determination of ortho phosphate in water by addition of ammonium molybdate, potassium antimonyl tartrate and ascorbic acid followed by colorimetry.Accredited matrices: SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton, analysis by discreet analyser.	L082-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02		W	18-88577	979021	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH02		W	18-88577	979021	c	Hexavalent chromium in water	L080-PL	c
BH02		W	18-88577	979021	c	Alkalinity in Water	L082-PL	c
BH02		W	18-88577	979021	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH02		W	18-88577	979021	c	Boron in water	L039-PL	c
BH02		W	18-88577	979021	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH02		W	18-88577	979021	c	Chloride in water	L082-PL	c
BH02		W	18-88577	979021	c	Dissolved Organic Carbon in water	L037-PL	c
BH02		W	18-88577	979021	c	Dissolved Oxygen in water	L086-PL	c
BH02		W	18-88577	979021	c	Electrical conductivity at 20oC of water	L031-PL	c
BH02		W	18-88577	979021	c	Fluoride in water	L033B-PL	c
BH02		W	18-88577	979021	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH02		W	18-88577	979021	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH02		W	18-88577	979021	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH02		W	18-88577	979021	c	Nitrate as N in water	L078-PL	c
BH02		W	18-88577	979021	c	Nitrite as N in water	L082-PL	c
BH02		W	18-88577	979021	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH02		W	18-88577	979021	c	Semi-volatile organic compounds in water	L102B-PL	c
BH02		W	18-88577	979021	c	Settleable Solids in water	L004-PL	c
BH02		W	18-88577	979021	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH02		W	18-88577	979021	c	Sulphate in water	L039-PL	c
BH02		W	18-88577	979021	c	Suspended solids in water	L004-PL	c
BH02		W	18-88577	979021	c	TO - Chlorophenols in water		c
BH02		W	18-88577	979021	c	TPH in (Water)	L070-PL	c
BH02		W	18-88577	979021	c	TPHCWG (Waters)	L070-PL	c
BH02		W	18-88577	979021	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH02		W	18-88577	979021	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH02		W	18-88577	979021	c	Total Phosphate as P in water	L082-PL	c
BH02		W	18-88577	979021	c	Total Phosphate in water	L082-PL	c
BH02		W	18-88577	979021	c	Total cyanide in water	L080-PL	c
BH02		W	18-88577	979021	c	Total oxidised nitrogen in water	L078-PL	c
BH02		W	18-88577	979021	c	Volatile organic compounds in water	L073B-PL	c
BH02		W	18-88577	979021	c	Volatile organic compounds in water extended	L073B-PL	c
BH02		W	18-88577	979021	c	pH at 20oC in water (automated)	L099-PL	c
BH03		W	18-88577	979022	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH03		W	18-88577	979022	c	Hexavalent chromium in water	L080-PL	c
BH03		W	18-88577	979022	c	Alkalinity in Water	L082-PL	c
BH03		W	18-88577	979022	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH03		W	18-88577	979022	c	Boron in water	L039-PL	c
BH03		W	18-88577	979022	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH03		W	18-88577	979022	c	Chloride in water	L082-PL	c
BH03		W	18-88577	979022	c	Dissolved Organic Carbon in water	L037-PL	c
BH03		W	18-88577	979022	c	Dissolved Oxygen in water	L086-PL	c
BH03		W	18-88577	979022	c	Electrical conductivity at 20oC of water	L031-PL	c
BH03		W	18-88577	979022	c	Fluoride in water	L033B-PL	c
BH03		W	18-88577	979022	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH03		W	18-88577	979022	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH03		W	18-88577	979022	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH03		W	18-88577	979022	c	Nitrate as N in water	L078-PL	c
BH03		W	18-88577	979022	c	Nitrite as N in water	L082-PL	c
BH03		W	18-88577	979022	c	Oxygenates in water by HS-GC-MS	L052B-PL	c

BH03		W	18-88577	979022	c	Semi-volatile organic compounds in water	L102B-PL	c
BH03		W	18-88577	979022	c	Settleable Solids in water	L004-PL	c
BH03		W	18-88577	979022	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH03		W	18-88577	979022	c	Sulphate in water	L039-PL	c
BH03		W	18-88577	979022	c	Suspended solids in water	L004-PL	c
BH03		W	18-88577	979022	c	TO - Chlorophenols in water		c
BH03		W	18-88577	979022	c	TPH in (Water)	L070-PL	c
BH03		W	18-88577	979022	c	TPHCWG (Waters)	L070-PL	c
BH03		W	18-88577	979022	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH03		W	18-88577	979022	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH03		W	18-88577	979022	c	Total Phosphate as P in water	L082-PL	c
BH03		W	18-88577	979022	c	Total Phosphate in water	L082-PL	c
BH03		W	18-88577	979022	c	Total cyanide in water	L080-PL	c
BH03		W	18-88577	979022	c	Total oxidised nitrogen in water	L078-PL	c
BH03		W	18-88577	979022	c	Volatile organic compounds in water	L073B-PL	c
BH03		W	18-88577	979022	c	Volatile organic compounds in water extended	L073B-PL	c
BH03		W	18-88577	979022	c	pH at 20oC in water (automated)	L099-PL	c
BH05		W	18-88577	979023	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH05		W	18-88577	979023	c	Alkalinity in Water	L082-PL	c
BH05		W	18-88577	979023	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH05		W	18-88577	979023	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH05		W	18-88577	979023	c	Chloride in water	L082-PL	c
BH05		W	18-88577	979023	c	Dissolved Organic Carbon in water	L037-PL	c
BH05		W	18-88577	979023	c	Dissolved Oxygen in water	L086-PL	c
BH05		W	18-88577	979023	c	Electrical conductivity at 20oC of water	L031-PL	c
BH05		W	18-88577	979023	c	Fluoride in water	L033B-PL	c
BH05		W	18-88577	979023	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH05		W	18-88577	979023	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH05		W	18-88577	979023	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH05		W	18-88577	979023	c	Nitrate as N in water	L078-PL	c
BH05		W	18-88577	979023	c	Nitrite as N in water	L082-PL	c
BH05		W	18-88577	979023	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH05		W	18-88577	979023	c	Semi-volatile organic compounds in water	L102B-PL	c
BH05		W	18-88577	979023	c	Settleable Solids in water	L004-PL	c
BH05		W	18-88577	979023	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH05		W	18-88577	979023	c	Sulphate in water	L039-PL	c
BH05		W	18-88577	979023	c	Suspended solids in water	L004-PL	c
BH05		W	18-88577	979023	c	TO - Chlorophenols in water		c
BH05		W	18-88577	979023	c	TPH in (Water)	L070-PL	c
BH05		W	18-88577	979023	c	TPHCWG (Waters)	L070-PL	c
BH05		W	18-88577	979023	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH05		W	18-88577	979023	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH05		W	18-88577	979023	c	Total Phosphate as P in water	L082-PL	c
BH05		W	18-88577	979023	c	Total Phosphate in water	L082-PL	c
BH05		W	18-88577	979023	c	Total oxidised nitrogen in water	L078-PL	c
BH05		W	18-88577	979023	c	Volatile organic compounds in water	L073B-PL	c
BH05		W	18-88577	979023	c	Volatile organic compounds in water extended	L073B-PL	c
BH05		W	18-88577	979023	c	pH at 20oC in water (automated)	L099-PL	c
BH08		W	18-88577	979024	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH08		W	18-88577	979024	c	Alkalinity in Water	L082-PL	c
BH08		W	18-88577	979024	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH08		W	18-88577	979024	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH08		W	18-88577	979024	c	Chloride in water	L082-PL	c
BH08		W	18-88577	979024	c	Dissolved Organic Carbon in water	L037-PL	c

BH08		W	18-88577	979024	c	Dissolved Oxygen in water	L086-PL	c
BH08		W	18-88577	979024	c	Electrical conductivity at 20oC of water	L031-PL	c
BH08		W	18-88577	979024	c	Fluoride in water	L033B-PL	c
BH08		W	18-88577	979024	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH08		W	18-88577	979024	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH08		W	18-88577	979024	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH08		W	18-88577	979024	c	Nitrate as N in water	L078-PL	c
BH08		W	18-88577	979024	c	Nitrite as N in water	L082-PL	c
BH08		W	18-88577	979024	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH08		W	18-88577	979024	c	Semi-volatile organic compounds in water	L102B-PL	c
BH08		W	18-88577	979024	c	Settleable Solids in water	L004-PL	c
BH08		W	18-88577	979024	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH08		W	18-88577	979024	c	Sulphate in water	L039-PL	c
BH08		W	18-88577	979024	c	Suspended solids in water	L004-PL	c
BH08		W	18-88577	979024	c	TO - Chlorophenols in water		c
BH08		W	18-88577	979024	c	TPH in (Water)	L070-PL	c
BH08		W	18-88577	979024	c	TPHCWG (Waters)	L070-PL	c
BH08		W	18-88577	979024	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH08		W	18-88577	979024	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH08		W	18-88577	979024	c	Total Phosphate as P in water	L082-PL	c
BH08		W	18-88577	979024	c	Total Phosphate in water	L082-PL	c
BH08		W	18-88577	979024	c	Total oxidised nitrogen in water	L078-PL	c
BH08		W	18-88577	979024	c	Volatile organic compounds in water	L073B-PL	c
BH08		W	18-88577	979024	c	Volatile organic compounds in water extended	L073B-PL	c
BH08		W	18-88577	979024	c	pH at 20oC in water (automated)	L099-PL	c
BH12		W	18-88577	979025	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH12		W	18-88577	979025	c	Alkalinity in Water	L082-PL	c
BH12		W	18-88577	979025	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH12		W	18-88577	979025	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH12		W	18-88577	979025	c	Chloride in water	L082-PL	c
BH12		W	18-88577	979025	c	Dissolved Organic Carbon in water	L037-PL	c
BH12		W	18-88577	979025	c	Dissolved Oxygen in water	L086-PL	c
BH12		W	18-88577	979025	c	Electrical conductivity at 20oC of water	L031-PL	c
BH12		W	18-88577	979025	c	Fluoride in water	L033B-PL	c
BH12		W	18-88577	979025	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH12		W	18-88577	979025	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH12		W	18-88577	979025	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH12		W	18-88577	979025	c	Nitrate as N in water	L078-PL	c
BH12		W	18-88577	979025	c	Nitrite as N in water	L082-PL	c
BH12		W	18-88577	979025	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH12		W	18-88577	979025	c	Semi-volatile organic compounds in water	L102B-PL	c
BH12		W	18-88577	979025	c	Settleable Solids in water	L004-PL	c
BH12		W	18-88577	979025	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH12		W	18-88577	979025	c	Sulphate in water	L039-PL	c
BH12		W	18-88577	979025	c	Suspended solids in water	L004-PL	c
BH12		W	18-88577	979025	c	TO - Chlorophenols in water		c
BH12		W	18-88577	979025	c	TPH in (Water)	L070-PL	c
BH12		W	18-88577	979025	c	TPHCWG (Waters)	L070-PL	c
BH12		W	18-88577	979025	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH12		W	18-88577	979025	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH12		W	18-88577	979025	c	Total Phosphate as P in water	L082-PL	c
BH12		W	18-88577	979025	c	Total Phosphate in water	L082-PL	c
BH12		W	18-88577	979025	c	Total oxidised nitrogen in water	L078-PL	c
BH12		W	18-88577	979025	c	Volatile organic compounds in water	L073B-PL	c

BH12		W	18-88577	979025	c	Volatile organic compounds in water extended	L073B-PL	c
BH12		W	18-88577	979025	c	pH at 20oC in water (automated)	L099-PL	c
BH13		W	18-88577	979026	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH13		W	18-88577	979026	c	Alkalinity in Water	L082-PL	c
BH13		W	18-88577	979026	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH13		W	18-88577	979026	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH13		W	18-88577	979026	c	Chloride in water	L082-PL	c
BH13		W	18-88577	979026	c	Dissolved Organic Carbon in water	L037-PL	c
BH13		W	18-88577	979026	c	Dissolved Oxygen in water	L086-PL	c
BH13		W	18-88577	979026	c	Electrical conductivity at 20oC of water	L031-PL	c
BH13		W	18-88577	979026	c	Fluoride in water	L033B-PL	c
BH13		W	18-88577	979026	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH13		W	18-88577	979026	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH13		W	18-88577	979026	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH13		W	18-88577	979026	c	Nitrate as N in water	L078-PL	c
BH13		W	18-88577	979026	c	Nitrite as N in water	L082-PL	c
BH13		W	18-88577	979026	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH13		W	18-88577	979026	c	Semi-volatile organic compounds in water	L102B-PL	c
BH13		W	18-88577	979026	c	Settleable Solids in water	L004-PL	c
BH13		W	18-88577	979026	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH13		W	18-88577	979026	c	Sulphate in water	L039-PL	c
BH13		W	18-88577	979026	c	Suspended solids in water	L004-PL	c
BH13		W	18-88577	979026	c	TO - Chlorophenols in water		c
BH13		W	18-88577	979026	c	TPH in (Water)	L070-PL	c
BH13		W	18-88577	979026	c	TPHCWG (Waters)	L070-PL	c
BH13		W	18-88577	979026	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH13		W	18-88577	979026	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH13		W	18-88577	979026	c	Total Phosphate as P in water	L082-PL	c
BH13		W	18-88577	979026	c	Total Phosphate in water	L082-PL	c
BH13		W	18-88577	979026	c	Total oxidised nitrogen in water	L078-PL	c
BH13		W	18-88577	979026	c	Volatile organic compounds in water	L073B-PL	c
BH13		W	18-88577	979026	c	Volatile organic compounds in water extended	L073B-PL	c
BH13		W	18-88577	979026	c	pH at 20oC in water (automated)	L099-PL	c

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Analytical Report Number : 18-89740

Replaces Analytical Report Number : 18-89740, issue no. 1

Project / Site name:	Riverside EfW	**Samples received on:**	20/06/2018
Your job number:	3765	**Samples instructed on:**	21/06/2018
Your order number:	PO-002715	**Analysis completed by:**	05/07/2018
Report Issue Number:	2	**Report issued on:**	06/07/2018
Samples Analysed:	4 water samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.8	7.7	8.0	8.0	
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	890	2200	10000	13000	
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Sulphate as SO_4	µg/l	45	ISO 17025	35200	99600	738000	872000	
Sulphate as SO_4	mg/l	0.045	ISO 17025	35.2	99.6	738	872	
Chloride	mg/l	0.15	ISO 17025	48	490	3700	4400	
Total Phosphate as P	µg/l	20	ISO 17025	140	310	990	1000	
Fluoride	µg/l	50	ISO 17025	770	310	350	420	
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	690	150	67	24	
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	17.7	13.9	6.84	6.06	
Nitrate as N	mg/l	0.01	ISO 17025	0.16	0.14	6.28	5.39	
Nitrite as N	µg/l	1	ISO 17025	34	18	21	14	
Alkalinity	mgCaCO3/l	3	ISO 17025	330	120	160	150	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	35	33	130	46	
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	< 0.3	< 0.3	6.3	5.4	
Total Suspended Solids	mg/l	2	NONE	26	26	140	50	
Dissolved Oxygen	mg/l	1	NONE	9.6	9.5	9.5	9.5	
Ionic Balance	+/-	-100	NONE	9.2	18	-2.2	-0.5	
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	3.1	1.4	30	45	
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	9.10	3.57	1.86	1.61	
Boron (dissolved)	µg/l	10	ISO 17025	3200	1100	690	860	
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	
Calcium (dissolved)	mg/l	0.012	ISO 17025	110	86	110	150	
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	0.5	0.2	0.4	
Copper (dissolved)	µg/l	0.5	ISO 17025	4.1	3.4	2.9	2.4	
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5	2.4	0.8	1.2	
Magnesium (dissolved)	mg/l	0.005	ISO 17025	21	39	190	310	
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.5	2.6	1.6	1.3	
Potassium (dissolved)	mg/l	0.025	ISO 17025	11	17	68	100	
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.4	3.2	19	22	
Sodium (dissolved)	mg/l	0.01	ISO 17025	65	430	2200	2500	
Zinc (dissolved)	µg/l	0.5	ISO 17025	3.2	8.1	3.0	2.6	
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	
VOC % Match	%	10	NONE	-	-	-	-	
Oxygenates by headspace GC-MS								
t-amyl methyl ether (TAME)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	
SVOC % Match	%	N/A	NONE	-	-	-	-	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 18-89740

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Ionic Balance in water	Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L032	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 18-89740

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Oxygenates in water by HS-GC-MS	Determination of oxygenates in water by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TO - Chlorophenols in water	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total oxidised nitrogen in water	Calculation from nitrate and nitrite.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L078-PL	W	NONE
Total Phosphate as P in water	Determination of ortho phosphate in water by addition of ammonium molybdate, potassium antimonyl tartrate and ascorbic acid followed by colorimetry.Accredited matrices: SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton, analysis by discreet analyser.	L082-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref
DS		W	18-89740	986256	c	Dissolved Oxygen in water	L086-PL
S DITCH		W	18-89740	986254	c	Dissolved Oxygen in water	L086-PL
US		W	18-89740	986255	c	Dissolved Oxygen in water	L086-PL
W DITCH		W	18-89740	986253	c	Dissolved Oxygen in water	L086-PL

Test Deviation code
c
c
c
c

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Watford,
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WD18 8YS

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f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 18-92270

Project / Site name:	Riverside EfW	**Samples received on:**	12/07/2018
Your job number:	3765	**Samples instructed on:**	12/07/2018
Your order number:	PO-002715	**Analysis completed by:**	18/07/2018
Report Issue Number:	1	**Report issued on:**	18/07/2018
Samples Analysed:	8 water samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.5	6.9	7.4	7.0	7.0
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	920	10000	8400	7500	12000
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	45	ISO 17025	200000	599000	980000	821000	480000
Sulphate as SO_4	mg/l	0.045	ISO 17025	200	599	980	821	480
Chloride	mg/l	0.15	ISO 17025	75	2200	5000	4100	2800
Total Phosphate as P	µg/l	20	ISO 17025	< 20	250	22	41	59
Fluoride	µg/l	50	ISO 17025	500	430	590	430	260
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	170	16000	17000	17000	18000
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	4.08	73.6	7.13	10.2	11.5
Nitrate as N	mg/l	0.01	ISO 17025	2.67	0.29	0.33	0.17	0.22
Nitrite as N	µg/l	1	ISO 17025	65	4.5	11	13	6.8
Alkalinity	mgCaCO3/l	3	ISO 17025	240	2000	660	550	830
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	5.6	140	63	59	57
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	2.7	< 0.3	0.3	< 0.3	< 0.3
Total Suspended Solids	mg/l	2	NONE	< 2.0	38	36	60	88
Dissolved Oxygen	mg/l	1	NONE	8.1	6.5	7.4	7.1	7.2
Ionic Balance	+/-	-100	NONE	-5.4	-6.2	-6.5	1.0	-3.5
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	1.2	1.1	< 1.0	1.6
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.75	9.41	5.86	0.66	2.34
Boron (dissolved)	µg/l	10	ISO 17025	8500	23000	6400	12000	19000
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	130	370	230	290	220
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	6.8 **	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	1.1	1.9 **	4.0	3.6	3.9
Copper (dissolved)	µg/l	0.5	ISO 17025	3.3	< 0.5	1.2	< 0.5	< 0.5
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	< 0.2	0.2	< 0.2	< 0.2
Magnesium (dissolved)	mg/l	0.005	ISO 17025	12	240	350	360	180
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.2	3.4	3.0	2.1	2.0
Potassium (dissolved)	mg/l	0.025	ISO 17025	12	31	99	91	63
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.6	24	30	26	22
Sodium (dissolved)	mg/l	0.01	ISO 17025	56	1400	2500	2300	1600
Zinc (dissolved)	µg/l	0.5	ISO 17025	7.3	3.5	2.3	2.0	3.7

** Due to method variation, results for hexavalent chromium and dissolved chromium do not agree.

Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	< 100
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-
Oxygenates by headspace GC-MS								
t-amyl methyl ether (TAME)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
SVOC % Match	%	N/A	NONE	-	-	-	-	-
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999461	999462	999463		
Sample Reference				BH13	W DITCH	S DITCH		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				10/07/2018	10/07/2018	10/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.5	7.6		
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	9500	1000	2700		
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Sulphate as SO_4	µg/l	45	ISO 17025	43800	3440	111000		
Sulphate as SO_4	mg/l	0.045	ISO 17025	43.8	3.4	111		
Chloride	mg/l	0.15	ISO 17025	1700	68	730		
Total Phosphate as P	µg/l	20	ISO 17025	300	570	960		
Fluoride	µg/l	50	ISO 17025	4500	1000	430		
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	9400	510	410		
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	178	23.1	16.6		
Nitrate as N	mg/l	0.01	ISO 17025	0.11	0.16	0.23		
Nitrite as N	µg/l	1	ISO 17025	< 1.0	13	2.6		
Alkalinity	mgCaCO3/l	3	ISO 17025	3500	780	560		
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	150	54	33		
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	< 0.3	< 0.3	< 0.3		
Total Suspended Solids	mg/l	2	NONE	24	110	20		
Dissolved Oxygen	mg/l	1	NONE	6.8	6.9	7.3		
Ionic Balance	+/-	-100	NONE	-6.1	-22	-13		
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	2.5	1.9	2.2		
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16		

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999461	999462	999463		
Sample Reference				BH13	W DITCH	S DITCH		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				10/07/2018	10/07/2018	10/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	15.8	8.36	4.16		
Boron (dissolved)	µg/l	10	ISO 17025	89000	6000	1200		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.05		
Calcium (dissolved)	mg/l	0.012	ISO 17025	200	110	110		
Chromium (hexavalent)	µg/l	5	ISO 17025	17 **	< 5.0	< 5.0		
Chromium (dissolved)	µg/l	0.2	ISO 17025	5.1 **	1.4	1.1		
Copper (dissolved)	µg/l	0.5	ISO 17025	1.0	0.6	2.1		
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5	0.3	1.0		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	150	31	48		
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05		
Nickel (dissolved)	µg/l	0.5	ISO 17025	24	1.6	3.8		
Potassium (dissolved)	mg/l	0.025	ISO 17025	34	12	17		
Selenium (dissolved)	µg/l	0.6	ISO 17025	33	2.0	6.0		
Sodium (dissolved)	mg/l	0.01	ISO 17025	1900	72	380		
Zinc (dissolved)	µg/l	0.5	ISO 17025	12	4.8	6.5		

** Due to method variation, results for hexavalent chromium and dissolved chromium do not agree.

Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10		

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10		

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999461	999462	999463		
Sample Reference				BH13	W DITCH	S DITCH		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				10/07/2018	10/07/2018	10/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999461	999462	999463		
Sample Reference				BH13	W DITCH	S DITCH		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				10/07/2018	10/07/2018	10/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100		
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0		

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999461	999462	999463		
Sample Reference				BH13	W DITCH	S DITCH		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				10/07/2018	10/07/2018	10/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND		
VOC % Match	%	10	NONE	-	-	-		
Oxygenates by headspace GC-MS								
t-amyl methyl ether (TAME)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10		

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999461	999462	999463		
Sample Reference				BH13	W DITCH	S DITCH		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				10/07/2018	10/07/2018	10/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		

Analytical Report Number: 18-92270

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				999461	999462	999463		
Sample Reference				BH13	W DITCH	S DITCH		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				10/07/2018	10/07/2018	10/07/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND		
SVOC % Match	%	N/A	NONE	-	-	-		
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	0.09	< 0.05	< 0.05		

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 18-92270

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Ionic Balance in water	Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L032	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 18-92270

Project / Site name: Riverside EfW

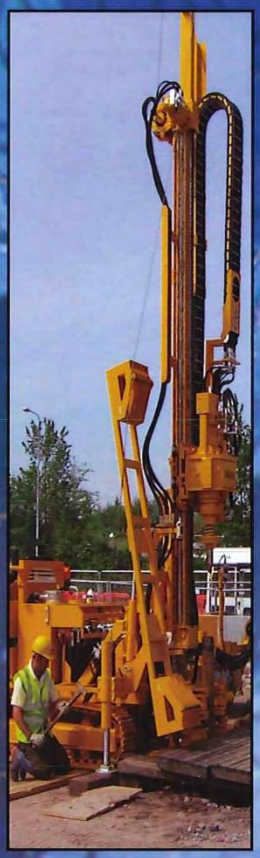
Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Oxygenates in water by HS-GC-MS	Determination of oxygenates in water by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TO - Chlorophenols in water	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total oxidised nitrogen in water	Calculation from nitrate and nitrite.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L078-PL	W	NONE
Total Phosphate as P in water	Determination of ortho phosphate in water by addition of ammonium molybdate, potassium antimonyl tartrate and ascorbic acid followed by colorimetry.Accredited matrices: SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton, analysis by discreet analyser.	L082-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02		W	18-92270	999456	c	Dissolved Oxygen in water	L086-PL	c
BH03		W	18-92270	999457	c	Dissolved Oxygen in water	L086-PL	c
BH05		W	18-92270	999458	c	Dissolved Oxygen in water	L086-PL	c
BH08		W	18-92270	999459	c	Dissolved Oxygen in water	L086-PL	c
BH12		W	18-92270	999460	c	Dissolved Oxygen in water	L086-PL	c
BH13		W	18-92270	999461	c	Dissolved Oxygen in water	L086-PL	c
S DITCH		W	18-92270	999463	c	Dissolved Oxygen in water	L086-PL	c
W DITCH		W	18-92270	999462	c	Dissolved Oxygen in water	L086-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature


TerraConsult

July 2018
Report No 3765R001-2

Riverside EfW

Carried out for:

Hitachi Zosen Inova AG

Riverside EfW

Date: July 2018

Report No 3765R001-2

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DOCUMENT INFORMATION AND CONTROL SHEET

Document Status and Approval Schedule

Report No.	Title
3765R001-2	Riverside EfW

Prepared by:	**D Daniels**		**Project Manager**
Approved by:	**C S Eccles**		**Project Director**
Date:	**07/07/018**		

Issue:	Date:	Description:	Prepared by:
1	31/05/18	Draft for approval	DD
2	07/07/18	Draft for approval	DD

DISCLAIMER

This site investigation contract was completed by TerraConsult Ltd on the basis of a specification and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget, the degree of manpower and resources allocated to the project as agreed.

TerraConsult Ltd cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

This report is issued solely to the client and TerraConsult cannot accept any responsibility to any third parties to whom this report may be circulated, in part or in full, and any such parties rely on the contents at their own risk.

Riverside EfW

CONTENTS

DRAWINGS

APPENDICES

Riverside EfW

1 INTRODUCTION

TerraConsult Limited (TCL) was commissioned by Hitachi Zosen Inova AG (HZI) to carry out a ground investigation for the proposed energy from waste facility at the Cory Riverside Facility, Belvedere, London.

Other parties involved with the site investigation included:

- Cory Riverside Energy Ltd (CRE) – Client;
- Doran Consulting (DC) – structural engineers;
- Gavin & Doherty Geosolutions (GDG) – subcontracted by DC for the geotechnical aspects of the contract;
- Peter Brett Associates (PBA) – geoenvironmental consultants for CRE.

This report presents the factual records of the fieldwork and laboratory testing. The data is also presented separately in digital format following AGS4 (2011).

The scope of the investigation, which was specified by GDG, comprised:

- Boreholes formed by cable percussion and rotary techniques;
- Mechanically excavated trial pits;
- In situ testing comprising of;
    - Standard penetration tests in boreholes;
    - PID;
    - Variable head permeability testing;
- Post fieldwork monitoring and sampling;
- Geotechnical laboratory testing;
- Geoenvironmental laboratory testing;
- Factual report (GIR) and ags data.

The investigation was carried out in accordance with the contract specification and relevant standards (see References). The fieldwork was carried out between 27/03/18 - 03/05/18 and 11 - 16/06/18.

Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of exploratory hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks. Where appropriate, field descriptions have been

All information given in this report is based on the ground conditions encountered during the site work and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations and water conditions between or below exploratory holes. It should be noted that groundwater levels, gas concentrations and gas flows usually vary due to seasonal, atmospheric and/or other effects and may at times differ to those measured during the investigation.

2 SITE DESCRIPTION

2.1 Location and Topography

The site is located Cory Riverside facility, Belvedere, London. The approximate centre of the site is located at Ordnance Survey National Grid Reference TQ 495 806.

2.2 Published Geology

The online British Geological Survey (BGS) Geoindex 1:50,000 scale map shows the site to be underlain by Alluvium, Terrace Gravels, London Clay Formation, Harwich Formation, Lambeth Group and the Thanet Sand Formation.

3 FIELDWORK

3.1 General

The fieldwork was undertaken between 27/03/18 - 03/05/18 and 11 - 16/06/18. The scope of the works, as provided by Doran Consulting comprised:

Table 1: Scope of Intrusive Works and In Situ Testing

Exploratory Hole/In Situ Test Type	Proposed number
Cable percussion boreholes	13
Rotary boreholes	2
Trial pits	6

The exploratory hole locations were selected by Doran Consulting. The locations were set out by dGPS.

3.2 Exploratory Holes

The exploratory holes were logged by an engineer in accordance with the recommendations of BS5930:2015, which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1. Methods of formation and geological descriptions, together with sample records, in situ test results and observations made during formation of the exploratory hole are given in the logs presented in Appendix A and should be read in conjunction with the Key included therein. Core photographs are presented in Appendix B.

A summary of the exploratory holes formed is listed in the following table.

Table 2: Summary of Exploratory Positions

Exploratory position:	Type:	Final depth:	Easting (m E):	Northing (m N):	Level (m OD):	Start date:	End date:	Notes:
BH01	CP	31.38	549433.37	180764.48	3.02	03/04/18	06/04/18	
BH02	CP	32.70	549427.99	180724.99	2.44	11/04/18	09/04/18	
BH02A	CP+RC	50.50	549427.99	180723.57	2.40	30/04/18	03/05/18	
BH03	CP	31.00	549487.14	180720.48	3.40	11/04/18	16/04/18	
BH04	CP	30.90	549477.07	180679.14	1.81	11/04/18	19/04/18	
BH05	CP+RC	33.30	549532.61	180668.51	1.81	16/04/18	16/04/18	
BH06	CP	37.50	549496.44	180754.62	3.18	11/06/18	16/06/18	
BH07	CP		549570.01	180618.99	1.56			(1)
BH08	CP	31.00	549559.32	180559.36	1.32	03/04/18	06/04/18	
BH09	CP	31.39	549400.00	180660.00	1.66	04/04/18	10/04/18	
BH10	CP	33.41	549432.01	180647.00	1.30	07/04/18	10/04/18	
BH10A	CP+RC	50.71	549436.47	180645.95	1.22	23/04/18	27/04/18	
BH11	CP	34.10	549477.76	180565.97	1.28	27/03/18	29/03/18	
BH12	CP	30.00	549429.90	180577.09	1.04	27/03/18	03/04/18	
BH13	CP	32.00	549501.99	180611.01	1.45	06/04/18	09/04/18	
TP01	TP	3.20	549422.11	180759.13	2.95	25/04/18	25/04/18	
TP02	TP	3.00	549501.85	180676.67	1.96	26/04/18	26/04/18	
TP03	TP		549572.00	180601.00	2.41			(1)
TP04	TP	2.50	549550.30	180668.77	1.71	26/04/18	26/04/18	
TP05	TP	3.00	549453.45	180680.63	1.74	25/04/18	25/04/18	
TP06	TP	3.85	549386.70	180615.57	1.50	25/04/18	25/04/18	

Type: CP – cable percussion; RC – rotary core; TP – trial pit

Notes:
(1) Cancelled due to proximity to site services.

Prior to commencement, all exploratory positions were checked for services by reference to available plans, visual inspection and CAT/Genny survey. Inspection pits were excavated by hand and rechecked with a CAT at all borehole and dynamic sample/probe locations.

3.3 Sampling

Samples for geotechnical testing and strata description were taken during the formation of the exploratory holes in general accordance with the specification, BS5930:2015, BS10175:2011 and BS EN ISO 22475-1:2006. Soil and water samples for geochemical analysis were taken in accordance with the specification and stored in cool boxes for despatch directly to i2 Analytical.

Groundwater samples from installations were obtained by low flow sampling techniques. Installation development records and a summary of water samples taken from monitoring installations is presented in Appendix D.

On instruction from PBA, surface water samples were taken from the River Thames (upstream and downstream of the site) and from drainage ditches to the west and south of the site. Locations are shown on drawing 3765D003-1.

3.4 In Situ Testing

In situ testing was carried in accordance with BS 5930:2015 and BS 1377-9 (1990) unless otherwise stated. SPT results are presented on individual exploratory hole logs as uncorrected N values. Information relating to the identification and calibration of SPT hammers can also be found on the individual borehole logs. Hammer calibration certificates are presented in Appendix G.

Photo ionisation testing was undertaken on samples recovered from the made ground at each exploratory position. Results are presented on each exploratory hole log and tabulated in Appendix C.

Variable head (falling) permeability tests in boreholes were undertaken in boreholes 02 and 10 in accordance with ISO 22282-1 : 2012 and ISO 22282-2 : 2012. Results are presented in Appendix C.

3.5 Instrumentation and Monitoring

Details of instrumentation installed is presented on the exploratory hole logs. Following installation, the instrumentation was commissioned to show that it was functioning in the correct manner.

A summary of the installed instrumentation is listed in the following table.

Table 3: Summary of Instrumentation

Exploratory position:	Instrument type:	Instrument reference:	Internal diameter (mm):	Installed depth (m bgl):	Depth (m OD):	Top of response zone (m bgl):	Base of response zone (m bgl):
BH01	SP	1	51	6.00	-2.98	5.00	6.00
BH02	SP	1	51	8.50	-6.06	3.00	8.50
BH03	SP	1	51	8.50	-5.10	3.50	8.50
BH04	SP	1	51	2.00	-0.19	1.00	2.00
BH05	SP	1	51	13.50	-11.69	10.00	13.50
BH06	SP	1	51	14.00	-10.82	12.00	14.00
BH08	SP	1	51	15.00	-13.68	10.00	15.00
BH09	SP	1	51	2.00	-0.34	1.00	2.00
BH11	SP	1	51	9.00	-7.72	1.00	9.00
BH12	SP	1	51	29.50	-24.46	11.50	25.50
BH13	SP	1	51	8.00	-6.55	2.00	8.00

Records of monitoring and gas/groundwater sampling carried out by TerraConsult during and after the fieldwork period to the date of issue of this report are presented in Appendix D. Calibration certificates are presented in Appendix G.

3.6 Surveying

All exploratory positions were set out by use of dGPS. Coordinates and reduced levels to Ordnance Survey are provided on the exploratory hole logs.

4 LABORATORY TESTING

4.1 Geotechnical Testing

The testing was scheduled by GDG and was carried out by GSTL in accordance with BS 1377 (1990) unless otherwise stated. The testing is summarised below and the results are presented in Appendix E.

Table 4: Summary of Geotechnical Laboratory Testing

Lab test:	Number undertaken:	Method (BS1377 ref):	Remarks:
Moisture content	86	K1.1	
Liquid limit, plastic limit and plasticity index	21	K1.2	
Particle size distribution by wet sieving	29	K1.9	
Sedimentation by pipette	7	K1.11	
Sulphate content of acid extract from soil	3	K2.3	
Sulphate content of water extract from soil	3	K2.4	
Sulphate content of groundwater	5	K2.5	
pH value	8	K2.12	
Dry density/moisture content relationship using 4.5 kg rammer	19	K3.2	
California Bearing Ratio on re-compacted disturbed sample	8	K3.9	
One-dimensional consolidation properties	19	K4.1	
Undrained strength of a single 100mm diameter specimen in triaxial compression without the measurement of pore pressure	39	K6.16	
Consolidated undrained triaxial compression test with measurement of pore pressure (set of three 38mm specimens), test duration not exceeding 4 days per specimen	11	K7.1	

NOTE – Testing incomplete at date of this report

4.2 Geoenvironmental Testing

The testing was scheduled by PBA and carried out by i2 Analytical. The results are presented in Appendix F.

5 REFERENCES

AGS: 2010: Electronic transfer of geotechnical and geoenvironmental data (Edition 4 including addendum 3, 2011). Association of Geotechnical and Geoenvironmental Specialists.

BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. Published in nine parts. British Standards Institution.

BS 5930 : 2015 : Code of practice for site investigation. British Standards Institution.

BS 10175 : 2011: Investigation of potentially contaminated sites – Code of Practice. British Standards Institution

BS EN 1997-1: 2004 : Eurocode 7 – Geotechnical Design – Part 1: General rules. Including UK National Appendix of November 2007. British Standards Institution.

BS EN ISO 14688-1 : 2002 : Geotechnical investigation and testing – Identification and classification of soil – Part 1: Identification and description. British Standards Institution.

BS EN ISO 14688-2 : 2004 : Geotechnical investigation and testing – Identification and classification of soil – Part 2: Principles for a classification. British Standards Institution.

BS EN ISO 22282-1 2012 Geotechnical Invest & Test - Geohydraulic Testing General Rules

BS EN ISO 22282 2 2012 Geotechnical investigation and testing. Geohydraulic testing.

BS EN ISO 22475-1 : 2006 : Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 1: Technical principals for execution (July 2011 reprint). British Standards Institution.

BS EN ISO 22476-3 : 2005 : Geotechnical investigation and testing – Field Testing – Part 3: Standard penetration test

6 LICENCES

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Ordnance Survey Reproduction Licence Number. 100035365

DRAWINGS

3765D001-1 Site Location Plan
3765D002-1 Exploratory Hole Location Plan
3765D003-1 Surface Water Sampling Locations

APPENDICES

APPENDIX A
Exploratory Hole Records

Key sheet	
Boreholes	BH01 – BH06, BH08 – BH13, BH02A, BH10A
Trial pits	TP01, TP02, TP04 – TP06

Exploratory Hole Key Sheet

TerraConsult

SAMPLES:

Undisturbed:	
U	Driven tube sample
UT	Thin wall driven tube sample
TW	Pushed thin wall tube sample
P	Pushed piston sample
L	Liner sample (from windowless or similar sampler), full recovery unless otherwise stated
CBR	CBR mould sample
BLK	Block sample
C	Core sample (from rotary core) taken for laboratory testing
Disturbed:	
D	Small sample
B	Bulk sample
AMAL	Amalgamated sample
Environmental:	
ES	Environmental soil sample
EW	Environmental water sample

Comments: Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that an attempt was made to take a tube sample; however, there was no recovery. Sample recovery is given as a percentage.

TESTS:

SPT S or SPT C	Standard Penetration Test, open shoe (S) or solid cone (C)
	The Standard Penetration Test is defined in BS EN ISO 22476-3 (2005). The incremental blow counts are given in the Field Records column; each increment is 75mm unless stated otherwise and any penetration under self weight in mm (SW) is noted. Where the full 300mm test drive is achieved the total number of blows for the test drive is presented as N = ** in the Test column. Where the test drive blows reach 50 (either in total or for a single increment) the total blow count beyond the seating drive is given (without the N = prefix).
ICBR	In situ CBR
IV	In situ vane shear strength, peak (p) and remoulded (r), kPa
HV	Hand vane shear strength, peak (p) and remoulded (r), kPa
PP	Pocket penetrometer test, converted to shear strength, kPa
KFH, KRH, KPI	Variable head permeability tests (KFH = falling head test, KRH = rising head test, KPI = packer test), permeability value
PID/FID	Photo-ionisation detector/Flame-ionisation detector
	Test results provided in Field Records column

DRILLING RECORDS:

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006)

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Minimum, typical and maximum spacings are presented.
NI	Non intact is used where the core is fragmented.
CRF	Core recovered (length in m) in the following run
AZCL	Assessed zone of core loss
NR	Not recovered

GROUNDWATER:

▽ Groundwater strike

▼ Groundwater level after standing period

DEPTH REMARKS:

EoS	End of Shift
SoS	Start of Shift
EoBH	End of Borehole

INSTRUMENTATION:

Details of installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill. The type of instrument installed is indicated by a code adjacent to the Legend column at the base of the instrument.

SP	Standpipe
SPIE	Standpipe piezometer
PPIE	Pneumatic piezometer
EPIE	Electronic piezometer
AP	Access pipe
GMP	Gas monitoring standpipe
(xx)	Internal diameter (mm)
ICE	Biaxial inclinometer
ICM	Inclinometer tubing for use with probe
SLIP	Slip indicator
ESET	Electronic settlement cell/gauge
ETM	Magnetic extensometer settlement point
ETR	Rod extensometer

EXPLORATORY HOLE TYPE:

CP	Cable percussion
DP	Dynamic probe
DCP	Dynamic cone penetrometer
HA	Hand auger
IP	Inspection pit
OP	Observation pit/trench
PC	Pavement core
RC	Rotary core
RO	Rotary open hole
SH	Shaft
SNC	Sonic (resonance)
TP	Trial pit/trench
TRAV	Traverse
WLS	Windowless (dynamic) sample
WS	Window (dynamic) sample

AGS

Project: **Riverside EfW**
Project No: **3765**
Client: **Hitachi Zosen Inova AG**

Reference

KEY SHEET

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	03-04-18	03-04-18	MF	Hand tools	n/a	n/a	03-04-18	VSS	
CP	1.20	31.38	03-04-18	05-04-18	MF	Dando 2000	n/a	n/a	05-04-18	VSS	Hammer ID: AR825 Er(%) 71

Location details:

mE: 549433.37
mN: 180764.48
mAOD: 3.02
Grid: OSGB

Backfill/ Instath	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
			2.97	0.05	ASPHALT.					
			2.72	0.30	(MADE GROUND) Pinkish brown sandy slightly silty GRAVEL of fine to coarse subangular to subrounded of mixed lithologies.			0.50 0.50	PID ES	0.3 ppmv
					(MADE GROUND)					
				(1.30)	Loose light orangish brown gravelly slightly clayey fine to coarse SAND. Gravel of subangular to rounded fine to coarse brick and subrounded to rounded medium to coarse flint. Faint hydrocarbon odour.	Dry	1.00	1.00 - 1.45 1.00 1.00 - 1.45	S PID D	N=12 (1,2/2,3,4,3) 0.3 ppmv
					(MADE GROUND)					
								1.50 1.60	PID D	0.2 ppmv
			1.42	1.60	Very soft to soft dark grey to light grey CLAY. Rare gravel of angular to subangular fine to coarse mixed lithologies. Occasional dark brown peat pockets.			2.00 2.00	PID ES	0.9 ppmv
					(ALLUVIUM)					
				(1.40)		Dry	2.50	2.50 - 2.95 2.50 2.50 - 2.95	S PID D	N=8 (1,2/2,2,2,2) 0.6 ppmv
			0.02	3.00	Soft dark grey to light brown CLAY. Occasional dark brown fibrous organic matter.			3.00	PID	0.4 ppmv
					(ALLUVIUM)					
				(1.00)				3.50	PID	0.7 ppmv
			-0.98	4.00	Very soft to soft dark brownish black peaty CLAY. Occasional plant matter.			4.00 4.00 4.00 - 4.45	PID ES UT	0.7 ppmv
					(ALLUVIUM)			4.45	D	
				(1.50)						
			-2.48	5.50	Loose dark grey silty micaceous fine to medium SAND	Dry	5.50	5.50 - 5.95 5.50 - 5.95	S D	N=3 (1,1/0,1,1,1)
					(ALLUVIUM)					
	SP									
						Dry	7.00	7.00 - 7.45 7.00 - 7.45	S B	N=1 (1,0/0,1,0,0)
				(5.90)		Dry	8.50	8.50 - 8.95 8.50 - 8.95	S B	N=3 (1,1/1,0,1,1)
Inst						Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
5.50	5.50	5.50	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	31.38	29.50

Depth related remarks:

From:	To:	Remarks:
8.00	10.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH01

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	03-04-18	03-04-18	MF	Hand tools	n/a	n/a	03-04-18	VSS	
CP	1.20	31.38	03-04-18	05-04-18	MF	Dando 2000	n/a	n/a	05-04-18	VSS	Hammer ID: AR825 Er(%) 71

Location details:

mE: 549433.37
mN: 180764.48
mAOD: 3.02
Grid: OSGB

Backfill/ Instalt'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results/Remarks
					Loose dark grey silty micaceous fine to medium SAND (ALLUVIUM)	Dry	10.00	10.00 - 10.45 10.00 - 10.45	S B	N=4 (1,1/1,1,1,1)
			-8.38	11.40	Dense to very dense dark greyish brown slightly sandy slightly silty GRAVEL of subangular to rounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	Dry	11.50	11.50 - 11.95 11.50 - 11.95	S B	N=45 (3,3/7,10,13,15)
				(3.20)		Dry	13.00	13.00 - 13.43 13.00 - 13.45	C B	50 (5,5/50 for 277mm)
						Dry	14.50	14.50 - 14.76 14.50 - 14.95	C B	50 (12,13/50 for 115mm)
			-11.58	14.60	Stiff to very stiff dark brownish grey with occasional whitish grey streaks closely fissured laminated occasionally slightly sandy CLAY. Occasionally micaceous. (LONDON CLAY)					
						Dry	16.00	16.00 - 16.45 16.00 - 16.45	S D	N=15 (3,3/3,4,4,4)
								17.50 - 17.95	UT	
				(6.30)				17.95	D	
						Dry	19.00	19.00 - 19.45 19.00 - 19.45	S D	N=36 (5,5/8,9,10,9)
Inst						Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
11.40	0.00	11.40	14.60

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	31.38	29.50

Depth related remarks:

From:	To:	Remarks:
17.00	19.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH01

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	03-04-18	03-04-18	MF	Hand tools	n/a	n/a	03-04-18	VSS	
CP	1.20	31.38	03-04-18	05-04-18	MF	Dando 2000	n/a	n/a	05-04-18	VSS	Hammer ID: AR825 Er(%) 71

Location details:

mE: 549433.37
mN: 180764.48
mAOD: 3.02
Grid: OSGB

Backfill/ Instalt'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Stiff to very stiff dark brownish grey with occasional whitish grey streaks closely fissured laminated occasionally slightly sandy CLAY. Occasionally micaceous. (LONDON CLAY)			20.50 - 20.95	UT	
			-17.88	20.90						
			-17.98	21.00	Dark grey slightly gravelly silty fine to medium SAND. Gravel of subrounded to rounded fine to coarse black flint. Occasional medium to coarse gravel sized pockets of light orangish brown slightly gravely clay. (BLACKHEATH MEMBER HARWICH FORMATION)			20.95 21.00	D D	
				(1.00)	Firm dark grey mottled light brownish grey CLAY (BLACKHEATH MEMBER HARWICH FORMATION)					
			-18.98	22.00	Dense dark blackish grey slightly sandy slightly silty GRAVEL of subrounded to rounded fine to coarse flint. Rare pockets of clay. Occasional sand sized shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)	Dry	22.00	22.00 - 22.45 22.00 - 22.45	S B	N=19 (3,3/3,4,4,8)
				(1.95)						
						Dry	23.50	23.50 - 23.91 23.50 - 23.95	C B	N=50 (12,13/50 for 262mm)
			-20.93	23.95	Very dense dark blackish grey sandy GRAVEL of subrounded to rounded fine to coarse flint. Abundant sand sized shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)					
						Dry	25.00	25.00 - 25.42 25.00 - 25.45	C B	N=50 (12,13/50 for 267mm)
				(3.55)						
						Dry	26.50	26.50 - 26.90 26.50 - 26.95	C B	50 (6,6/50 for 245mm)
			-24.48	27.50	Very dense dark blackish grey slightly sandy GRAVEL of subrounded to rounded fine to coarse flint. Occasional fine gravel size shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)					
				(0.95)		Dry	28.00	28.00 - 28.33 28.00 - 28.45	C B	50 (7,8/50 for 180mm)
			-25.43	28.45	Stiff dark grey slightly gravelly CLAY. Gravel of subrounded to rounded medium flint. Abundant shelly fragments. Occasionally laminated. (UPPER (?) SHELLY CLAY (LAMBETH GROUP))					
			-25.68	28.70	Stiff to very stiff dark grey slightly sandy CLAY. Occasional light greyish brown sand infilled fossil root tracks. (UPPER (?) SHELLY CLAY (LAMBETH GROUP))			28.70	D	
								29.50 - 29.95	UT	
								29.95	D	
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
20.90	6.40	20.90	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	31.38	29.50

Depth related remarks:

From:	To:	Remarks:
22.00	24.00	Blowing sand & gravel

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH01

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	03-04-18	03-04-18	MF	Hand tools	n/a	n/a	03-04-18	VSS	
CP	1.20	31.38	03-04-18	05-04-18	MF	Dando 2000	n/a	n/a	05-04-18	VSS	Hammer ID: AR825 Er(%) 71

Location details:

mE:	549433.37
mN:	180764.48
mAOD:	3.02
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(2.68)	Stiff to very stiff dark grey slightly sandy CLAY. Occasional light greyish brown sand infilled fossil root tracks. (UPPER (?) SHELLY CLAY (LAMBETH GROUP))	Dry	31.00	31.00 - 31.38	S	48 (8,9/48 for 225mm)
			-28.36	31.38	Borehole ends at 31.38m (Refusal)					

Inst	Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	31.38	29.50

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH01

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	KG	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	32.70	04-04-18	09-04-18	KG	Dando 2000 mk 2	n/a	n/a	04-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549427.99
mN:	180724.99
mAOD:	2.44
Grid:	OSGB

Backfill/ Instath	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
			2.34	0.10	ASPHALT.					
					(MADE GROUND)					
			2.19	0.25	Pinkish brown sandy slightly silty GRAVEL of subangular to subrounded fine to coarse mixed lithologies.					
					(MADE GROUND)					
					Orangish brown slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded of flint.			0.50	PID	0.3 ppmv
					(ALLUVIUM)			0.50	ES	
								0.50 - 0.80	B1	
								0.70	VHP	0.000847 m/s
								1.00	PID	0.3 ppmv
								1.00	ES	
				(1.75)				1.00 - 1.20	B2	
						Dry	1.50	1.50 - 1.95	C	N=8 (1,2/2,2,2,2)
								1.50	PID	0.2 ppmv
								1.50	ES	
								1.50 - 1.95	B3	
			0.44	2.00	Soft to firm extremely to very closely fissured light brownish grey mottled black slightly gravely CLAY. Gravel of subangular to rounded fine to coarse flint. Occasional rootlets and relic root tracks.			2.00	PID	0.6 ppmv
					(ALLUVIUM)			2.00	D4	0.000018 m/s
								2.00	ES	
								2.00 - 2.20	B5	
								2.00	VHP	
								2.50	PID	0.6 ppmv
								2.50	ES	8 (100%)
								2.50 - 2.95	UT6	
								2.95 - 3.05	D7	
				(2.50)						
						Dry	3.50	3.50 - 3.95	S	N=4 (1,0/1,1,1,1)
								3.50 - 3.95	D8	0.000007 m/s
								3.50	VHP	
			-2.06	4.50	Very soft to soft dark brown peaty CLAY. Occasional pockets of light grey clay. Frequent rootlets and occasional wood fragments.			4.50 - 4.95	UT9	9 (100%)
					(ALLUVIUM)			4.50 - 5.05	B11	
								4.62	W	
								4.95 - 5.05	D10	
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.70	28.30

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:25

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	KG	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	32.70	04-04-18	09-04-18	KG	Dando 2000 mk 2	n/a	n/a	04-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE: 549427.99
mN: 180724.99
mAOD: 2.44
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(1.30)	Very soft to soft dark brown peaty CLAY. Occasional pockets of light grey clay. Frequent rootlets and occasional wood fragments. (ALLUVIUM)			5.35	W	
						Dry	5.70	5.70 - 6.15	S	N=2 (1,0/1,0,0,1)
			-3.36	5.80				5.80	D12	
				(0.50)	Very loose light grey silty micaceous fine to medium SAND. (ALLUVIUM)			6.00 - 6.45	D13	
			-3.86	6.30						
					Very soft to soft very closely fissured laminated dark grey CLAY. Occasional shells. Occasional plant matter and roots. Occasional bands of micaceous slightly sandy CLAY. (ALLUVIUM)	Dry	5.70	6.90 - 7.35	S	N=6 (1,0/1,1,2,2)
								7.30	D14	
				(2.40)				7.50 - 7.95	UT15	18 (100%)
								7.95 - 8.05	D16	
	SP							8.50	VHP	0.000007 m/s
			-6.26	8.70				8.70	D17	
				(0.50)	Soft interlaminated dark reddish brown and black organic CLAY. Occasional woody plant matter. (Dark reddish brown becomes black upon exposure to air). (ALLUVIUM)	Dry	8.40	9.00 - 9.45 9.00 - 9.45	S D18	N=7 (1,0/2,3,0,2)
			-6.76	9.20						
					Soft to firm extremely closely fissured dark greenish grey (possibly) glauconitic CLAY. Frequent sand sized shell fragments. Rare mottling with dark blue. Rare gravel of subangular to rounded fine to coarse flint. (ALLUVIUM)			9.50 - 10.00	B19	
				(1.30)						
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.70	28.30

Depth related remarks:

From: To: Remarks:

Chiselling details:

From: to: Duration: Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:25

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	KG	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	32.70	04-04-18	09-04-18	KG	Dando 2000 mk 2	n/a	n/a	04-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE: 549427.99
mN: 180724.99
mAOD: 2.44
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Soft to firm extremely closely fissured dark greenish grey (possibly) glauconitic CLAY. Frequent sand sized shell fragments. Rare mottling with dark blue. Rare gravel of subangular to rounded fine to coarse flint. (ALLUVIUM)					
	▽		-8.06	10.50	Medium dense dark greyish brown sandy GRAVEL of subangular to rounded fine to coarse flint. Low cobble content of rounded flint. (TAPLOW GRAVEL MEMBER)	Dry	10.50	10.50 - 10.95 10.50 - 10.95	S B20	N=16 (1,2/2,3,5,6)
				(1.00)						
			-9.06	11.50	Medium dense dark greyish brown gravelly silty fine to coarse SAND. Gravel of subangular to rounded fine to medium flint. Frequent shell fragments. (TAPLOW GRAVEL MEMBER)					
						0.30	12.00	12.00 - 12.45 12.00 - 12.45	C B21	N=27 (2,4/4,6,8,9)
				(1.90)				12.50	VHP	0.000020 m/s
			-10.96	13.40	Firm to stiff very closely fissured occasionally laminated dark grey CLAY. (LONDON CLAY)			13.40 13.50 - 13.95	D22 UT23	49 (100%)
				(0.40)						
			-11.36	13.80	Stiff to very stiff laminated dark brownish grey slightly sandy CLAY. Occasional sand sized shell fragments. (LONDON CLAY)			13.95 - 14.05	D24	
	Inst					Dry Water	13.70 Casing	15.00 - 15.45 Depth	S Type & No	N=23 (3,4/5,5,6,7) Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
10.60	5.35	10.50	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.70	28.30

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:25

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	KG	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	32.70	04-04-18	09-04-18	KG	Dando 2000 mk 2	n/a	n/a	04-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549427.99
mN:	180724.99
mAOD:	2.44
Grid:	OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Stiff to very stiff laminated dark brownish grey slightly sandy CLAY. Occasional sand sized shell fragments. (LONDON CLAY)			15.00 - 15.45	D25	
								16.50 - 16.95	UT26	62 (100%)
				(6.00)				16.95 - 17.05	D27	
						17.70	13.70	18.00 - 18.45	S	N=31 (4,4/6,7,9,9)
								18.00 - 18.45	D28	
								19.50 - 19.95	UT29	81 (80%)
			-17.36	19.80	Very dense dark blackish grey sandy silty GRAVEL of subrounded to rounded fine to coarse black flint. Frequent shell fragments.			19.95 - 20.05	D30	
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.70	28.30

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:25

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	KG	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	32.70	04-04-18	09-04-18	KG	Dando 2000 mk 2	n/a	n/a	04-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549427.99
mN:	180724.99
mAOD:	2.44
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results/Remarks
					Very dense dark blackish grey sandy silty GRAVEL of subrounded to rounded fine to coarse black flint. Frequent shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)			20.10	D31	
						0.10	31.00	21.00 - 21.40 21.00 - 21.45	C B32	50 (4,7/50 for 255mm)
				(3.70)						
						0.10	22.50	22.50 - 22.88 22.50 - 22.95	C B33	50 (6,8/50 for 235mm)
			-21.06	23.50	Very dense dark grey gravelly silty fine to medium SAND. Gravel of subrounded to rounded fine to coarse black flint. Occasional shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)					
						0.10	24.00	24.00 - 24.38 24.00 - 24.45	C B34	50 (5,7/50 for 235mm)
				(1.50)						
	Inst		-22.56	25.00		Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
20.10	4.62	13.70	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.70	28.30

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:25

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	KG	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	32.70	04-04-18	09-04-18	KG	Dando 2000 mk 2	n/a	n/a	04-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE: 549427.99
mN: 180724.99
mAOD: 2.44
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results/Remarks
					Dark blackish grey silty GRAVEL of subrounded to rounded fine to medium black flint. (BLACKHEATH MEMBER HARWICH FORMATION)					
						0.10	25.50	25.50 - 25.90 25.50 - 25.95	C B35	50 (3,4/50 for 255mm)
				(3.10)						
								27.00 - 27.45	B36	
			-25.66	28.10	Stiff to very stiff dark grey extremely closely fissured CLAY. Rare gravel of subrounded to rounded medium flint. Occasional sand sized shell fragments. (LOWER SHELLY CLAY (LAMBETH GROUP))					
								28.50 - 28.95	UT37	100 (30%)
					28.80 - 29.20 m: Weak laminated closely fissured MUDSTONE.					
								28.95 - 29.05	D32	
								29.20	D33	
				(3.40)						
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.70	28.30

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:25

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	KG	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	32.70	04-04-18	09-04-18	KG	Dando 2000 mk 2	n/a	n/a	04-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE: 549427.99
mN: 180724.99
mAOD: 2.44
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Stiff to very stiff dark grey extremely closely fissured CLAY. Rare gravel of subrounded to rounded medium flint. Occasional sand sized shell fragments. (LOWER SHELLY CLAY (LAMBETH GROUP))	28.10	28.80	30.00 - 30.42 30.00 - 30.45	S D34	50 (6,7/50 for 265mm)
			-29.06	31.50	Stiff to very stiff dark greenish grey sandy slightly gravely CLAY. Gravel of subrounded to rounded fine to medium flint. Possibly glauconitic. (UPNOR FORMATION)			31.50 - 31.95	UT35	100 (50%)
				(0.55)				31.95 - 32.05	D36	
			-29.61	32.05	Very dense dark brownish grey gravelly silty fine to medium SAND. Gravel of subangular to rounded fine to coarse flint. Occasional shell fragments. (UPNOR FORMATION)					
			-29.96	32.40	Dark brownish grey gravelly silty fine to medium SAND. Gravel of subangular to rounded fine to coarse flint. Occasional shell fragments. (UPNOR FORMATION)					
				(0.30)						
			-30.26	32.70	Borehole ends at 32.70m (Refusal)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.70	28.30

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:
32.30	32.70	01:00	Californian

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:25

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	KG	Hand tools	n/a	n/a			
CP	1.20	28.20	16-04-18	18-04-18	KG	Dando 2000 mk 2	n/a	n/a			
RO	28.00	31.00	30-04-18	30-04-18	PS	Comacchio 305	n/a	PCD	04-05-18	VSS	Hammer ID: RHM1703006 Er(%) 82
RC	31.00	50.50	30-04-18	01-05-18	PS	Comacchio 305	Geobore S	PCD	04-05-18	VSS	

Location details:

mE:	549427.99
mN:	180723.57
mAOD:	2.10
Grid:	OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
			1.90	0.20	Tarmac (Driller's description) (MADE GROUND)					
			1.80	0.30	Type 1 (Driller's description) (MADE GROUND)					
				(1.70)	Brown SAND and GRAVEL (Driller's description) (ALLUVIUM)					
			0.10	2.00	Mottled grey peaty CLAY (Driller's description) (ALLUVIUM)					
	▼			(2.50)						
			-2.40	4.50	PEAT (Driller's description) (ALLUVIUM)					
				(1.40)						
			-3.80	5.90	Blue green CLAY with silt. (Driller's description) (ALLUVIUM)					
				(0.60)						
			-4.40	6.50	Soft to firm grey peaty CLAY (Driller's description) (ALLUVIUM)					
				(2.20)						
			-6.60	8.70	PEAT (Driller's description) (ALLUVIUM)					
				(0.60)						
			-7.20	9.30	Firm green blue gravelly CLAY. (Driller's description) (ALLUVIUM)					
				(1.10)						
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	13.80	13.80
200	28.20	28.00
146	50.50	50.40

Depth related remarks:

From:	To:	Remarks:
0.00	28.20	Cable percussion open hole prebore

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	KG	Hand tools	n/a	n/a			
CP	1.20	28.20	16-04-18	18-04-18	KG	Dando 2000 mk 2	n/a	n/a			
RO	28.00	31.00	30-04-18	30-04-18	PS	Comacchio 305	n/a	PCD	04-05-18	VSS	Hammer ID: RHM1703006 Er(%) 82
RC	31.00	50.50	30-04-18	01-05-18	PS	Comacchio 305	Geobore S	PCD	04-05-18	VSS	

Location details:

mE:	549427.99
mN:	180723.57
mAOD:	2.10
Grid:	OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
	▽		-8.30	10.40	Firm green blue gravelly CLAY. (Driller's description) (ALLUVIUM)					
				(3.20)	Grey SAND and GRAVEL (Driller's description) (TAPLOW GRAVEL MEMBER)					
			-11.50	13.60	Stiff grey CLAY (Driller's description) (LONDON CLAY FORMATION)					
				(6.00)						
			-17.50	19.60	Greenish grey CLAY. With occational shells (Driller's description) (UPPER SHELLY CLAY (LAMBETH GROUP))					
				(0.40)						
			-17.90	20.00	Grey SAND (Driller's description)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
10.40	3.20	10.40	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	13.80	13.80
200	28.20	28.00
146	50.50	50.40

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	KG	Hand tools	n/a	n/a			
CP	1.20	28.20	16-04-18	18-04-18	KG	Dando 2000 mk 2	n/a	n/a			
RO	28.00	31.00	30-04-18	30-04-18	PS	Comacchio 305	n/a	PCD	04-05-18	VSS	Hammer ID: RHM1703006 Er(%) 82
RC	31.00	50.50	30-04-18	01-05-18	PS	Comacchio 305	Geobore S	PCD	04-05-18	VSS	

Location details:

mE:	549427.99
mN:	180723.57
mAOD:	2.10
Grid:	OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Grey SAND (Driller's description)					
				(8.00)						
			-25.90	28.00	Stiff grey CLAY. With occational shells (Driller's description) (LOWER SHELLY CLAY (LAMBETH GROUP))					
				(3.00)						
	Inst					Water	Casing	Depth/Core Run	TCR SCR RQD	If / Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	13.80	13.80
200	28.20	28.00
146	50.50	50.40

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	KG	Hand tools	n/a	n/a			
CP	1.20	28.20	16-04-18	18-04-18	KG	Dando 2000 mk 2	n/a	n/a			
RO	28.00	31.00	30-04-18	30-04-18	PS	Comacchio 305	n/a	PCD	VSS	04-05-18	Hammer ID: RHM1703006 Er(%) 82
RC	31.00	50.50	30-04-18	01-05-18	PS	Comacchio 305	Geobore S	PCD	VSS	04-05-18	

Location details:

mE: 549427.99
mN: 180723.57
mAOD: 2.10
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks/ samples
				31.00							
			-28.90	31.00	Stiff dark brown mottled light grey sandy CLAY						31.08 - 31.27 D
			-29.10	31.20	(LOWER MOTTLED CLAY (LAMBETH GROUP))						
					Stiff light grey mottled orangish brown and black sandy CLAY						
					(LOWER MOTTLED CLAY (LAMBETH GROUP))						
					31.27 - 32.50 m: AZCL			31.00 - 32.50	18 n/a n/a		
				(1.30)							
			-30.40	32.50							
			-30.50	32.60	Recovered as: dark grey fine to coarse subangular to rounded black flint GRAVEL			32.50 - 33.00	100 n/a n/a		32.85 - 33.00 U
				(0.30)							
			-30.80	32.90	Firm dark greyish green slighty sandy CLAY. Gravel is fine to coarse subangular to rounded black and brown flint						
			-30.97	33.07	Stiff dark greyish green and yellowish green mottled sandy CLAY						
					Recovered as: dark grey and dark greenish grey mottled slightly clayey fine to coarse subangular to rounded black and dark brown flint GRAVEL			33.00 - 34.00	64 n/a n/a		
				(0.58)							
			-31.55	33.65							
			-31.65	33.75	Dark greyish green slightly sandy gravelly CLAY. Gravel is fine to coarse subangular to rounded black and dark brown flint						33.90 - 34.00 D
					Dark green mottled orangish brown clayey fine to medium SAND	0.00	28.20	~~34.00 - 34.45~~ S			N=50 (2,5/7,13,15,15)
					34.00 - 34.90 m: AZCL			34.00 - 35.50	40 n/a n/a		
				(1.15)							
			-32.80	34.90	Dark green and bluish green clayey fine to medium SAND						35.35 - 35.50 D
								35.50 - 37.00	57 n/a n/a		36.20 - 36.35 D
					36.35 - 38.25 m: AZCL						
				(3.35)							
						0.00	28.20	~~37.00 - 37.34~~ S			50 (8,16/50 for 195mm)
								37.00 - 38.50	23 n/a n/a		
			-36.15	38.25	Dark green fine to medium SAND						38.25 - 38.35 D
			-36.25	38.35	Dark green slightly gravelly clayey fine to medium SAND. Gravel is fine to medium subangular to rounded black and dark brown flint						
			-36.40	38.50	Dark green slightly clayey fine to medium SAND						
				(1.00)				38.50 - 39.50	93 n/a n/a		
											39.35 - 39.50 D
			-37.40	39.50	Dark greenish grey slightly gravelly very silty fine to coarse glauconitic SAND			39.50 - 40.00	100 n/a n/a		
				(0.68)							
					40.00 - 40.18 m: AZCL	0.00	28.20	~~40.00 - 40.42~~ S			50 (5,10/50 for 265mm)
			-38.08	40.18	Dark green slightly clayey fine to medium SAND						

Inst	Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	13.80	13.80
200	28.20	28.00
146	50.50	50.40

Depth related remarks:

From	to:	Remarks:

Flush details:

Depth:	Type:	Return:	Colour:
28.00 - 32.50	water	100%	grey
33.00 - 38.50	water	100%	brown

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:
BH02A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	KG	Hand tools	n/a	n/a			
CP	1.20	28.20	16-04-18	18-04-18	KG	Dando 2000 mk 2	n/a	n/a			
RO	28.00	31.00	30-04-18	30-04-18	PS	Comacchio 305	n/a	PCD	VSS	04-05-18	Hammer ID: RHM1703006 Er(%) 82
RC	31.00	50.50	30-04-18	01-05-18	PS	Comacchio 305	Geobore S	PCD	VSS	04-05-18	

Location details:

mE: 549427.99
mN: 180723.57
mAOD: 2.10
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks/ samples
				(1.17)				40.00 - 41.50	88 n/a n/a		41.00 - 41.15 D
			-39.25	41.35	Interlaminated dark greenish grey CLAY and fine to medium SAND						
			-39.45	41.55	Dark greenish grey fine to medium SAND						
								41.50 - 43.00	89 n/a n/a		42.55 - 42.70 D
				(1.85)							
					42.80 - 42.85 m: NI drilling disturbed						
					42.85 - 43.00 m: AZCL	0.00	28.20	~~43.00 - 43.33~~ S			50 (6,10/50 for 180mm) 43.00 - 43.45 D
			-41.30	43.40							
			-41.45	43.55	Dark greenish grey sandy gravelly CLAY. Gravel is fine to coarse subrounded to rounded black flint						
					Dark greyish brown slightly silty fine to medium micaceous SAND. Occasional dark grey sand infilled fossil bioturbations (50 - 100 mm) (THANET FORMATION)			43.00 - 44.50	93 n/a n/a		44.00 - 44.10 D
								44.50 - 46.00	100 n/a n/a		45.50 - 45.60 D
						0.00	28.20	~~46.00 - 46.38~~ S			50 (12,12/50 for 235mm) 46.00 D
								46.00 - 47.50	96 n/a n/a		47.05 - 47.15 D
				(6.95)							
					47.00 - 47.05 m: NI drilling disturbed						
					47.40 - 47.44 m: NI drilling disturbed						
								47.50 - 49.00	100 n/a n/a		48.50 - 48.60 D
					49.00 - 49.18 m: NI drilling disturbed	0.00	28.20	~~49.00 - 49.32~~ S			50 (9,13/50 for 170mm) 49.00 - 49.45 D
								49.00 - 50.50	100 n/a n/a		

	Inst					Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	13.80	13.80
200	28.20	28.00
146	50.50	50.40

Depth related remarks:

From	to:	Remarks:

Flush details:

Depth:	Type:	Return:	Colour:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	KG	Hand tools	n/a	n/a			
CP	1.20	28.20	16-04-18	18-04-18	KG	Dando 2000 mk 2	n/a	n/a			
RO	28.00	31.00	30-04-18	30-04-18	PS	Comacchio 305	n/a	PCD	VSS	04-05-18	Hammer ID: RHM1703006 Er(%) 82
RC	31.00	50.50	30-04-18	01-05-18	PS	Comacchio 305	Geobore S	PCD	VSS	04-05-18	

Location details:

mE: 549427.99
mN: 180723.57
mAOD: 2.10
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks/ samples
			-48.40	50.50	Borehole ends at 50.50 m (Termination reason: Target depth)						50.50 D

	Inst					Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	13.80	13.80
200	28.20	28.00
146	50.50	50.40

Depth related remarks:

From to: Remarks:

Flush details:

Depth: Type: Return: Colour:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH02A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	11-04-18	11-04-18	MJ	Hand tools	n/a	n/a	11-04-18	VSS	
CP	1.20	31.00	11-04-18	16-04-18	MJ	Dando 3000 mk 2	n/a	n/a	19-04-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE:	549487.14
mN:	180720.48
mAOD:	3.40
Grid:	OSGB

Backfill/ Instath	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results/Remarks
				(0.50)	Coarse GRAVEL and COBBLES of brick and concrete. (MADE GROUND)					
			2.90	0.50				0.50 - 0.90	B1	
				(0.30)	Firm dark grey occasionally mottled black slightly gravely CLAY. Gravel of subangular to subrounded brick.			0.60	PID	0.0 ppmv
			2.60	0.80	(MADE GROUND)			0.60	ES	
					Soft dark greyish brown occasionally mottled black gravely CLAY. Gravel of subangular to subround, fine to medium brick and flint. (MADE GROUND)	Dry	1.00	1.00 - 1.45	C	N=7 (1,2/2,1,2,2)
								1.00	PID	0.3 ppmv
								1.00	ES	
				(1.50)				1.50 - 1.95	B2	
						Dry	2.00	2.00 - 2.45	C	N=10 (2,2/2,2,3,3)
			1.10	2.30						
				(0.40)	Soft to firm black mottled dark brownish grey slightly sandy slightly gravely CLAY. Gravel of subangular to subround brick. (MADE GROUND)			2.40	PID	0.0 ppmv
								2.40	ES	
			0.70	2.70				2.50 - 2.95	B3	
					Firm dark brownish grey occasionally spotted black slightly sandy CLAY. Occasional rootlets. (ALLUVIUM)			2.80	PID	0.0 ppmv
								2.80	ES	
				(0.90)						
								3.50 - 3.95	UT1	
			-0.20	3.60	Very soft to soft dark blackish grey CLAY. Abundant rootlets.Occasional roots and woody plant material. Occasional coarse gravel size pockets of light grey slightly sandy clay. (ALLUVIUM)	Dry	4.00	4.00 - 4.45	S	N=7 (1,1/1,2,2,2)
								4.00	D1	
				(1.80)		Dry	4.00	4.45 - 4.90	S	N=7 (1,1/1,2,2,2)
								4.50 - 4.95	D2	
								5.00 - 6.00	D3	
			-2.00	5.40	Grey silty SAND. (ALLUVIUM)			5.50 - 5.95	UT2	
				(0.40)						
			-2.40	5.80	Very soft to soft dark grey slightly sandy CLAY. Occasional laminations with plant material (leaves). Occasional woody plant material. Rare sand size shell fragments. (ALLUVIUM)	Dry	7.00	7.00 - 7.45	S	SWP: 150 mm
								7.00 - 7.45	D4	N=2 (0,0/1,0,0,1)
						Dry	7.00	7.45 - 7.90	S	N=4 (1,0/1,1,1,1)
				(4.00)						
	SP							8.50 - 8.95	UT3	15 (100%)
								9.00	D5	
			-6.40	9.80	Dark yellowish grey slightly sandy slightly gravelly SILT. Gravel is					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
10.00	2.90	10.00	13.50

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	14.00	14.00
150	31.00	26.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH03

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	11-04-18	11-04-18	MJ	Hand tools	n/a	n/a	11-04-18	VSS	
CP	1.20	31.00	11-04-18	16-04-18	MJ	Dando 3000 mk 2	n/a	n/a	19-04-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549487.14
mN: 180720.48
mAOD: 3.40
Grid: OSGB

Backfill/ Instalt'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Dark yellowish grey slightly sandy slightly gravelly SILT. Gravel is subangular to subrounded fine to coarse of flint. (ALLUVIUM)	3.00	10.00	10.00 - 10.45 10.00 - 10.45	C B4	N=33 (3,5/7,8,8,10)
				(3.40)		3.60	11.50	11.50 - 11.95 11.50 - 11.95	C B5	N=34 (4,5/6,8,10,10)
						5.40	13.00	13.00 - 13.45	C	N=19 (4,4/4,4,5,6)
			-9.80	13.20	Stiff very closely fissured dark blackish grey slightly sandy CLAY. Occasional thick partings of light grey fine to medium SAND. Rare sand size shell fragments. (LONDON CLAY)			13.50	D6	
						Dry	14.00	14.00 - 14.45	S	N=31 (3,5/6,7,8,10)
				(2.80)				14.50 - 14.95	UT4	80 (100%)
								15.00	D7	
			-12.60	16.00	Stiff to very stiff laminated dark brownish grey slightly sandy CLAY. Occasional sand sized shell fragments. Occasional whitish grey fine sand infilled bioturbations. (LONDON CLAY)			16.00 - 16.45	D8	
				(3.50)				17.50 - 17.95	UT5	95 (100%)
								18.00	D9	
						Dry	14.00	19.00 - 19.45 19.00 - 19.45	S D10	N=38 (4,6/7,9,10,12)
▽			-16.10	19.50	Dense becoming very dense dark blackish grey sandy GRAVEL of subrounded to rounded fine to coarse flint. Abundant sand sized shell fragments.					
Inst						Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
19.50	4.70	14.00	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	14.00	14.00
150	31.00	26.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH03

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	11-04-18	11-04-18	MJ	Hand tools	n/a	n/a	11-04-18	VSS	
CP	1.20	31.00	11-04-18	16-04-18	MJ	Dando 3000 mk 2	n/a	n/a	19-04-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549487.14
mN: 180720.48
mAOD: 3.40
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results/Remarks
					Dense becoming very dense dark blackish grey sandy GRAVEL of subrounded to rounded fine to coarse flint. Abundant sand sized shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)	4.90	20.50	20.50 - 20.95 20.50 - 20.95	C B6	N=43 (4,6/9,10,10,14)
				(5.00)		3.30	22.00	22.00 - 22.45 22.00 - 22.50	C B7	N=43 (5,7/8,10,12,13)
						1.90	23.50	23.50 - 23.94 23.50 - 23.95	C B8	50 (4,6/50 for 285mm)
			-21.10	24.50	Dense dark grey gravelly silty fine to medium SAND. Gravel of subrounded to rounded fine to coarse black flint. Occasional shell fragments.					
				(1.10)	(BLACKHEATH MEMBER HARWICH FORMATION)	2.30	25.00	25.00 - 25.45 25.00 - 25.45	C B9	N=39 (6,7/9,10,10,10)
			-22.20	25.60	Stiff extremely closely fissured laminated dark grey CLAY. Abundant shells and sand size shell fragments. (LOWER SHELLY CLAY (LAMBETH GROUP))			26.00	D11	
				(1.90)				26.50 - 26.95	UT6	
								27.00	D12	
			-24.10	27.50	Stiff to very stiff extremely closely fissured laminated dark brownish grey slightly sandy CLAY. Occasional sand size shell fragments. (LOWER SHELLY CLAY (LAMBETH GROUP))	20.00	26.00	28.00 - 28.45 28.00 - 28.45	S D13	N=38 (4,6/7,9,10,12)
				(1.50)						
			-25.60	29.00	Stiff dark greenish grey mottled dark orangish brown slightly gravelly sandy glauconitic CLAY. Gravel is subangular to subrounded fine to coarse of black flint. (UPNOR FORMATION)			29.50 - 29.95	UT7	
				(1.60)						
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	14.00	14.00
150	31.00	26.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH03

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	11-04-18	11-04-18	MJ	Hand tools	n/a	n/a	11-04-18	VSS	
CP	1.20	31.00	11-04-18	16-04-18	MJ	Dando 3000 mk 2	n/a	n/a	19-04-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE:	549487.14
mN:	180720.48
mAOD:	3.40
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Stiff dark greenish grey mottled dark orangish brown slightly gravelly sandy glauconitic CLAY. Gravel is subangular to subrounded fine to coarse of black flint. (UPNOR FORMATION	10.00	26.00	30.00 - 30.45	S	N=50 (6,9/10,12,13,15)
								30.00	D14	
								30.00 - 30.45	D15	
			-27.20	30.60						
				(0.40)	Very dense dark grey slightly sandy clayey GRAVEL of subrounded to rounded fine to coarse black flint. (UPNOR FORMATION					
			-27.60	31.00				31.00	D16	
					Borehole ends at 31.00m (Refusal)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	14.00	14.00
150	31.00	26.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH03

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	11-04-18	11-04-18	KG	Hand tools	n/a	n/a	11-04-18	VSS	
CP	1.20	30.90	11-04-18	13-04-18	KG	Dando 2000 mk 2	n/a	n/a	18-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE: 549477.07
mN: 180679.14
mAOD: 1.81
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(0.40)	Dark orangish brown gravelly clayey fine to coarse SAND. Gravel of subangular to subround fine to coarse brick, flint and rare asphalt. (MADE GROUND)			0.30	PID	0.0 ppmv
			1.41	0.40	Soft to firm dark grey slightly gravelly CLAY. Gravel of subangular to subrounded brick and rare glass. (MADE GROUND)			0.30	ES	
								0.50 - 0.80	B1	
								0.70	PID	0.0 ppmv
				(0.90)				0.70	ES	
								1.00 - 1.20	B2	
			0.51	1.30	Soft dark grey mottled black CLAY. Occasional rootlets. (ALLUVIUM)			1.30	D3	
								1.50	PID	0.0 ppmv
								1.50	ES	20 (90%)
								1.50 - 1.95	UT4	
	SP			(1.20)		Dry		1.95 - 2.05	D5	N=0 (1,0/0,0,0,0)
								2.00 - 2.45		
						Dry	2.00	2.45 - 2.90	S	N=4 (1,0/1,1,1,1)
			-0.69	2.50	Very soft to soft dark reddish brown organic CLAY. Occasional roots and woody material. Becomes dark brown on exposure to air. (ALLUVIUM)	Dry	2.00	2.50 - 2.95	S	N=0 (1,0/0,0,0,0)
				(0.50)				2.50 - 2.95	D6	
			-1.19	3.00	Soft dark brown and black mottled pseudofibrous PEAT. Abundant rootlets. Occasional roots and woody plant material. Occasional coarse gravel size pockets of light grey CLAY. (ALLUVIUM)	Dry		3.00 - 3.45		N=1 (1,0/0,1,0,0)
								3.00	D7	
								3.50 - 3.95	UT8	11 (100%)
				(2.00)				3.95 - 4.05	D9	
						Dry	3.00	4.50 - 4.95	S	N=1 (1,0/0,1,0,0)
								4.50 - 4.95	D10	
			-3.19	5.00	Very loose dark grey silty clayey fine to medium SAND. (ALLUVIUM)	Dry	3.00	4.95 - 5.40	S	N=3 (1,0/1,0,1,1)
								5.00	D11	
				(0.60)						
			-3.79	5.60	Soft dark brown and black mottled pseudofibrous PEAT. Abundant rootlets. Occasional roots and woody plant material. Occasional coarse gravel size pockets of light grey CLAY. (ALLUVIUM)					
				(0.70)				6.00 - 6.45	UT12	9 (100%)
			-4.49	6.30	Very soft to soft dark grey CLAY. Abundant becoming occasional with depth rootlets. Occasional roots and woody material. (ALLUVIUM)			6.45 - 6.55	D13	
						Dry		7.00 - 7.45		N=4 (1,0/1,0,1,2)
						Dry	7.00	7.50 - 7.95	S	N=4 (1,0/1,0,1,2)
								7.50 - 7.95	D14	
				(3.10)		Dry	7.00	7.95 - 8.40	S	N=8 (1,1/2,2,2,2)
								8.50	D15	
								9.00 - 9.45	UT16	29 (100%)
			-7.59	9.40	Medium dense dark grey sandy slightly silty GRAVEL of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)			9.45 - 9.55	D17	
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
9.40	9.40	9.00	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.40	9.40
200	13.50	13.50
150	30.90	26.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH04

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	11-04-18	11-04-18	KG	Hand tools	n/a	n/a	11-04-18	VSS	
CP	1.20	30.90	11-04-18	13-04-18	KG	Dando 2000 mk 2	n/a	n/a	18-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549477.07
mN:	180679.14
mAOD:	1.81
Grid:	OSGB

Backfill/ Instalt'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(2.10)	Medium dense dark grey sandy slightly silty GRAVEL of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	2.40	10.50	10.50 - 10.95 10.50 - 10.95	C B18	N=26 (3,4/4,6,7,9)
			-9.69	11.50						
				(1.80)	Medium dense dark yellowish brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	0.10	12.00	12.00 - 12.45 12.00 - 12.45	C B19	N=24 (2,3/4,6,6,8)
			-11.49	13.30				13.30	D20	
				(0.50)	Stiff dark grey slightly sandy CLAY. Rare 5 mm partings of light grey fine to medium SAND. (LONDON CLAY)	14.90	13.50	13.50 - 13.95 13.50 - 13.95	S UT21	N=25 (2,4/5,6,6,8) 100 (100%)
			-11.99	13.80				13.95 - 14.05	D22	
				(2.95)	Stiff very closely fissured laminated dark brownish grey CLAY. Occasional sand size shell fragments. (LONDON CLAY)			15.00 - 15.45	D23	
								16.50 - 16.95	UT24	89 (100%)
			-14.94	16.75				16.95 - 17.05	D25	
				(1.85)	Stiff very closely fissured laminated dark brownish grey slightly sandy micaceous CLAY. Occasional <5 mm white fine sand infilled bioturbations. Occasional sand size shell fragments. Rare shells. (LONDON CLAY)	Dry	13.50	18.00 - 18.45 18.00 - 18.45	S D26	N=30 (4,5/6,7,8,9)
	▽		-16.79	18.60				18.60	D27	
				(1.90)	Dense dark grey gravelly silty fine and medium SAND. Gravel is subrounded to rounded fine to coarse black flint. Occasional sand size shell fragments. (BLACKHEATH MEMEBER HARWICH FORMATION)	2.30	19.50	19.50 - 19.95 19.50 - 19.95	C B28	N=42 (2,4/7,9,12,14)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
18.60	3.69	13.50	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.40	9.40
200	13.50	13.50
150	30.90	26.00

Depth related remarks:

From:	To:	Remarks:
16.00	17.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH04

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	11-04-18	11-04-18	KG	Hand tools	n/a	n/a	11-04-18	VSS	
CP	1.20	30.90	11-04-18	13-04-18	KG	Dando 2000 mk 2	n/a	n/a	18-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549477.07
mN:	180679.14
mAOD:	1.81
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Dense dark grey gravelly silty fine and medium SAND. Gravel is subrounded to rounded fine to coarse black flint. Occasional sand size shell fragments.					
			-18.69	20.50	(BLACKHEATH MEMEBER HARWICH FORMATION)					
					Dark blackish grey sandy slightly silty GRAVEL of subrounded to rounded fine to coarse black flint. Occasional to abundant shell fragments. Occasional cobble size pockets of grey gravelly CLAY. (Unable to undertake SPTs due to material 'blowing' up borehole). (BLACKHEATH MEMEBER HARWICH FORMATION)			21.00 - 21.45	B29	
								22.50 - 22.95	B30	
				(4.80)						
								24.00 - 24.45	B31	
			-23.49	25.30	Stiff to vey stiff extremely closely fissured laminated dark grey CLAY. Abundant shell fragments. (LOWER SHELLY CLAY (LAMBETH GROUP))	7.20	25.40	25.30 25.40 - 25.82 25.50 - 25.95	D32 S D33	50 (5,7/50 for 275mm)
				(2.50)						
			-25.99	27.80	Stiff to very stiff extremely closely fissured dark brown mottled dark grey CLAY. Occasional relic root tracks. (LOWER SHELLY CLAY (LAMBETH GROUP))					
				(0.45)						
			-26.44	28.25	Stiff to very stiff laminated dark greyish brown mottled dark brown sandy CLAY. Occasional sand size shell fragments. (LOWER SHELLY CLAY (LAMBETH GROUP))	25.30	25.50	28.50 - 28.95	S	N=46 (6,7/9,11,12,14)
				(1.45)						
			-27.89	29.70	Stiff to very stiff dark greenish grey (glauconitic) slightly sandy CLAY. Occasional infilled relic root tracks.					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.40	9.40
200	13.50	13.50
150	30.90	26.00

Depth related remarks:

From:	To:	Remarks:
21.00	25.00	Blowing sand & gravel

Chiselling details:

From:	to:	Duration:	Tool:
24.10	24.50	01:00	Californian

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH04

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	11-04-18	11-04-18	KG	Hand tools	n/a	n/a	11-04-18	VSS	
CP	1.20	30.90	11-04-18	13-04-18	KG	Dando 2000 mk 2	n/a	n/a	18-04-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549477.07
mN:	180679.14
mAOD:	1.81
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(1.10)	Stiff to very stiff dark greenish grey (glauconitic) slightly sandy CLAY. Occasional infilled relic root tracks. (UPNOR FORMATION)					
			-28.99	30.80						
			-29.09	30.90	Very dense dark brownish grey slightly sandy clayey GRAVEL of subrounded to rounded fine to coarse black flint. (UPNOR FORMATION)					
					Borehole ends at 30.90m (Refusal)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.40	9.40
200	13.50	13.50
150	30.90	26.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH04

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	10-04-18	10-04-18	DW	Hand tools	n/a	n/a	10-04-18	VSS	
CP	1.20	27.50	10-04-18	16-04-18	DW	Dando 2000	n/a	n/a	18-04-18	VSS	Hammer ID: AR1926 Er(%) 74
WLS	27.50	33.30	16-04-18	20-04-18	PS	Comacchio 305	WLS		23-04-18	VSS	Hammer ID: RHM1703006 Er(%) 82

Location details:

mE:	549532.61
mN:	180668.51
mAOD:	1.81
Grid:	OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(0.90)	Light orangish brown gravelly clayey SAND. Gravel is subangular to subrounded fine to coarse brick, concrete and flint. Occasional pockets of sandy CLAY. Abundant rootlets. (MADE GROUND) *0.20 m: Plastic sheet.*			0.30	ES	
			0.91	0.90	Soft dark grey mottled black CLAY. Occasional rootlets. (ALLUVIUM)			1.00	ES	
			0.71	1.10						
			0.56	1.25	Soft light brownish grey mottled black organic CLAY. Occasional rootlets. (ALLUVIUM)					
					Soft to firm extremely closely fissured dark grey mottled light orangish brown CLAY. Occasional rootlets. (ALLUVIUM)	Dry	1.50	1.50 - 1.95 1.50 - 1.95	S D	N=3 (1,0/1,1,0,1)
				(1.55)						
			-0.99	2.80	Very soft to soft dark brown and reddish brown mottled organic CLAY. Abundant rootlets. Occasional roots and woody material. Dark reddish brown becomes dark brown on exposure to air. (ALLUVIUM)			2.80	D	
			-1.19	3.00				3.00 - 3.45	UT	4 (0%) NR
					Soft dark brown pseudofibrous PEAT. (ALLUVIUM)					
				(2.50)		Dry	4.50	4.50 - 4.95 4.50 - 4.95	S D	N=1 (1,0/0,0,1,0)
			-3.69	5.50	Dark grey silty clayey fine to medium SAND. Occasional roots and rootlets. (ALLUVIUM)			5.50	D	
				(0.50)						
			-4.19	6.00	Very soft to soft dark brown organic CLAY. Abundant rootlests. Occasional roots and woody material. (ALLUVIUM)			6.00 - 6.45	UT	5 (100%)
								6.50	D	
				(1.50)						
			-5.69	7.50	Soft extremely closely fissured dark grey CLAY. Abundant rootlets. Occasional roots and woody material. (ALLUVIUM)	Dry	7.50	7.50 - 7.95 7.50 - 7.95	S D	SWP: 450 mm N=0 (0,0/0,0,0,0)
				(1.95)						
	▼							9.00 - 9.45	UT	7 (100%)
	▽		-7.64	9.45	Dark greyish brown slightly sandy slightly clayey GRAVEL of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)			9.45 9.50	D D	
	(50)									
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
9.45	9.00	9.00	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.90	26.80

Depth related remarks:

From:	To:	Remarks:
8.00	10.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH05

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	10-04-18	10-04-18	DW	Hand tools	n/a	n/a	10-04-18	VSS	
CP	1.20	27.50	10-04-18	16-04-18	DW	Dando 2000	n/a	n/a	18-04-18	VSS	Hammer ID: AR1926 Er(%) 74
WLS	27.50	33.30	16-04-18	20-04-18	PS	Comacchio 305	WLS		23-04-18	VSS	Hammer ID: RHM1703006 Er(%) 82

Location details:

mE: 549532.61
mN: 180668.51
mAOD: 1.81
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(2.05)	Dark greyish brown slightly sandy slightly clayey GRAVEL of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	Dry	10.50	10.50 - 10.95 10.50 - 10.95	C B	N=11 (2,2/3,2,3,3)
			-9.69	11.50						
				(0.50)	Dark yellowish grey sandy GRAVEL of subangular to rounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)					
			-10.19	12.00		Dry	12.00	12.00 - 12.45 12.00 - 12.45	C B	N=14 (3,4/4,3,4,3)
				(2.00)	Dark yellowish brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)					
	SP (50)					Dry	13.50	13.50 - 13.95 13.50 - 13.95	C B	N=19 (2,4/5,5,4,5)
			-12.19	14.00				14.00	D	
					Stiff very closely fissured laminated dark grey slightly sandy micaceous CLAY. Occasional blackish brown laminations. Rare to occasional sand size shell fragments. Rare light grey fine sand infilled bioturbations. (LONDON CLAY FORMATION)			15.00 - 15.45	UT	32 (100%)
								15.45	D	
								16.50 - 16.95	UT	28 (100%)
								16.95	D	
				(7.00)						
						Dry	18.00	18.00 - 18.45 18.00 - 18.45	S D	N=33 (4,7/7,9,8,9)
						Dry	19.50	19.50 - 19.95 19.50 - 19.95	S D	N=29 (3,5/7,8,7,7)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.90	26.80

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH05

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	10-04-18	10-04-18	DW	Hand tools	n/a	n/a	10-04-18	VSS	
CP	1.20	27.50	10-04-18	16-04-18	DW	Dando 2000	n/a	n/a	18-04-18	VSS	Hammer ID: AR1926 Er(%) 74
WLS	27.50	33.30	16-04-18	20-04-18	PS	Comacchio 305	WLS		23-04-18	VSS	Hammer ID: RHM1703006 Er(%) 82

Location details:

mE: 549532.61
mN: 180668.51
mAOD: 1.81
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Stiff very closely fissured laminated dark grey slightly sandy micaceous CLAY. Occasional blackish brown laminations. Rare to occasional sand size shell fragments. Rare light grey fine sand infilled bioturbations. (LONDON CLAY FORMATION)					
			-19.19	21.00		Dry	21.00	21.00 - 21.45	S	N=37 (5,7/9,9,10,9)
					Stiff dark grey slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse black flint. (LONDON CLAY FORMATION)			21.00 - 21.45	D	
				(0.50)						
			-19.69	21.50	Dark grey slightly silty fine and medium SAND. (BLACKHEATH MEMBER HARWICH FORMATION)			21.50	D	
				(1.50)				22.45	B	
								22.50	D	
			-21.19	23.00	Dark blackish grey fine to coarse GRAVEL of subangular to rounded black flint. Abundant shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)					
				(3.25)						
			-24.44	26.25	Stiff to very stiff laminated dark grey CLAY. Occasional to abundant shells and sand size shell fragments. (LOWER SHELLY CLAY (LAMBET GROUP))			27.00 - 27.50	B	
								27.13 - 27.28	D	
				(2.75)	*27.50 - 27.70 m: Becomes sandy*	Dry	27.50	27.50 - 27.89	100 D	27.50 D
								S		50 (8,8/50 for 240mm)
										27.84 - 28.00 U
										28.00 - 28.22 U
								27.50 - 29.00	78	
									n/a	
									n/a	
					28.63 - 29.00 m: AZCL					
			-27.19	29.00	Stiff dark grey sandy CLAY. Abundant shell fragments. (LOWER SHELLY CLAY (LAMBET GROUP))	2.00	29.00	29.00 - 29.42		50 (5,7/50 for 275mm)
				(0.40)				S		29.00 - 29.45 D
					29.20 - 29.40 m: Becomes firm					
			-27.59	29.40						
			-27.74	29.55	Stiff to very stiff laminated black mottled light grey CLAY. Frequent lignitic fragments and blocks. Occasional shell fragments. (LOWER SHELLY CLAY (LAMBET GROUP))					29.50 - 29.60 D
			-27.89	29.70				29.00 - 30.50	100	
									n/a	
									n/a	
					Firm to stiff light grey mottled black lignitic CLAY. (LOWER SHELLY CLAY (LAMBET GROUP))					30.00 - 30.30 U
				(0.80)						
					Stiff to very stiff dark grey sandy CLAY. (LOWER SHELLY CLAY (LAMBET GROUP))					
	Inst					Water	Casing	Depth/Core Run	TCR SCR RQD / If	Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.90	26.80

Depth related remarks:

From:	To:	Remarks:
22.50	26.80	Blowing sand & gravel

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH05

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
IP	0.00	1.20	10-04-18	10-04-18	DW	Hand tools	n/a	n/a	VSS	10-04-18	
CP	1.20	27.50	10-04-18	16-04-18	DW	Dando 2000	n/a	n/a	VSS	18-04-18	Hammer ID: AR1926 Er(%) 74
WLS	27.50	33.30	16-04-18	20-04-18	PS	Comacchio 305	WLS		VSS	23-04-18	Hammer ID: RHM1703006 Er(%) 82

Location details:

mE:	549532.61
mN:	180668.51
mAOD:	1.81
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks/ samples
			-28.69	30.50	Stiff light grey mottled dark grey slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium flint. Occasional shell fragments and pyrite nodules.			30.50 - 30.90	100 n/a n/a		
				(0.40)							
			-29.09	30.90	(LOWER SHELLY CLAY (LAMBET GROUP))			30.90 - 31.30	100 n/a n/a		
			-29.29	31.10	Soft dark grey gravelly CLAY. Gravel is subrounded to rounded of black flint.						
			-29.39	31.20	(LOWER SHELLY CLAY (LAMBET GROUP))						
			-29.49	31.30	Dark grey clayey subrounded to rounded fine to coarse GRAVEL of black and red flint.			31.30 - 32.00	100 n/a n/a		31.50 - 31.60 D
				(0.40)	(UPNOR FORMATION)						
			-29.89	31.70	*31.10 - 31.20 m: Becomes greenish grey*						
			-30.04	31.85	Dark greenish grey clayey subrounded to rounded fine to coarse GRAVEL of black flint.	2.00	31.50	~~32.00 - 32.38~~ S			50 (8,4/50 for 225mm) 32.00 - 32.45 D
			-30.14	31.95	(UPNOR FORMATION)						
			-30.19	32.00	*31.20 m: mottled light organish brown*			32.00 - 32.90	80 n/a n/a		
				(1.30)	Greenish grey and light brown glauconitic clayey silty SAND.						
					(UPNOR FORMATION)						
					31.50 m: Becomes silty sand	2.00	31.50	~~32.90 - 33.30~~ S			50 (8,9/50 for 250mm)
					31.60 m: Becomes light brownish grey						
			-31.49	33.30	Dark orangish brown and dark grey slightly sandy subangular to subrounded fine to medium GRAVEL of flint. Abundant shell fragments.						
					(UPNOR FORMATION)						
					Soft to firm dark grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to medium of flint. Abundant shell fragments.						
					(UPNOR FORMATION)						
					Black subrounded to rounded fine to coarse flint GRAVEL.						
					(UPNOR FORMATION)						
					Dark orangish brown and dark grey mottled slightly sandy subangular to subrounded fine to coarse flint GRAVEL.						
					(UPNOR FORMATION)						
					Borehole ends at 33.30 m (Termination reason: Refusal)						
	Inst					Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.90	26.80

Depth related remarks:

From	to:	Remarks:

Flush details:

Depth:	Type:	Return:	Colour:
26.00 - 32.00	water	100%	brown

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH05

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
PC	0.00	0.35	11-06-18	11-06-18	MJ	Pavement corer	n/a	n/a	11-06-18	DG	
IP	0.00	1.20	11-06-18	11-06-18	MJ	Hand tools	n/a	n/a	11-06-18	DG	
CP	0.00	37.50	11-06-18	11-06-18	MJ	Dando 3000 mk 2	n/a	n/a	14-06-18	DG	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549496.44
mN: 180754.63
mAOD: 3.18
Grid: OSGB

Backfill/ Instath	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(0.35)	CONCRETE over polythene membrane. (MADE GROUND)					
			2.83	0.35	Dark brown very gravelly slightly clayey fine to coarse SAND. Gravel is angular to rounded, fine to coarse of brick, concrete and flint. Occasional black slag, wood (max 50 mm long), brick and flint cobbles (max 80 mm long). (MADE GROUND)			0.50	PID	16.5 ppmv
								0.50	ES	
				(0.75)				0.60 - 0.90	B1	
								1.00	PID	23.2 ppmv
			2.08	1.10	Dark greyish brown gravelly sandy CLAY. Sand is angular to rounded, fine to coarse of flint, brick and concrete. Occasional pockets of greyish white clay (up to 10cm diameter). Rare glass. From 1.50m sweet odour, numerous fragments of black wood (max 20cm long) and black staining. (MADE GROUND)			1.00	D1	
						Dry	1.40	1.50 - 1.95	C	N=2 (1,1/1,0,0,1)
								1.50	PID	14.5 ppmv
								1.50	D2	
								1.50	ES	
				(1.70)				1.50 - 1.95	B2	132.2 ppmv
								2.00	PID	
								2.00	D3	
								2.00	ES	
						Dry	1.40	2.45 - 2.90	C	N=4 (1,1/1,1,1,1)
								2.45 - 3.00	B3	4.3 ppmv
			0.38	2.80	Soft greenish grey mottled brown CLAY. (ALLUVIUM)			2.50	PID	
								3.00	PID	4.6 ppmv
								3.00	D4	
				(1.00)				3.00	ES	
			-0.62	3.80	Spongy dark brown pseudo-fibrous PEAT. (ALLUVIUM)			4.00	D5	
								4.50 - 4.90	UT1	20 (0%)
				(1.70)				4.50 - 4.95	B4	NR
						Dry	5.00	5.00 - 5.45	S	N=4 (1,1/1,1,1,1)
								5.00 - 5.45	D6	
			-2.32	5.50	Soft dark grey peaty CLAY. Peat is dark brown pseudo-fibrous. (ALLUVIUM)					
				(0.50)						
			-2.82	6.00	Dark grey slightly silty fine SAND. (ALLUVIUM)			6.00 - 6.40	B5	
						3.20	6.50	6.50 - 6.95	S	N=2 (1,0/1,0,1,0)
								6.50 - 6.95	D7	
						3.90	8.00	8.00 - 8.45	S	N=10 (1,2/2,2,3,3)
								8.00 - 8.45	D8	
				(5.30)						
						4.20	9.50	9.50 - 9.95	S	N=16 (2,2/3,3,4,6)
								9.50 - 9.95	D9	
Inst						Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
6.00	3.00	6.00	

Diameter & casing:

Dia (mm):	Depth:	Casing:
300	5.00	5.00
250	14.10	14.10
200	28.00	28.00
150	37.00	37.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:
0.40	1.20	01:00	Californian

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH06

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
PC	0.00	0.35	11-06-18	11-06-18	MJ	Pavement corer	n/a	n/a	11-06-18	DG	
IP	0.00	1.20	11-06-18	11-06-18	MJ	Hand tools	n/a	n/a	11-06-18	DG	
CP	0.00	37.50	11-06-18	11-06-18	MJ	Dando 3000 mk 2	n/a	n/a	14-06-18	DG	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549496.44
mN: 180754.63
mAOD: 3.18
Grid: OSGB

Backfill/ Instrn	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results/Remarks
					Dark grey slightly silty fine SAND. (ALLUVIUM)					
						4.60	11.00	11.00 - 11.45	S	N=16 (1,3/3,4,4,5)
								11.00 - 11.45	D10	
			-8.12	11.30						
			-8.22	11.40	Firm brown fibrous PEAT. Fibres are of woody material. (ALLUVIUM)			11.50 - 12.00	B6	
					Dark grey slightly sandy subangular to rounded fine to coarse GRAVEL of flint with low cobble content. Sand is coarse. Cobbles are subrounded (up to 100 mm diameter). (TAPLOW GRAVEL MEMBER)	3.20	12.00	12.00		11/06/2018 00:00:00
	(51)					4.60	12.00	12.00		12/06/2018 00:00:00
				(2.10)		4.10	12.50	12.50 - 12.95	C	N=12 (2,3/3,3,3,3)
								12.50 - 12.95	B7	
					13.00 m: Becoming greyish brown fine to coarse sandy					
			-10.32	13.50	Brown very gravelly slightly silty fine to coarse SAND. Gravel is subangular to angular, fine to coarse of flint. (TAPLOW GRAVEL MEMBER)					
				(0.50)						
	SP		-10.82	14.00	Stiff to very stiff dark brownish grey CLAY. Occasional light grey silt traces. (LONDON CLAY FORMATION)			14.00	D11	
	(51)							14.50 - 14.95	UT2	65 (100%)
								15.00	D12	
						Dry	14.10	16.00 - 16.45	S	N=23 (3,4/5,5,6,7)
								16.00 - 16.95	D13	
				(7.10)				17.50 - 17.95	UT3	100 (100%)
								18.00	D14	
						Dry	19.00	19.00 - 19.45	S	N=16 (2,3/3,4,4,5)
								19.00 - 19.95	D15	
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
300	5.00	5.00
250	14.10	14.10
200	28.00	28.00
150	37.00	37.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH06

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
PC	0.00	0.35	11-06-18	11-06-18	MJ	Pavement corer	n/a	n/a	11-06-18	DG	
IP	0.00	1.20	11-06-18	11-06-18	MJ	Hand tools	n/a	n/a	11-06-18	DG	
CP	0.00	37.50	11-06-18	11-06-18	MJ	Dando 3000 mk 2	n/a	n/a	14-06-18	DG	Hammer ID: SI08 Er(%) 74

Location details:

mE:	549496.44
mN:	180754.63
mAOD:	3.18
Grid:	OSGB

Backfill/ Instalt'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Stiff to very stiff dark brownish grey CLAY. Occasional light grey silt traces. (LONDON CLAY FORMATION)			20.50 - 20.95	UT4	100 (100%)
								21.00	D16	
			-17.92	21.10	Dark greyish black sandy subrounded to rounded, fine to coarse GRAVEL of flint. Sand is fine to coarse. Abundant sand sized shell fragments. Occasional very sandy layers and pockets with gravel sized shell fragments. (BLACKHEATH MEMBER - HARWICH FORMATION)			21.50 - 21.90	B8	
						4.90	22.00	22.00 - 22.45 22.00 - 22.45	C B9	N=19 (1,2/3,3,6,7)
						4.10 3.40	23.50 23.50	23.50 - 23.89 23.50 - 23.95 23.50	C B10	50 (2,4/50 for 240mm) 13/06/2018 00:00:00
				(6.10)						
						4.00	25.00	25.00 - 25.38 25.00 - 25.45	C B11	50 (3,7/50 for 231mm)
						5.20	26.50	26.50 - 26.88 26.50 - 26.95	C B12	50 (2,4/50 for 235mm)
			-24.02	27.20	Very stiff thinly laminated dark grey CLAY. Occasional to abundant sand to coarse gravel sized shell fragments. Abundant partings of silt and fine sand. (LOWER SHELLY BEDS - LAMBETH GROUP)					
						Dry	28.00	28.00 - 28.45 28.00 - 28.50	S D17	N=39 (4,5/7,9,11,12)
				(2.00)						
			-26.02	29.20	Very stiff black lignitic CLAY. Abundant greenish grey clay filled fossil rootlet tracks. (LOWER MOTTLED BEDS - LAMBETH GROUP)			29.20	D18	
			-26.22	29.40	Very stiff dark greyish brown slightly sandy CLAY. Sand is fine grained. Occasional greenish grey silt filled fossil rootlets tracks and black organic			29.50 - 29.95	UT5	100 (100%)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
21.10	3.90	14.10	

Diameter & casing:

Dia (mm):	Depth:	Casing:
300	5.00	5.00
250	14.10	14.10
200	28.00	28.00
150	37.00	37.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH06

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
PC	0.00	0.35	11-06-18	11-06-18	MJ	Pavement corer	n/a	n/a	11-06-18	DG	
IP	0.00	1.20	11-06-18	11-06-18	MJ	Hand tools	n/a	n/a	11-06-18	DG	
CP	0.00	37.50	11-06-18	11-06-18	MJ	Dando 3000 mk 2	n/a	n/a	14-06-18	DG	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549496.44
mN: 180754.63
mAOD: 3.18
Grid: OSGB

Backfill/ Instath	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
								30.00	D19	
				(2.00)	Very stiff dark greyish brown slightly sandy CLAY. Sand is fine grained. Occasional greenish grey silt filled fossil rootlets tracks and black organic mottling. Occasional sand sized shell fragments. (LOWER MOTTLED BEDS - LAMBETH GROUP)	Dry	30.00	31.00 - 31.23	S	50 (8,12/50 for 83mm)
								31.00 - 31.45	D20	
			-28.22	31.40						
				(1.40)	Light grey clayey fine SAND. Occasional black sand sized organic pockets and linear traces. Greenish silt traces (possible infilled burrows). Occasional sand sized shell fragments. (LOWER MOTTLED BEDS - LAMBETH GROUP)			32.50 - 32.95	UT6	100 (60%)
			-29.62	32.80				32.80	D21	
					Very stiff greenish grey, blueish green and olive green mottled very gravelly sandy CLAY. Gravel is subrounded to rounded, fine to coarse of brown flint. Sand is fine to coarse. (UPNOR FORMATION)			33.00	B13	
					32.80 - 32.90 m: Slightly gravelly with occasional black vertical fossil rootlets					
					33.50 m: Becoming green					
						4.00	34.00	34.00 - 34.45	C	N=50 (8,10/26,24,0,0)
						3.50	34.00	34.00 - 34.50	B14	14/06/2018 00:00:00
				(2.90)				34.00		
						4.30	35.00	35.50 - 35.86	C	50 (9,10/50 for 215mm)
								35.50 - 35.95	B15	
			-32.52	35.70	Greenish grey, blueish green and brown mottled silty clayey fine SAND. (UPNOR FORMATION)					
				(1.80)						
						3.70	37.00	37.00 - 37.31	S	50 (10,14/50 for 160mm)
								37.00 - 37.50	B16	
								37.00 - 37.50	D22	
			-34.32	37.50	Borehole ends at 37.50m (Target depth)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
300	5.00	5.00
250	14.10	14.10
200	28.00	28.00
150	37.00	37.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:
33.00	33.40	01:00	Californian
33.60	34.00	01:00	Californian

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH06

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	03-04-18	03-04-18	DW	Hand tools	n/a	n/a	03-04-18	VSS	
CP	1.20	31.00	03-04-18	03-04-18	DW	Dando 2000	n/a	n/a	10-04-18	VSS	Hammer ID: AR1926 Er(%) 74

Location details:

mE:	549559.32
mN:	180559.36
mAOD:	1.32
Grid:	OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results/Remarks
			1.12	0.20	ASPHALT.					
				(0.40)	(MADE GROUND) Dark brown gravely slightly silty fine to coarse SAND with medium cobble content. Gravel is fine to coarse angular to subround of brick, concrete, occasional slag and ceramic tile. Cobbles are angular to subangular of brick.			0.20 0.30	PID D	0.4 ppmv
			0.72	0.60	(MADE GROUND) Very soft to soft extremely closely fissured dark grey mottled dark greyish brown CLAY. Rare rootlets. (ALLUVIUM)			0.50 0.60	ES D	
								1.00 1.00	PID ES	0.6 ppmv
						Dry	1.50	1.50 - 1.95 1.50 - 1.95	S D	N=4 (1,1/1,1,1,1)
				(3.10)						
								3.00 - 3.45	UT	5 (100%)
			-2.38	3.70	Very soft dark brown highly decomposed woody PEAT. Occasional amorphous wood fragments and relic roots. (ALLUVIUM)			4.00	D	
				(0.55)						
			-2.93	4.25	Very soft to soft laminated dark brownish grey occasionally mottled dark grey CLAY. Occasional wood fragments. Occasional sand sized shell fragments. (ALLUVIUM)	Dry	4.50	4.50 - 4.95 4.50 - 4.95	S D	N=4 (1,2/1,1,1,1)
								6.00 - 6.45	UT	7 (100%)
								6.45	D	
				(5.75)						
						Dry	7.50	7.50 - 7.95 7.50 - 7.95	S D	N=5 (1,1/1,2,1,1)
								9.00 - 9.45	UT	12 (100%)
	Inst		-8.68	10.00		Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
10.00	10.00	10.00	10.00

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	20.50	20.50
150	31.00	28.00

Depth related remarks:

From:	To:	Remarks:
8.00	10.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH08

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	03-04-18	03-04-18	DW	Hand tools	n/a	n/a	03-04-18	VSS	
CP	1.20	31.00	03-04-18	03-04-18	DW	Dando 2000	n/a	n/a	10-04-18	VSS	Hammer ID: AR1926 Er(%) 74

Location details:

mE:	549559.32
mN:	180559.36
mAOD:	1.32
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results/Remarks
								10.00	W	
					Medium dense dark greyish brown sandy slightly silty fine to coarse GRAVEL of subangular to rounded flint. (TAPLOW GRAVEL MEMBER)	Dry	10.50	10.50 - 10.95	C	N=8 (1,2/3,2,1,2)
								10.50 - 10.95	B	
				(3.50)						
						Dry	12.00	12.00 - 12.45	C	N=12 (3,3/4,3,2,3)
								12.00 - 12.45	B	
			-12.18	13.50		Dry	13.50	13.50 - 13.95	C	N=14 (3,5/4,3,4,3)
				(0.45)	Medium dense dark brownish grey slightly sandy slightly silty fine to coarse GRAVEL. Gravel of subangular to rounded flint. Rare cobble sized pocket of soft dark grey CLAY. (TAPLOW GRAVEL MEMBER)			13.50 - 13.95	B	
			-12.63	13.95	Medium dense dark brownish grey gravelly slightly silty SAND. Gravel of subangular to rounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)					
				(1.55)						
	SP					Dry	15.00	15.00 - 15.45	C	N=13 (5,4/3,3,4,3)
								15.00 - 15.45	B	
			-14.18	15.50	Stiff to very stiff dark grey CLAY. Occasional thick laminations of fine to medium sand. Occasional shell fragments. (LONDON CLAY)					
								16.50 - 16.95	UT	27 (100%)
				(5.00)				18.00 - 18.45	UT	27 (100%)
								19.50 - 19.95	UT	45 (100%)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	20.50	20.50
150	31.00	28.00

Depth related remarks:

From:	To:	Remarks:
17.50	20.50	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH08

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	03-04-18	03-04-18	DW	Hand tools	n/a	n/a	03-04-18	VSS	
CP	1.20	31.00	03-04-18	03-04-18	DW	Dando 2000	n/a	n/a	10-04-18	VSS	Hammer ID: AR1926 Er(%) 74

Location details:

mE: 549559.32
mN: 180559.36
mAOD: 1.32
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
	▼				Stiff to very stiff dark grey CLAY. Occasional thick laminations of fine to medium sand. Occasional shell fragments. (LONDON CLAY)					
			-19.18	20.50				20.50	D	
					Dense becoming very dense dark blackish grey slightly sandy GRAVEL of subrounded to rounded fine to coarse flint. Occasional sand sized shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)	Dry	21.00	21.00 - 21.45	C	N=38 (5,7/9,9,10,10)
						Dry	22.50	22.50 - 22.95	C	N=45 (5,8/10,10,11,14)
				(6.50)		Dry	24.00	24.00 - 24.45	C	N=45 (6,10/9,11,11,14)
						Dry	25.50	25.50 - 25.92	C	50 (6,11/50 for 275mm)
			-25.68	27.00		Dry	27.00	27.00 - 27.30	C	50 (5,12/50 for 155mm)
				(0.90)	Very dense dark grey gravelly silty fine to coarse SAND. Gravel of subrounded to rounded fine to coarse black flint. Abundant sand sized shell fragments. (BLACKHEATH MEMBER HARWICH FORMATION)					
			-26.58	27.90						
					Stiff to very stiff dark grey laminated CLAY. Frequent shell fragments. (LOWER SHELLY CLAY (LAMBETH GROUP))	Dry	28.50	28.50 - 28.95	C	N=38 (6,8/8,10,10,10)
				(3.10)						
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
20.50	20.50	20.00	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	20.50	20.50
150	31.00	28.00

Depth related remarks:

From: To: Remarks:

Chiselling details:

From: to: Duration: Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH08

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	03-04-18	03-04-18	DW	Hand tools	n/a	n/a	03-04-18	VSS	
CP	1.20	31.00	03-04-18	03-04-18	DW	Dando 2000	n/a	n/a	10-04-18	VSS	Hammer ID: AR1926 Er(%) 74

Location details:

mE:	549559.32
mN:	180559.36
mAOD:	1.32
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Stiff to very stiff dark grey laminated CLAY. Frequent shell fragments. (LOWER SHELLY CLAY (LAMBETH GROUP))	Dry	28.00	30.00 - 30.42	S	50 (6,12/50 for 265mm)
			-29.68	31.00	Borehole ends at 31.00m (Refusal)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	20.50	20.50
150	31.00	28.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH08

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	MJ	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	31.39	04-04-18	04-04-18	MJ	Dando 3000 mk 2	n/a	n/a	16-04-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549400.00
mN: 180660.00
mAOD: 1.66
Grid: OSGB

Backfill/ Instath	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results/Remarks
			1.56	0.10	ASPHALT.					
			1.36	0.30	(MADE GROUND)			0.25	PID	0.2 ppmv
			1.26	0.40	Pinkish brown sandy slightly silty GRAVEL of subangular to subrounded fine to coarse mixed lithologies.			0.25	ES	
					(MADE GROUND)			0.50	PID	0.3 ppmv
					Orangish brown slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint.			0.50	ES	
					(MADE GROUND)			0.60 - 1.00	B1	
					Soft to firm extremely closely fissured dark grey mottled orangish brown CLAY. Occasional dark brown fibrous organic matter. Occasional light grey gleying.			1.00	PID	0.6 ppmv
					(ALLUVIUM)			1.00	ES	
								1.20	D1	
								1.50 - 1.95	UT1	12 (100%)
				(2.80)						
	SP							2.00	D2	
						Dry	2.00	2.50 - 2.95	S	SWP: 225 mm
								2.50 - 2.95	D3	N=1 (0,0/0,1,0,0)
						Dry	2.00	2.95 - 3.40	S	N=2 (1,0/1,0,1,0)
			-1.54	3.20	Very soft to soft dark blackish brown mottled reddish brown organic CLAY. Occasional rootlets, roots and woody material. Dark reddish brown becomes dark brown on exposure to air.					
					(ALLUVIUM)			3.50 - 3.95	UT2	12 (100%)
								4.00	D4	
						Dry	4.00	4.50 - 4.95	S	SWP: 375 mm
								4.50 - 4.95	D5	N=1 (0,0/0,0,0,1)
				(3.60)		Dry	4.00	4.95 - 5.40	S	N=2 (0,1/0,1,0,1)
								5.50 - 5.95	UT3	12 (100%)
								6.00	D6	
			-5.14	6.80	Very soft to soft dark grey mottled black CLAY. Occasional roots. Occasional organic material.					
					(ALLUVIUM)	Dry	6.00	7.00 - 7.45	S	SWP: 450 mm
								7.00 - 7.45	D7	N=1 (0,0/1,0,0,0)
				(3.00)						
								8.50 - 8.95	UT4	10 (100%)
								9.00	D8	
			-8.14	9.80	Dense dark grey very sandy slightly silty slightly clayey GRAVEL. Gravel					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	14.00	14.00
150	31.39	28.00

Depth related remarks:

From:	To:	Remarks:
8.00	9.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH09

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	MJ	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	31.39	04-04-18	04-04-18	MJ	Dando 3000 mk 2	n/a	n/a	16-04-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549400.00
mN: 180660.00
mAOD: 1.66
Grid: OSGB

Backfill/ Inst'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Dense dark grey very sandy slightly silty slightly clayey GRAVEL. Gravel is subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	3.00	10.00	10.00 - 10.45 10.00 - 10.45	C B2	N=31 (3,4/6,7,9,9)
				(1.70)						
			-9.84	11.50	Dense dark orangish brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	2.90	11.50	11.50 - 11.95 11.50 - 11.95	C B3	N=35 (3,5/7,8,9,11)
				(2.10)						
						3.40	13.00	13.00 - 13.45 13.00 - 13.45	C B4	N=27 (4,5/5,6,7,9)
			-11.94	13.60	Stiff dark brownish grey sandy CLAY. Rare shell fragments. (LONDON CLAY)			14.00 - 14.45	UT5	80 (100%)
								14.50	D9	
				(3.70)		14.10	14.00	15.50 - 15.95 15.50 - 15.95	S D10	N=24 (2,4/5,5,6,8)
								17.00 - 17.45	UT6	100 (100%)
			-15.64	17.30	Dense dark blackish grey slightly sandy slightly clayey GRAVEL of subrounded to rounded fine to coarse black flint. Occasional coarse gravel size pockets of dark grey CLAY. (TAPLOW GRAVEL MEMBER)			17.50 17.50 - 18.00	D11 B5	
				(1.10)						
			-16.74	18.40	Very dense dark brownish grey silty fine ot medium SAND. (TAPLOW GRAVEL MEMBER)	2.10	18.50	18.50 - 18.92 18.50 - 18.95	S D12	50 (2,3/50 for 275mm)
				(1.40)						
			-18.14	19.80	Dense becoming very dense dark blackish grey sandy silty GRAVEL of					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	14.00	14.00
150	31.39	28.00

Depth related remarks:

From:	To:	Remarks:
18.00	27.00	Redrilled due to sand ingress overnight

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH09

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	MJ	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	31.39	04-04-18	04-04-18	MJ	Dando 3000 mk 2	n/a	n/a	16-04-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549400.00
mN: 180660.00
mAOD: 1.66
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results/Remarks
					Dense becoming very dense dark blackish grey sandy silty GRAVEL of subrounded to rounded fine to coarse black flint. Abundant becoming occasional shell fragments.	1.80	20.00	20.00 - 20.45 20.00 - 20.45	C B6	N=49 (2,4/4,9,16,20)
						2.20	21.50	21.50 - 21.95 21.50 - 21.95	C B7	N=44 (3,5/8,9,13,14)
						2.10	23.00	23.00 - 23.38	C	50 (6,9/50 for 225mm)
				(7.50)						
			-25.64	27.30	Stiff to very stiff black mottled dark brownish grey slightly sandy CLAY. Rare lignified fragments.					
				(0.40)						
			-26.04	27.70	Stiff to very stiff dark brownish grey mottled dark brown sandy CLAY. Rare relic root tracks.					
						19.60		28.00 - 28.38		50 (5,7/50 for 235mm)
				(2.55)		19.60	28.00	29.00 - 29.38	S	50 (5,7/50 for 235mm)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	14.00	14.00
150	31.39	28.00

Depth related remarks:

From:	To:	Remarks:
24.00	27.00	Blowing sand & gravel

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH09

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	04-04-18	04-04-18	MJ	Hand tools	n/a	n/a	04-04-18	VSS	
CP	1.20	31.39	04-04-18	04-04-18	MJ	Dando 3000 mk 2	n/a	n/a	16-04-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE:	549400.00
mN:	180660.00
mAOD:	1.66
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
			-28.59	30.25	Stiff to very stiff dark brownish grey mottled dark brown sandy CLAY. Rare relic root tracks.					
				(0.75)	Stiff dark greenish grey slightly sandy (glauconitic) gravelly CLAY. Gravel is subrounded to rounded fine to coarse black flint.			30.50 - 30.95	UT8	100 (100%)
			-29.34	31.00				31.00	D16	
				(0.39)	Dark orangish brown gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to coarse black flint.			31.00 - 31.30	B11	
			-29.73	31.39	Borehole ends at 31.39m (Refusal)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	14.00	14.00
150	31.39	28.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH09

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	07-04-48	07-04-18	MF	Hand tools	n/a	n/a	07-04-18	VSS	Hammer ID: AR825 Er(%) 71
CP	1.20	33.41	07-04-48	11-04-18	MF	Dando 2000	n/a	n/a	13-04-18	VSS	Hammer ID: AR825 Er(%) 71

Location details:

mE: 549434.00
mN: 180646.08
mAOD: 1.30
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
			1.25	0.05	ASPHALT.					
				(0.35)	(MADE GROUND)			0.20	PID	0.5 ppmv
			0.90	0.40	Pinkish brown sandy slightly silty GRAVEL of subangular to subrounded fine to coarse mixed lithologies. (MADE GROUND)			0.20	ES	
					Very soft to soft dark grey CLAY. Occasional dark brown fibrous organic matter. (ALLUVIUM)			0.80	PID	0.2 ppmv
								0.80	ES	
								1.00	VHP	No infiltration
						Dry	1.50	1.50 - 1.95	S	N=4 (1,1/1,1,1,1)
								1.50 - 1.95	D	
				(3.30)				2.00	VHP	No infiltration
								2.50	D	
								3.00 - 3.45	UT	3 (100%)
			-2.40	3.70	Very soft to soft light brownish grey CLAY. Occasional roots, rootlets and woody plant material. (ALLUVIUM)			4.00	VHP	No infiltration
						Dry	4.50	4.50 - 4.95	S	N=2 (1,0/1,0,1,0)
								4.50 - 4.95	D	
				(2.75)				6.00 - 6.45	UT	8 (100%)
			-5.15	6.45	Soft to very soft dark brown organic CLAY. Occasional coarse gravel sized pockets of dark brownish grey CLAY. Occasional roots and woody plant material. Rare wood fragment. (ALLUVIUM)					
					7.50 - 8.00 m: Occasional shell fragments.	Dry	7.50	7.50 - 7.95	S	N=1 (1,0/0,1,0,0)
								7.50 - 7.95	D	
				(3.15)				9.00 - 9.45	UT	12 (100%)
								9.00	VHP	No infiltration
								9.50	D	
			-8.30	9.60	Dark greyish brown sandy silty fine to coarse GRAVEL of subangular to rounded flint.					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
9.60	3.00	9.50	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	16.50	16.50
150	33.41	29.50

Depth related remarks:

From:	To:	Remarks:
8.50	10.50	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	07-04-48	07-04-18	MF	Hand tools	n/a	n/a	07-04-18	VSS	Hammer ID: AR825 Er(%) 71
CP	1.20	33.41	07-04-48	11-04-18	MF	Dando 2000	n/a	n/a	13-04-18	VSS	Hammer ID: AR825 Er(%) 71

Location details:

mE: 549434.00
mN: 180646.08
mAOD: 1.30
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Dark greyish brown sandy silty fine to coarse GRAVEL of subangular to rounded flint. (ALLUVIUM)	Dry	10.50	10.50 - 10.95	S	N=44 (5,7/11,11,12,12,10)
								10.50 - 10.95	B	
				(3.90)		Dry	12.00	12.00 - 12.45	S	N=50 (3,8/13,12,13,12)
								12.00 - 12.45	B	
								13.00	VHP	No infiltration
	▽		-12.20	13.50	Firm to stiff dark grey sandy CLAY. Occasionally laminated. Rare shell fragments. (LONDON CLAY)	Dry	13.50	13.50 - 13.95	S	N=19 (3,3/4,4,5,6)
								13.50 - 13.95	B	
								14.00	D	
				(3.40)				15.00 - 15.45	UT	20 (100%)
						Dry	16.50	16.50 - 16.95	S	N=33 (11,6/6,9,8,10)
								16.50 - 16.95	UT	34 (100%)
			-15.60	16.90	Dark blackish grey sandy silty GRAVEL of subrounded to rounded fine to coarse black flint. Occasional shell fragments.	Dry	18.00	18.00 - 18.45	C	N=41 (6,8/9,9,12,11)
								18.70	D	
						Dry	19.50	19.50 - 19.88	C	50 (6,18/50 for 225mm)
								19.50 - 19.95	B	
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
13.50	3.00	13.50	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	16.50	16.50
150	33.41	29.50

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	07-04-48	07-04-18	MF	Hand tools	n/a	n/a	07-04-18	VSS	Hammer ID: AR825 Er(%) 71
CP	1.20	33.41	07-04-48	11-04-18	MF	Dando 2000	n/a	n/a	13-04-18	VSS	Hammer ID: AR825 Er(%) 71

Location details:

mE: 549434.00
mN: 180646.08
mAOD: 1.30
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results/Remarks
					Dark blackish grey sandy silty GRAVEL of subrounded to rounded fine to coarse black flint. Occasional shell fragments.					
					21.00 - 23.00 m: Abundant shell fragments.	Dry	21.00	21.00 - 21.38 21.00 - 21.45	C B	50 (8,16/50 for 225mm)
				(9.90)						
						Dry	22.50	22.50 - 22.88 22.50 - 22.95	C B	50 (9,9/50 for 225mm)
						Dry	24.00	24.00 - 24.30 24.00 - 24.45	C B	50 (6,18/50 for 150mm)
						Dry	25.50	25.50 - 25.88 25.50 - 25.95	C B	50 (5,15/50 for 225mm)
								26.20	D	
			-25.50	26.80	Firm to stiff black occasionally mottled light grey CLAY. Occasionally laminated. Occasionally very closely fissured. Occasionally lignite. Rare subrounded to rounded fine to medium black flint gravel.	Dry	27.00	27.00 - 27.45 27.00 - 27.45	S D	N=35 (5,5/6,8,9,12)
				(2.10)						
								28.50 - 28.95	D	
			-27.60	28.90				29.00	D	
				(0.40)	Dark grey slightly sandy clayey GRAVEL of subrounded to rounded fine to coarse black flint. Occasional gravel sized pockets of dark greenish grey clay.					
			-28.00	29.30	Stiff to very stiff dark greenish grey mottled light orangish brown slightly sandy gravelly CLAY. Gravel of subrounded to rounded fine to coarse black flint.					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	16.50	16.50
150	33.41	29.50

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	07-04-48	07-04-18	MF	Hand tools	n/a	n/a	07-04-18	VSS	Hammer ID: AR825 Er(%) 71
CP	1.20	33.41	07-04-48	11-04-18	MF	Dando 2000	n/a	n/a	13-04-18	VSS	Hammer ID: AR825 Er(%) 71

Location details:

mE:	549434.00
mN:	180646.08
mAOD:	1.30
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing				
						Water	Casing	Depth	Type & No	Results/Remarks
					Stiff to very stiff dark greenish grey mottled light orangish brown slightly sandy gravelly CLAY. Gravel of subrounded to rounded fine to coarse black flint.	Dry	30.00	30.00 - 30.45 30.00 - 30.45	C D	N=50 (10,13/16,14,12,8)
				(4.11)				32.00	D	
			-32.11	33.41	Borehole ends at 33.41m (Refusal)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	16.50	16.50
150	33.41	29.50

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	MJ	Hand tools	n/a	n/a			
CP	1.20	27.00	16-04-18	19-04-18	MJ	Dando 2000 mk 3	n/a	n/a			
RC	27.00	32.90	23-04-18	24-04-18	PS	Comacchio 305	Geobore S	PCD	30-04-18	VSS	Hammer ID: RHM1703006 Er(%) 82
WLS	32.90	39.90	24-04-18	25-04-18	PS	Comacchio 305	WLS	n/a	30-04-18	VSS	
RC	39.90	50.71	26-05-18	27-04-18	PS	Comacchio 305	Geobore S	PCD	30-04-18	VSS	

Location details:

mE:	549436.47
mN:	180645.96
mAOD:	1.22
Grid:	OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(0.30)	Type 1 (Driller's description) (MADE GROUND)					
			0.92	0.30	Soft grey CLAY (Driller's description) (ALLUVIUM)					
				(3.70)						
			-2.78	4.00	PEAT (Driller's description) (ALLUVIUM)					
				(1.50)						
			-4.28	5.50	Soft grey peaty CLAY (Driller's description) (ALLUVIUM)					
				(3.50)						
			-7.78	9.00	Grey SAND and GRAVEL. Gravels consist of flint (Driller's description) (ALLUVIUM)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
9.00	3.10	3.10	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	14.00	14.00
200	27.00	27.00
146	50.40	50.00

Depth related remarks:

From:	To:	Remarks:
0.00	27.00	Cable percussion open hole prebore

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	MJ	Hand tools	n/a	n/a			
CP	1.20	27.00	16-04-18	19-04-18	MJ	Dando 2000 mk 3	n/a	n/a			
RC	27.00	32.90	23-04-18	24-04-18	PS	Comacchio 305	Geobore S	PCD	30-04-18	VSS	Hammer ID: RHM1703006 Er(%) 82
WLS	32.90	39.90	24-04-18	25-04-18	PS	Comacchio 305	WLS	n/a	30-04-18	VSS	
RC	39.90	50.71	26-05-18	27-04-18	PS	Comacchio 305	Geobore S	PCD	30-04-18	VSS	

Location details:

mE:	549436.47
mN:	180645.96
mAOD:	1.22
Grid:	OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(4.30)	Grey SAND and GRAVEL. Gravels consist of flint (Driller's description) (ALLUVIUM)					
			-12.08	13.30						
				(3.50)	Stiff grey CLAY (Driller's description) (LONDON CLAY)					
			-15.58	16.80						
					Black GRAVEL (Driller's description) (BLACKHEATH BEDS)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	14.00	14.00
200	27.00	27.00
146	50.40	50.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	MJ	Hand tools	n/a	n/a			
CP	1.20	27.00	16-04-18	19-04-18	MJ	Dando 2000 mk 3	n/a	n/a			
RC	27.00	32.90	23-04-18	24-04-18	PS	Comacchio 305	Geobore S	PCD	30-04-18	VSS	Hammer ID: RHM1703006 Er(%) 82
WLS	32.90	39.90	24-04-18	25-04-18	PS	Comacchio 305	WLS	n/a	30-04-18	VSS	
RC	39.90	50.71	26-05-18	27-04-18	PS	Comacchio 305	Geobore S	PCD	30-04-18	VSS	

Location details:

mE: 549436.47
mN: 180645.96
mAOD: 1.22
Grid: OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Black GRAVEL (Driller's description) (BLACKHEATH BEDS)					
				(10.00)						
			-25.58	26.80	Stiff grey CLAY (Driller's description)					
			-25.78	27.00	Stiff black mottled light grey occasional extremely closely fissured lignitic CLAY			27.00 - 28.40	100 n/a n/a	27.31 - 27.63 U
				(1.00)	*27.60 m: Becomes slightly sandy and rarely lignitic*					
			-26.78	28.00	Stiff to very stiff dark brown occasionally dark grey sandy micaceaus CLAY					
			-26.98	28.20	Stiff light grey occasional mottled black sandy CLAY					
			-27.18	28.40	NIDD - Possibly grey gravelly CLAY, recovered as firm subrounded to rounded black flint GRAVEL.			28.40 - 29.90	59 n/a n/a	
				(0.85)						
			-28.03	29.25	Stiff dark greenish grey slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of black flint.					29.50 - 29.80 U
				(0.65)						
			-28.68	29.90	NIDD - Possibly gravelly CLAY washed out, recovered as subangular to subrounded fine to coarse GRAVEL of flint	2.40	27.00	~~29.90 - 30.15~~ S		50 (5,16/50 for 100mm) 29.90 - 30.35 D
				(1.03)						

Inst						Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	14.00	14.00
200	27.00	27.00
146	50.40	50.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	MJ	Hand tools	n/a	n/a			
CP	1.20	27.00	16-04-18	19-04-18	MJ	Dando 2000 mk 3	n/a	n/a			
RC	27.00	32.90	23-04-18	24-04-18	PS	Comacchio 305	Geobore S	PCD	VSS	30-04-18	Hammer ID: RHM1703006 Er(%) 82
WLS	32.90	39.90	24-04-18	25-04-18	PS	Comacchio 305	WLS	n/a	VSS	30-04-18	
RC	39.90	50.71	26-05-18	27-04-18	PS	Comacchio 305	Geobore S	PCD	VSS	30-04-18	

Location details:

mE: 549436.47
mN: 180645.96
mAOD: 1.22
Grid: OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks/ samples
			-29.71	30.93				29.90 - 31.40	67 n/a n/a		31.30 - 31.40 D
			-29.78	31.00	Stiff to firm dark greyish green slightly gravelly very sandy CLAY. Gravel is subangular to subrounded fine of flint.						
			-30.03	31.25	Stiff dark greyish green very sandy CLAY/ clayey sand.						
			-30.18	31.40	Dark yellowish green mottled dark greyish green and occasional light brown very sandy CLAY/ very clayey SAND.						
				(1.12)	NIDD - Possibly gravelly CLAY washed out, recovered as subangular to subrounded fine to coarse GRAVEL of flint			31.40 - 32.90	37 n/a n/a		32.80 - 32.90 D
			-31.30	32.52							
				(0.38)	Stiff to firm dark greyish green slightly gravelly very sandy CLAY. Gravel is subangular to subrounded fine of flint.						
			-31.68	32.90							
				(0.80)	Greyish green gravelly sandy CLAY/clayey SAND. Gravel is subangular to subrounded fine to coarse of brown and black flint. *32.90 m: Core loss zone at top*	1.50	27.00	32.90 - 33.31 S			50 (4,7/50 for 260mm) 32.90 D
			-32.48	33.70				32.90 - 34.40	84 n/a n/a		34.30 - 34.40 D
				(0.70)	Green clayey SAND/ sandy CLAY. Sand is fine to medium glauconitic. With rare gravel.						
			-33.18	34.40							
				(1.50)	Dark greyish green and yellowish green slightly clayey fine to medium SAND. *34.67 - 34.72 m: Band of fine to medium subangular to rounded black and dark brown flint.*			34.40 - 35.40	70 n/a n/a		
								35.40 - 35.90	0 n/a n/a		
			-34.68	35.90		2.00	27.00	~~35.90 - 36.30~~ S			52 (7,9/52 for 250mm) 35.90 D
				(0.45)	Dark greenish grey slightly silty fine to medium SAND.						36.00 - 36.20 D
			-35.13	36.35				35.90 - 36.90	100 n/a n/a		
				(3.05)	Dark greenish grey clayey fine to medium SAND.			36.90 - 38.40	100 n/a n/a		37.50 - 37.65 D
					38.40 - 39.30 m: Becomes slightly clayey	2.40	27.00	~~38.40 - 38.85~~ S			N=49 (4,7/9,10,14,16) 38.40 - 38.85 D
								38.40 - 39.90	100 n/a n/a		39.00 - 39.10 D
			-38.18	39.40							
				(0.30)	Stiff to very stiff greenish grey very sandy CLAY.						
			-38.48	39.70							
				(1.10)	Dark greenish grey clayey fine to medium SAND with occasional sand sized shell fragments. *39.80 m: Thin lamination of light grey fine to medium SAND*			39.90 - 40.40	18 n/a n/a		
	Inst					Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	14.00	14.00
200	27.00	27.00
146	50.40	50.00

Depth related remarks:

From	to:	Remarks:

Flush details:

Depth:	Type:	Return:	Colour:
27.00 - 35.90	water	100%	blue
39.90 - 50.40	water	100%	grey

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	MJ	Hand tools	n/a	n/a			
CP	1.20	27.00	16-04-18	19-04-18	MJ	Dando 2000 mk 3	n/a	n/a			
RC	27.00	32.90	23-04-18	24-04-18	PS	Comacchio 305	Geobore S	PCD	VSS	30-04-18	Hammer ID: RHM1703006 Er(%) 82
WLS	32.90	39.90	24-04-18	25-04-18	PS	Comacchio 305	WLS	n/a	VSS	30-04-18	
RC	39.90	50.71	26-05-18	27-04-18	PS	Comacchio 305	Geobore S	PCD	VSS	30-04-18	

Location details:

mE: 549436.47
mN: 180645.96
mAOD: 1.22
Grid: OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks/ samples
											40.50 - 40.60 D
			-39.58	40.80							
			-39.68	40.90	Dark greenish grey slightly gravelly clayey fine to medium SAND with occasional sand sized shell fragments. Gravel is rounded fine to medium of black flint.			40.40 - 41.40	100 n/a n/a		
					Dark greyish brown very silty fine to coarse SAND. Occasional micaceous grains. (THANET FORMATION)	2.00	27.00	~~41.40 - 41.70~~ S			50 (8,14/50 for 150mm) 41.40 - 41.85 D
								41.40 - 42.90	100 n/a n/a		
											43.40 - 43.50 D
								42.90 - 44.40	100 n/a n/a		
						1.80	27.00	~~44.40 - 44.72~~ S			50 (9,15/50 for 170mm) 44.40 - 44.85 D
											44.90 - 45.00 D
								44.40 - 45.90	100 n/a n/a		
				(9.81)							
											46.40 - 46.50 D
								45.90 - 47.40	100 n/a n/a		
						1.90	27.00	~~47.40 - 47.72~~ S			50 (9,11/50 for 175mm) 47.40 - 47.85 D
											47.90 - 48.00 D
								47.40 - 48.90	93 n/a n/a		
											49.40 - 49.50 D
								48.90 - 50.40	93 n/a n/a		
											49.90 D
						1.70	27.00	~~50.40 - 50.71~~ S			50 (8,16/50 for 160mm)
	Inst					Water	Casing	Depth/Core Run	TCR SCR RQD	If	50.40 - 50.85 D Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	14.00	14.00
200	27.00	27.00
146	50.40	50.00

Depth related remarks:

From to: Remarks:

Flush details:

Depth: Type: Return: Colour:

AGS Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill bit:	Logger:	Logged:	Remarks:
IP	0.00	1.20	16-04-18	16-04-18	MJ	Hand tools	n/a	n/a			
CP	1.20	27.00	16-04-18	19-04-18	MJ	Dando 2000 mk 3	n/a	n/a			
RC	27.00	32.90	23-04-18	24-04-18	PS	Comacchio 305	Geobore S	PCD	VSS	30-04-18	Hammer ID: RHM1703006 Er(%) 82
WLS	32.90	39.90	24-04-18	25-04-18	PS	Comacchio 305	WLS	n/a	VSS	30-04-18	
RC	39.90	50.71	26-05-18	27-04-18	PS	Comacchio 305	Geobore S	PCD	VSS	30-04-18	

Location details:

mE: 549436.47
mN: 180645.96
mAOD: 1.22
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks/ samples
			-49.49	50.71	Borehole ends at 50.71 m (Termination reason: Target depth)						

	Inst					Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	14.00	14.00
200	27.00	27.00
146	50.40	50.00

Depth related remarks:

From to: Remarks:

Flush details:

Depth: Type: Return: Colour:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in meters.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10A

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	27-03-18	27-03-18	KG	Hand tools	n/a	n/a	27-03-18	VSS	
CP	1.20	34.10	27-03-18	29-03-18	KG	Dando 2000 mk 2	n/a	n/a	29-03-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549477.76
mN:	180565.97
mAOD:	1.28
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
				(0.30)	ASPHALT. (MADE GROUND)					
			0.98	0.30	Dark greyish brown gravelly fine to coarse SAND with medium cobble content. Gravel of angular to subangular fine to coarse red and yellow brick. Occasional subangular asphalt and concrete cobbles (MADE GROUND)			0.30 - 0.60	B1	
				(0.30)				0.50	ES	
			0.68	0.60				0.70 - 1.00	B2	
				(0.80)	Soft dark grey CLAY. Occasional mottling black brown of organic matter. Occasionally slightly sandy. Rare fine to medium gravel of subrounded to rounded flint. (ALLUVIUM)			1.00 1.10	ES D3	
			-0.22	1.50	Very soft to soft dark greyish brown peaty CLAY. Frequent black plant matter and relic roots. (ALLUVIUM)	Dry	1.20	1.50 - 1.95 1.50 - 1.95	S D4	SWP: 450 mm N=0 (0,0/0,0,0,0)
				(1.60)				2.50 - 2.95	UT5	6 (100%)
								2.95 - 3.05	D6	
			-1.82	3.10	Very soft dark greyish brown highly decomposed PEAT. (ALLUVIUM)			3.10 - 3.40	B7	
						Dry	3.20	3.50 - 3.95 3.50 - 3.95	S D8	SWP: 450 mm N=0 (0,0/0,0,0,0)
				(2.90)				4.50 - 4.95	UT9	7 (90%)
								4.95 - 5.05	D10	
								5.73	W1	
			-4.72	6.00	Very loose dark greyish brown slightly clayey SAND. Occasional rootlets. Occasional mottling dark brown/black plant matter. Rare roots. (ALLUVIUM)	Dry	6.00	6.00 - 6.45 6.00 - 6.45	S D11	SWP: 450 mm N=0 (0,0/0,0,0,0)
				(4.50)		Dry	7.20	7.50 - 7.95 7.50 - 7.95	S D12	N=1 (1,0/0,0,1,0)
	SP					Dry	8.90	9.00 - 9.45 9.00 - 9.45	S D13	N=4 (1,0/0,1,1,2)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	21.40	21.40
150	33.45	34.10

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH11

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	27-03-18	27-03-18	KG	Hand tools	n/a	n/a	27-03-18	VSS	
CP	1.20	34.10	27-03-18	29-03-18	KG	Dando 2000 mk 2	n/a	n/a	29-03-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549477.76
mN:	180565.97
mAOD:	1.28
Grid:	OSGB

Backfill/ Instalt'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Very loose dark greyish brown slightly clayey SAND. Occasional rootlets. Occasional mottling dark brown/black plant matter. Rare roots. (ALLUVIUM)					
	▽		-9.22	10.50	Medium dense dark brownish grey gravelly slightly silty fine to coarse SAND. Gravel of subangular to rounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	Dry	10.40	10.50 - 10.95 10.50 - 10.95	S B14	N=18 (2,3/4,4,4,6)
				(1.50)						
			-10.72	12.00	Medium dense dark grey slightly silty sandy GRAVEL of subangular to rounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	3.20	12.00	12.00 - 12.45 12.00 - 12.45	C B15	N=20 (2,3/4,5,5,6)
						0.10	13.50	13.50 - 13.95 13.50 - 13.95	C B16	N=22 (3,4/4,5,6,7)
				(6.00)		1.80	15.00	15.00 - 15.45 15.00 - 15.45	C B17	N=21 (2,3/4,4,6,7)
						1.70	16.50	16.50 - 16.95 16.50 - 16.95	C B18	N=19 (2,3/3,4,5,7)
			-16.72	18.00	Medium dense dark yellowish grey sandy GRAVEL of subangular to rounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	1.30	18.00	18.00 - 18.45 18.00 - 18.45	C B19	N=14 (1,2/2,4,4,4)
				(2.80)						
						1.50	19.50	19.50 - 19.95 19.50 - 19.95	C B20	N=12 (1,1/2,2,4,4)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
10.60	5.73	10.40	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	21.40	21.40
150	33.45	34.10

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH11

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	27-03-18	27-03-18	KG	Hand tools	n/a	n/a	27-03-18	VSS	
CP	1.20	34.10	27-03-18	29-03-18	KG	Dando 2000 mk 2	n/a	n/a	29-03-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549477.76
mN:	180565.97
mAOD:	1.28
Grid:	OSGB

Backfill/ Instrn	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Medium dense dark yellowish grey sandy GRAVEL of subangular to rounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)					
			-19.52	20.80						
					Medium dense becoming very dense dark greyish black GRAVEL of subrounded to rounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)					
						0.90	21.00	21.00 - 21.45	C	N=25 (4,5/5,6,7,7)
								21.00 - 21.45	B21	
						0.10	22.50	22.50 - 22.95	C	N=21 (2,3/4,4,5,8)
								22.50 - 22.95	B22	
				(5.50)						
						0.10	24.00	24.00 - 24.33	C	50 (6,9/50 for 180mm)
								24.00 - 24.45	B23	
								25.50 - 25.95	B24	
			-25.02	26.30	Stiff to very stiff dark grey extremely closely to closely fissured CLAY. Occasionally laminated. Frequent shells.			26.30	D25	
								27.00 - 27.45	UT25	100 (80%)
				(2.10)				27.45 - 27.55	D26	
					28.20 - 28.40 m: Weak MUDSTONE. Laminated, lignified blocks, closely fissured.			28.20	D27	
								28.20 - 28.40	B28	
			-27.12	28.40	Very stiff dark brownish grey slightly sandy slightly gravely CLAY. Gravel of subrounded to rounded medium to coarse flint. Occasional shell fragments.	26.30	26.50	28.50 - 28.95	S	N=37 (2,3/5,7,12,13)
								28.50 - 28.95	D29	
				(2.20)						
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	21.40	21.40
150	33.45	34.10

Depth related remarks:

From:	To:	Remarks:
20.40	21.40	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH11

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	27-03-18	27-03-18	KG	Hand tools	n/a	n/a	27-03-18	VSS	
CP	1.20	34.10	27-03-18	29-03-18	KG	Dando 2000 mk 2	n/a	n/a	29-03-18	VSS	Hammer ID: SI03 Er(%) 64

Location details:

mE:	549477.76
mN:	180565.97
mAOD:	1.28
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Very stiff dark brownish grey slightly sandy slightly gravely CLAY. Gravel of subrounded to rounded medium to coarse flint. Occasional shell fragments.			30.00 - 30.45	UT30	100 (80%)
								30.45 - 30.55	D31	
			-29.32	30.60				30.60	D32	
					Dense becoming very dense blackish grey sandy silty GRAVEL of subrounded to rounded fine to coarse flint.					
						0.50	31.50	31.50 - 31.95	C	N=44 (3,4/6,8,13,17)
								31.50 - 31.95	B34	
				(3.50)						
						0.10	33.00	33.00 - 33.42	C	50 (4,7/50 for 265mm)
								33.00 - 33.41	B35	
			-32.82	34.10						
					Borehole ends at 34.10m (Refusal)					
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	21.40	21.40
150	33.45	34.10

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:
33.80	34.10	01:00	Californian

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH11

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	27-03-18	27-03-18	MJ	Hand tools	n/a	n/a	27-03-18	VSS	
CP	1.20	30.00	27-03-18	29-03-18	MJ	Dando 3000 mk 2	n/a	n/a	29-03-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE:	549429.90
mN:	180577.09
mAOD:	1.04
Grid:	OSGB

Backfill/ Instrn	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
			0.84	0.20	ASPHALT.					
				(0.30)	(MADE GROUND) Soft to firm dark brownish grey occasionally mottled black slightly sandy slightly gravelly CLAY. Gravel of subangular to subround fine to medium flint and angular to subangular brick. Rare pieces of rubber matting.			0.20 - 0.50	B1	
			0.54	0.50	(MADE GROUND) Soft dark grey occasionally mottled light orangish brown CLAY. Occasional rootlets.			0.40	ES	
				(1.50)	(ALLUVIUM)			0.60 - 1.00	B2	
								1.00	ES	
						Dry	1.00	1.50 - 1.95	S	SWP: 225 mm
								1.50 - 1.95	D1	N=1 (0,0/0,1,0,0)
			-0.96	2.00	Very soft dark brown highly decomposed woody PEAT. Rare medium gravel sized pockets of dark grey clay. Occasional relic roots. (ALLUVIUM)			2.00	D2	
								2.00	W1	
								2.50 - 2.95	UT1	
	▼							3.00	D3	
				(3.00)		Dry	3.00	3.50 - 3.95	S	SWP: 300 mm
								3.50 - 3.95	D4	N=1 (0,0/0,0,1,0)
								4.50 - 4.95	UT2	
			-3.96	5.00	Very soft to soft dark brown slightly peaty CLAY. Occasional medium gravel sized pockets of light orangish brown fine to coarse sand. Abundant relic roots, rootlets and plant matter.			5.00	D5	
				(0.50)	(ALLUVIUM)					
			-4.46	5.50	Very soft light brownish grey CLAY. Occasional pockets of dark brown peat. Frequent relic roots and plant matter. (ALLUVIUM)	Dry	5.00	5.50 - 5.95	S	SWP: 450 mm
								5.50 - 5.95	D6	N=0 (0,0/0,0,0,0)
				(1.25)						
			-5.71	6.75	Very soft very closely fissured light brownish grey slightly sandy CLAY. Occasionally laminated with plant matter (leaves). (ALLUVIUM)			7.00 - 7.45	UT3	
								7.50	D7	
				(3.25)		Dry	8.00	8.50 - 8.95	S	SWP: 225 mm
								8.50 - 8.95	D8	N=1 (0,0/0,1,0,0)
	▽ Inst		-8.96	10.00		Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
10.00	3.00	10.00	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	20.50	20.50
150	30.00	30.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH12

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	27-03-18	27-03-18	MJ	Hand tools	n/a	n/a	27-03-18	VSS	
CP	1.20	30.00	27-03-18	29-03-18	MJ	Dando 3000 mk 2	n/a	n/a	29-03-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549429.90
mN: 180577.09
mAOD: 1.04
Grid: OSGB

Backfill/ Install'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results/Remarks
					Medium dense dark yellowish grey gravelly slightly silty very sandy GRAVEL. Gravel of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	Dry	10.45	10.00 - 10.45 10.00 - 10.45	C B3	N=12 (1,1/2,2,3,5)
	(50)			(2.50)		Dry	11.95	11.50 - 11.95 11.50 - 11.95	C B4	N=12 (2,2/3,3,3,3)
			-11.46	12.50	Medium dense dark yellowish grey slightly silty fine to coarse SAND and subangular to subrounded flint to coarse GRAVEL. (TAPLOW GRAVEL MEMBER)					
				(0.95)		Dry	13.45	13.00 - 13.45 13.00 - 13.45	C B5	N=19 (2,3/2,4,6,7)
			-12.41	13.45	Medium dense dark yellowish grey gravelly slightly silty fine to coarse SAND. Gravel of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)					
						Dry	14.95	14.50 - 14.95 14.50 - 14.95	C B6	N=21 (2,2/4,5,6,6)
						Dry	16.45	16.00 - 16.45 16.00 - 16.45	C B7	N=23 (3,3/4,5,7,7)
				(6.85)						
						Dry	17.95	17.50 - 17.95 17.50 - 17.95	C B8	N=17 (2,3/3,4,5,5)
						Dry	19.45	19.00 - 19.45 19.00 - 19.45	C B9	N=32 (4,5/6,7,9,10)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	20.50	20.50
150	30.00	30.00

Depth related remarks:

From:	To:	Remarks:
19.00	21.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH12

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	27-03-18	27-03-18	MJ	Hand tools	n/a	n/a	27-03-18	VSS	
CP	1.20	30.00	27-03-18	29-03-18	MJ	Dando 3000 mk 2	n/a	n/a	29-03-18	VSS	Hammer ID: SI08 Er(%) 74

Location details:

mE: 549429.90
mN: 180577.09
mAOD: 1.04
Grid: OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
			-19.26	20.30	Medium dense dark yellowish grey gravelly slightly silty fine to coarse SAND. Gravel of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)					
					Medium dense dark blackish grey slightly sandy GRAVEL of subrounded to rounded fine to coarse flint.	Dry	20.95	20.50 - 20.95	C	N=30 (3,4/6,6,8,10)
								20.50 - 20.95	B10	
				(1.20)						
			-20.46	21.50	Dark yellowish grey slightly sandy slightly silty GRAVEL of subrounded to rounded fine to coarse flint. (Unable to undertake SPTs due to material 'blowing' up borehole).			22.00 - 22.40	B11	
								23.50 - 23.90	B12	
				(4.50)						
					25.00 - 25.80 m: Abundant sand sized shell fragments.			25.00 - 25.40	B13	
	SP (50)							25.80	D9	
			-24.96	26.00				26.00 - 26.45	UT4	
				(0.50)	Stiff very closely fissured thinly to thickly laminated dark blackish grey mottled light greyish brown CLAY.					
			-25.46	26.50				26.50	D10	
					Very stiff to hard greenish grey occasionally mottled light greyish brown and dark grey slightly gravelly sandy glauconitic CLAY. Gravel of subrounded to rounded medium to coarse flint. Occasional fossil rootlets.					
				(1.20)						
						Dry	27.95	27.50 - 27.82	S	50 (7,10/50 for 175mm)
								27.50 - 27.95	D11	
			-26.66	27.70						
					Very dense dark greyish brown gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to medium flint. Abundant coarse gravel and cobble sized nodules of light greenish grey sandy slightly gravelly glauconitic clay.			28.00 - 28.40	B14	
				(1.30)						
			-27.96	29.00		Dry	29.45	29.00 - 29.39	C	50 (4,6/50 for 240mm)
					Very dense dark grey and light orangish brown very gravelly SAND. Gravel of subangular to rounded fine to coarse flint. Occasional medium gravel sized pockets of light grey brown clay.			29.00 - 29.45	B15	
	(50)			(1.00)						
	Inst		-28.96	30.00	Borehole ends at 30.00m (Refusal)	Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	9.00	9.00
200	20.50	20.50
150	30.00	30.00

Depth related remarks:

From:	To:	Remarks:
21.00	25.50	Blowing sand & gravel

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH12

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	06-04-18	06-04-18	DW	Hand tools	n/a	n/a	06-04-18	VSS	
CP	1.20	32.00	06-04-18	09-04-18	DW	Dando 2000	n/a	n/a	17-04-18	VSS	Hammer ID: AR1926 Er(%) 74

Location details:

mE: 549501.99
mN: 180611.01
mAOD: 1.45
Grid: OSGB

Backfill/ Instalm	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
			1.40	0.05	ASPHALT.					
			1.35	0.10	(MADE GROUND)					
			1.25	0.20	Light grey slightly silty SAND and GRAVEL of mixed lithologies. Sand is fine to coarse. Gravel is angular to subangular fine to coarse.					
				(0.40)	(MADE GROUND)			0.50	PID	1.3 ppmv
			0.85	0.60	CONCRETE.			0.60	PID	5.9 ppmv
				(0.40)	(MADE GROUND)			0.70	ES	
			0.45	1.00	Reddish brown and light grey SAND and GRAVEL with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse of brick and concrete. Cobbles are angular to subangular of brick.			1.00	PID	0.6 ppmv
					(MADE GROUND)			1.20	ES	
						Dry	1.50	1.50 - 1.95	S	N=0 (1,0/0,0,0,0)
				(1.50)	Very soft to soft dark grey to black very sandy gravely CLAY. Sand is fine to coarse. Gravel is fine to coarse concrete. Occasional fragments of wood, metal wire, plastic, glass and ceramic tile. Hydrocarbon odour.			1.50 - 1.95	D	
					(MADE GROUND)					
					Very soft extremely closely fissured dark grey mottled lightorangish brown CLAY. Occasional rootlets. Occasional black plant material.					
			-1.05	2.50	(ALLUVIUM)			2.50	D	
					Very soft to soft dark blackish brown mottled reddish brown organic CLAY. Occasional rootlets, roots and woody material. Dark reddish brown becomes dark brown on exposure to air.			3.00 - 3.45	UT	3 (100%)
				(1.50)	(ALLUVIUM)					
			-2.55	4.00	Very soft dark brown amorphous PEAT. Occasional woody material. (ALLUVIUM)					
						Dry	4.50	4.50 - 4.95	S	N=1 (0,0/0,0,1,0)
								4.50 - 4.95	D	
				(2.50)						
								6.00 - 6.45	UT	8 (100%)
			-5.05	6.50	Very soft to soft dark grey CLAY. Occasional roots and woody material. Occasional laminations with plant material (leaves). (ALLUVIUM)					
						Dry	7.50	7.50 - 7.95	S	N=2 (1,1/0,1,0,1)
	SP			(2.90)				7.50 - 7.95	D	
								9.00 - 9.45	UT	12 (100%)
			-7.95	9.40	Medium dense dark orangish brown grey sandy clayey GRAVEL of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)			9.80	D	
				(1.10)						
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.00	32.00

Depth related remarks:

From:	To:	Remarks:
8.00	10.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH13

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	06-04-18	06-04-18	DW	Hand tools	n/a	n/a	06-04-18	VSS	
CP	1.20	32.00	06-04-18	09-04-18	DW	Dando 2000	n/a	n/a	17-04-18	VSS	Hammer ID: AR1926 Er(%) 74

Location details:

mE: 549501.99
mN: 180611.01
mAOD: 1.45
Grid: OSGB

Backfill/ Instalt'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results/Remarks
					Medium dense dark orangish brown grey sandy clayey GRAVEL of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)					
			-9.05	10.50	Medium dense dark yellowish grey sandy GRAVEL of subangular to subrounded fine to coarse flint. (TAPLOW GRAVEL MEMBER)	Dry	10.50	10.50 - 10.95 10.50 - 10.95	C B	N=3 (1,0/1,0,1,1)
				(3.50)		Dry	12.00	12.00 - 12.45 12.00 - 12.45	C B	N=14 (2,3/4,3,4,3)
					12.80 - 14.00 m: Very sandy.	Dry	13.50	13.50 - 13.95 13.50 - 13.95	C B	N=15 (3,4/3,4,4,4)
			-12.55	14.00	Stiff laminated dark grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium flint. (LONDON CLAY)			14.00	D	
								15.00 - 15.45	UT	20 (100%)
				(4.70)				16.50 - 16.95	UT	34 (100%)
						Dry	18.00	18.00 - 18.45	C	N=35 (6,8/8,9,9,9)
			-17.25	18.70	Dense dark blackish grey slightly sandy slightly clayey GRAVEL of subrounded fine to coarse black flint.			18.70	D	
						Dry	19.50	19.50 - 19.95 19.50 - 19.95	C B	N=34 (4,7/8,9,9,8)
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.00	32.00

Depth related remarks:

From:	To:	Remarks:
18.00	19.00	Bentonite seal

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH13

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	06-04-18	06-04-18	DW	Hand tools	n/a	n/a	06-04-18	VSS	
CP	1.20	32.00	06-04-18	09-04-18	DW	Dando 2000	n/a	n/a	17-04-18	VSS	Hammer ID: AR1926 Er(%) 74

Location details:

mE: 549501.99
mN: 180611.01
mAOD: 1.45
Grid: OSGB

Backfill/ Instalh	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Dense dark blackish grey slightly sandy slightly clayey GRAVEL of subrounded fine to coarse black flint.					
				(4.80)	*21.00 - 22.40 m: Abundant shell fragments.*	Dry	21.00	21.00 - 21.45 21.00 - 21.45	C B	N=37 (5,8/8,10,9,10)
						Dry	22.50	22.50 - 22.95 22.50 - 22.95	C B	N=20 (4,5/5,5,6,4)
			-22.05	23.50	Dense dark blackish grey gravelly silty fine to coarse SAND. Gravel is subrounded to rounded fine to coarse black flint. Abundant shell fragments.					
				(2.70)		Dry	24.00	24.00 - 24.45 24.00 - 24.45	C B	N=37 (6,8/8,10,9,10)
						Dry	25.50	25.50 - 25.95 25.50 - 25.95	C B	N=38 (5,7/10,10,9,9)
			-24.75	26.20	Stiff to very stiff laminated dark grey CLAY. Abundant shells and sand size shell fragments.			26.20	D	
				(2.80)		Dry	27.00	27.00 - 27.37 27.00 - 27.45	S D	40 (6,7/40 for 220mm)
						Dry	28.50	28.50 - 28.86 28.50 - 28.95	S D	50 (7,9/50 for 210mm)
			-27.55	29.00	Stiff to very stiff extremely closely fissured black mottled light grey CLAY. Rare lignite.			29.00	D	
				(1.00)						
	Inst		-28.55	30.00		Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.00	32.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT
Scale: 1:50

Project: Riverside EfW
Project No: 3765
Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH13

Borehole Log

TerraConsult

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Logger:	Remarks:
IP	0.00	1.20	06-04-18	06-04-18	DW	Hand tools	n/a	n/a	06-04-18	VSS	
CP	1.20	32.00	06-04-18	09-04-18	DW	Dando 2000	n/a	n/a	17-04-18	VSS	Hammer ID: AR1926 Er(%) 74

Location details:

mE:	549501.99
mN:	180611.01
mAOD:	1.45
Grid:	OSGB

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Samples & In Situ Testing: Water	Casing	Depth	Type & No	Results/Remarks
					Stiff to very stiff dark grey becoming greyish green slightly sandy gravelly CLAY. Gravel is subrounded to rounded fine to coarse of black flint. Occasional shell fragments.	Dry	30.00	30.00 - 30.41	S	50 (7,10/50 for 255mm)
								30.00 - 30.45	D	
				(2.00)						
	▼		-30.55	32.00	Borehole ends at 32.00m (Refusal)			32.00	D	
	Inst					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:
32.00	32.00	32.00	

Diameter & casing:

Dia (mm):	Depth:	Casing:
250	10.00	10.00
200	19.00	19.00
150	32.00	32.00

Depth related remarks:

From:	To:	Remarks:

Chiselling details:

From:	to:	Duration:	Tool:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:50

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH13

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:		Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	0.70	mE:	549422.11	Start:	25/04/2018
Checked by:	DD			Length:	2.50	mN:	180759.13	End:	25/04/2018
		Plant:	JCB 3CX	**Orientation:**		mAOD:	2.95	Logged:	25/04/2018
		Shoring:	n/a	Bearing =		Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			2.80 0.15	ASPHALT. (MADE GROUND)			
			2.65 0.30	Pinkish brown slightly silty sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounder of mixed lithologies. (sub-base). (MADE GROUND)			
			2.45 0.50	Dark yellowish brown fine to coarse SAND. (MADE GROUND)			
			(0.95)	Dark orangish brown fine to coarse SAND. (MADE GROUND)			
			1.50 1.45		1.45	ES	
			1.45 1.50	ASPHALT. (MADE GROUND)	1.45	ES1	
			1.30 1.65	Dark orangish brown gravelly fine to coarse SAND.Gravel is subangular to subrounded fine to coarse brick. (MADE GROUND)	1.65 1.65 1.70	ES ES2 B4	
			(0.90)	Soft to firm dark grey gravelly CLAY. Gravel is angular to subrounded fine to coarse brick, concrete and flint. Abundant pockets of black organic CLAY. (MADE GROUND)	1.70	D3	
			0.40 2.55		2.55	ES	
			(0.45)	Dark whitish grey becoming mottled light orangish brown sandy clayey GRAVEL. Gravel is subangular to subrounded fine to coarse brick, chalk and concrete. (MADE GROUND)	2.55 2.56 2.56	ES7 B6 D5	
			-0.05 3.00	Soft to firm dark grey with occasionally mottled black CLAY (ALLUVIUM)	3.00	B9	
			-0.25 3.20	Trial pit ends at 3.20m (Target depth)	3.00	D8	
					Depth	Type & No	Results

Groundwater entries:

Depth:	Rose to:	Remarks:

Depth related remarks:

From	to:	Remarks:

General remarks:

Weather: Bright, dry

Stability: Good

Remarks:

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:25

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TP01

Sheet 1 of 1

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:		Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	0.70	mE:	549501.85	Start:	26/04/2018
Checked by:	DD			Length:	2.40	mN:	180676.67	End:	26/04/2018
		Plant:	JCB 3CX	**Orientation:**		mAOD:	1.96	Logged:	26/04/2018
		Shoring:	n/a	Bearing =		Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			1.81 0.15	Light orangish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint, brisk and concrete. Abundant roots and rootlets. (MADE GROUND)			
			(0.45)	Dark orangish brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse brick and concrete. Occasional plastic sheet, textiles, string, metal pipe and plastic strapping. One concrete angular boulder. (MADE GROUND)	0.50 0.50 0.50	PID ES ES1	0.5 ppmv
			1.36 0.60	Dark grey gravelly ashy slightly silty fine to coarse SAND. Gravel is angular to subangular fine to coarse of flint, brick and concrete. Occasional cobble size pockets of sandy CLAY. Rare terracoatta tile, glass and slate. (MADE GROUND)	0.80	ES	
			(0.60)	*0.80 m: Rare white and pinkish white sand size crystals*	0.80 0.90	ES2 PID	0.6 ppmv
				1.00 m: Metal sheet with white coating that reacts on exposure to air	0.90 0.90	ES ES3	
	▼		0.76 1.20	Soft to firm extremely closely fissured dark grey mottled black slightly sandy CLAY. Occasional fossil rootlets. (ALLUVIUM)	1.30	PID	0.5 ppmv
			(0.60)		1.30 1.30 1.30 1.30	B6 D5 ES ES4	
			0.16 1.80	Very soft to soft dark grey mottled light orangish brown CLAY. (ALLUVIUM)			
			(1.20)	*2.70 - 3.00 m: Occasional pockets of peat/organic matter*			
	▼		-1.04 3.00	Trial pit ends at 3.00m (Target depth)	3.00 3.00 3.00	PID B8 D7	0.2 ppmv

Depth	Type & No	Results

Groundwater entries:

Depth:	Rose to:	Remarks:
1.20	1.20	
3.00	2.90	

Depth related remarks:

From to: Remarks:

General remarks:

Weather: Bright, dry

Stability: Good

Remarks:

AGS Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:25

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TP02

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:		Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	0.70	mE:	549550.30	Start:	26/04/2018
Checked by:	DD			Length:	2.10	mN:	180668.77	End:	26/04/2018
		Plant:	JCB 3CX	**Orientation:**		mAOD:	1.71	Logged:	26/04/2018
		Shoring:	n/a	Bearing =		Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			(0.80)	Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of flint, brick and concrete. Rare plastic. (MADE GROUND)			
			0.91 0.80		0.80	PID	0.2 ppmv
			(0.30)	Black ashy gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint. Rare gravel of slag and asphalt. Rare cables and rubber ducting. Rotten egg odour. (MADE GROUND)	0.80 0.80	ES ES1	
			0.61 1.10				
			(0.50)	Soft dark grey mottled black CLAY. Occasional rootlets. (ALLUVIUM)	1.50	PID	0.3 ppmv
			0.11 1.60		1.50 1.50 1.50 1.50	B4 D3 ES ES2	
			(0.90)	Very soft to soft dark grey mottled orangish brown CLAY. Occasional cobble size pockets of peat. (ALLUVIUM)			
				2.40 - 2.50 m: Occasional woody material			
			-0.79 2.50	Trial pit ends at 2.50m (Target depth)	2.50 2.50	B6 D5	

Depth	Type & No	Results

Groundwater entries:

Depth:	Rose to:	Remarks:
1.05	1.05	
1.50	1.50	

Depth related remarks:

From to: Remarks:

General remarks:

Weather: Bright, dry

Stability: Good

Remarks:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:25

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TP04

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:		Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	0.70	mE:	549453.45	Start:	25/04/2018
Checked by:	DD			Length:	2.60	mN:	180680.63	End:	25/04/2018
		Plant:	JCB 3CX	**Orientation:**		mAOD:	1.74	Logged:	25/04/2018
		Shoring:	n/a	Bearing =		Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			1.59 0.15	Dark yellowish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of flint, brick and concrete. Abundant roots and rootlets. (MADE GROUND)			
			(0.35)	Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to rounded of flint and brick. Occasional cobbles and boulders of concrete. Rare plastic.			
			1.24 0.50	(MADE GROUND)			
			1.04 0.70	Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is angular to subangular flint, brick and concrete. Rare gravel of asphalt, tile and slag. (MADE GROUND)	0.60 0.60 0.60	PID ES ES1	0.1 ppmv
			0.84 0.90	Light greyish white clayey SILT. Occasional partings of dark grey or light orangish brown silt. (ALLUVIUM)			
			(0.70)	Soft light brownish grey mottled black CLAY. Occasionally extremely closely fissured. Occasional rootlets. (ALLUVIUM)	1.30 1.30 1.30 1.30 1.30 1.60 1.60	PID B4 D3 ES ES2 B6 D5	0.3 ppmv
			0.14 1.60	Soft to firm light grey mottled light orangish brown CLAY. (ALLUVIUM)			
			(1.15)				
			-1.01 2.75	Dark brown pseudofibrous PEAT. Occasional roots. (ALLUVIUM)	2.80 2.80	B8 D7	
			-1.26 3.00	Trial pit ends at 3.00m (Target depth)			

Depth	Type & No	Results

Groundwater entries:

Depth:	Rose to:	Remarks:
2.65	2.50	
2.75	2.65	

Depth related remarks:

From to: Remarks:

General remarks:

Weather: Bright, dry

Stability: Good

Remarks:

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:25

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TP05

Trial Pit Log

TerraConsult

Personnel:		Equipment & methods:		Dimensions:		Coordinates & level:		Dates:	
Logged by:	VSS	Method:	Mechanically excavated	Width:	0.70	mE:	549386.70	Start:	25/04/2018
Checked by:	DD			Length:	2.50	mN:	180615.57	End:	25/04/2018
		Plant:	JCB 3CX	**Orientation:**		mAOD:	1.50	Logged:	25/04/2018
		Shoring:	n/a	Bearing =		Grid:	OSGB		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing		
					Depth	Type & No	Results
			1.35 0.15	ASPHALT.			
			1.20 0.30	(MADE GROUND)			
				Dark orangish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint and brick. Occasional cobbles of angular to subangular brick and concrete.	0.30	ES	
				(MADE GROUND)	0.30	ES1	
				Very soft to soft grey mottled black CLAY.			
				(ALLUVIUM)	0.70	ES	
					0.70	ES2	
			(1.20)		0.90	B4	
					0.90	D3	
			0.00 1.50	Soft to firm grey mottled dark orangish brown CLAY.			
				(ALLUVIUM)			
					1.90	B6	
					1.90	D5	
			(1.20)				
			-1.20 2.70	Soft grey CLAY. Occasional cobble size pockets of peat. Occasional plant material.			
				(ALLUVIUM)	2.90	B8	
					2.90	D7	
			(1.15)				
			-2.35 3.85	Trial pit ends at 3.85m (Target depth)			
					Depth	Type & No	Results

Groundwater entries:

Depth:	Rose to:	Remarks:
1.10	1.10	
2.10	2.10	
2.70	2.60	

Depth related remarks:

From to: Remarks:

General remarks:

Weather: Bright, dry

Stability: Good

Remarks:

AGS

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Log issue: DRAFT

Scale: 1:25

Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TP06

Sheet 1 of 1

APPENDIX B
Photographs

Core BH02A, BH05, BH10A

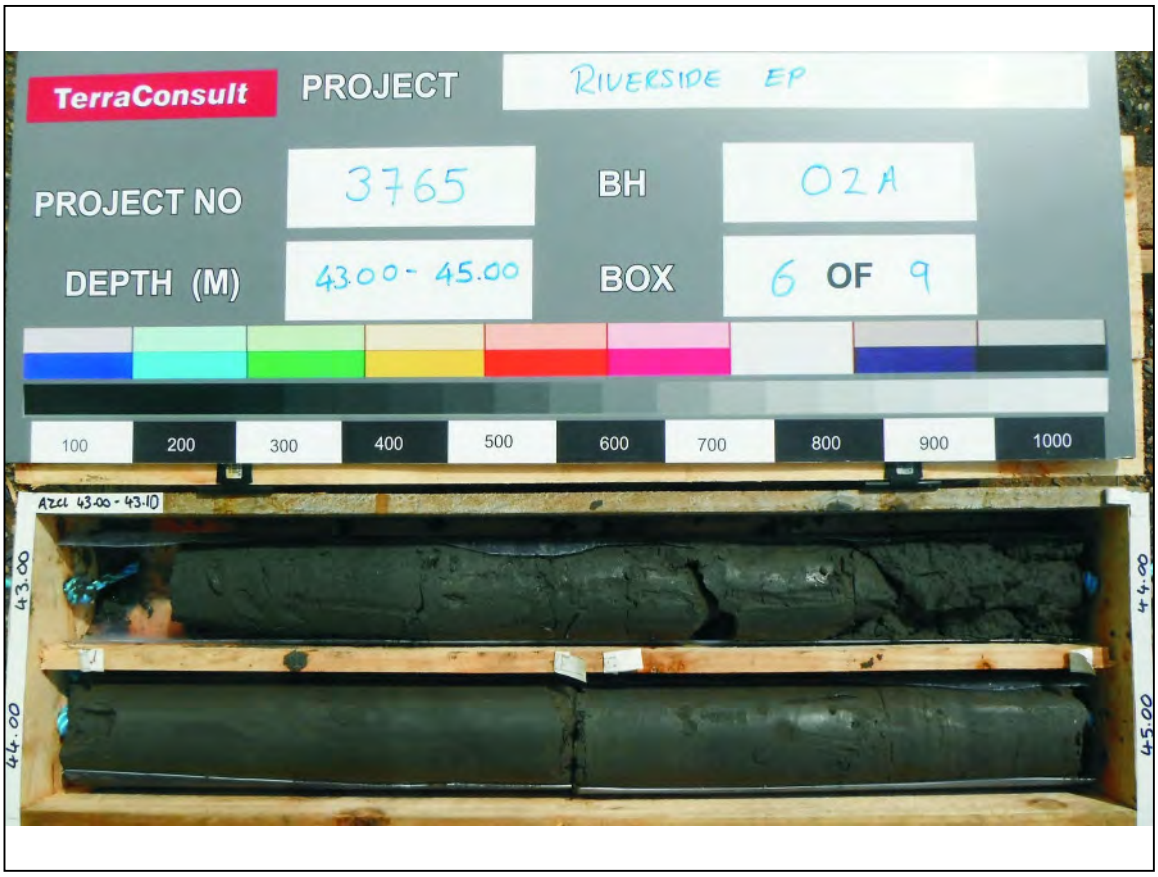
3765 BH02A core photo - box (1)

3765 BH02A core photo - box (2)

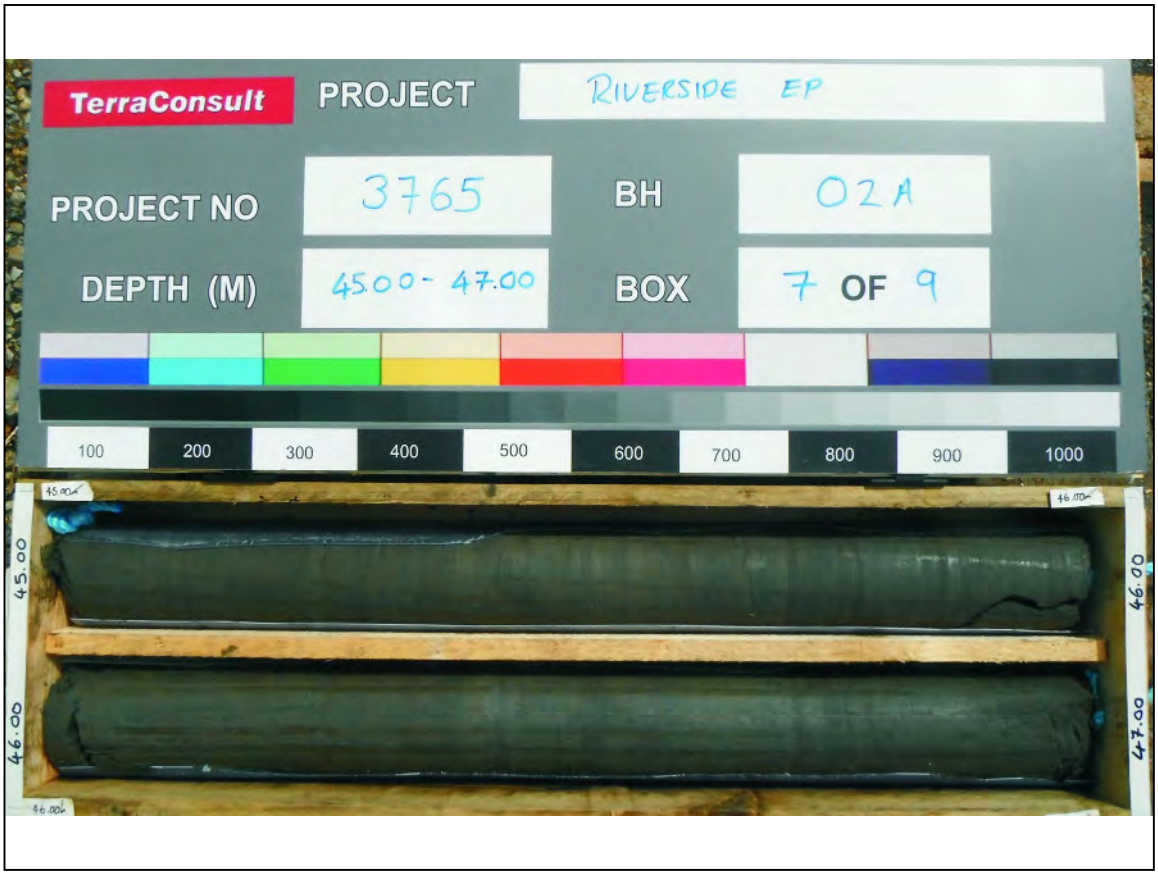
3765 BH02A core photo - box (3)

3765 BH02A core photo - box (4)

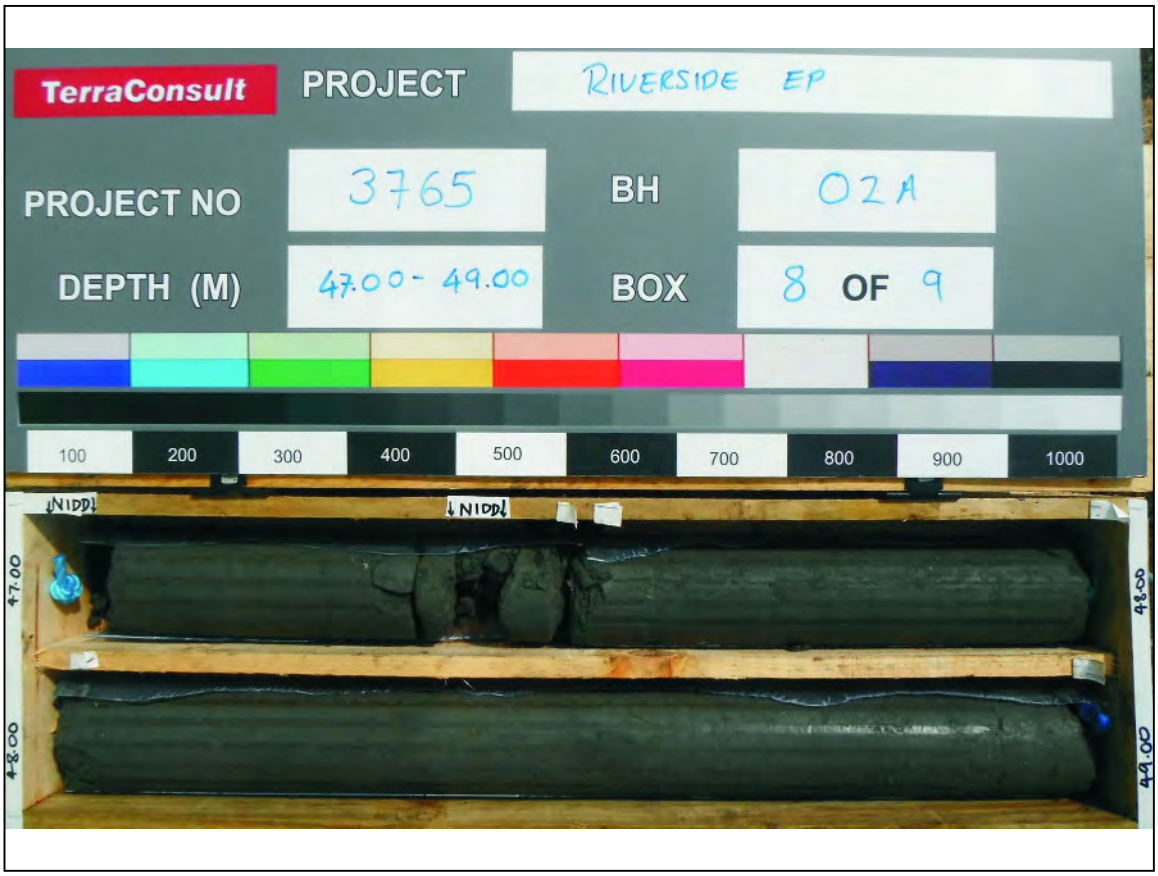
3765 BH02A core photo - box (5)



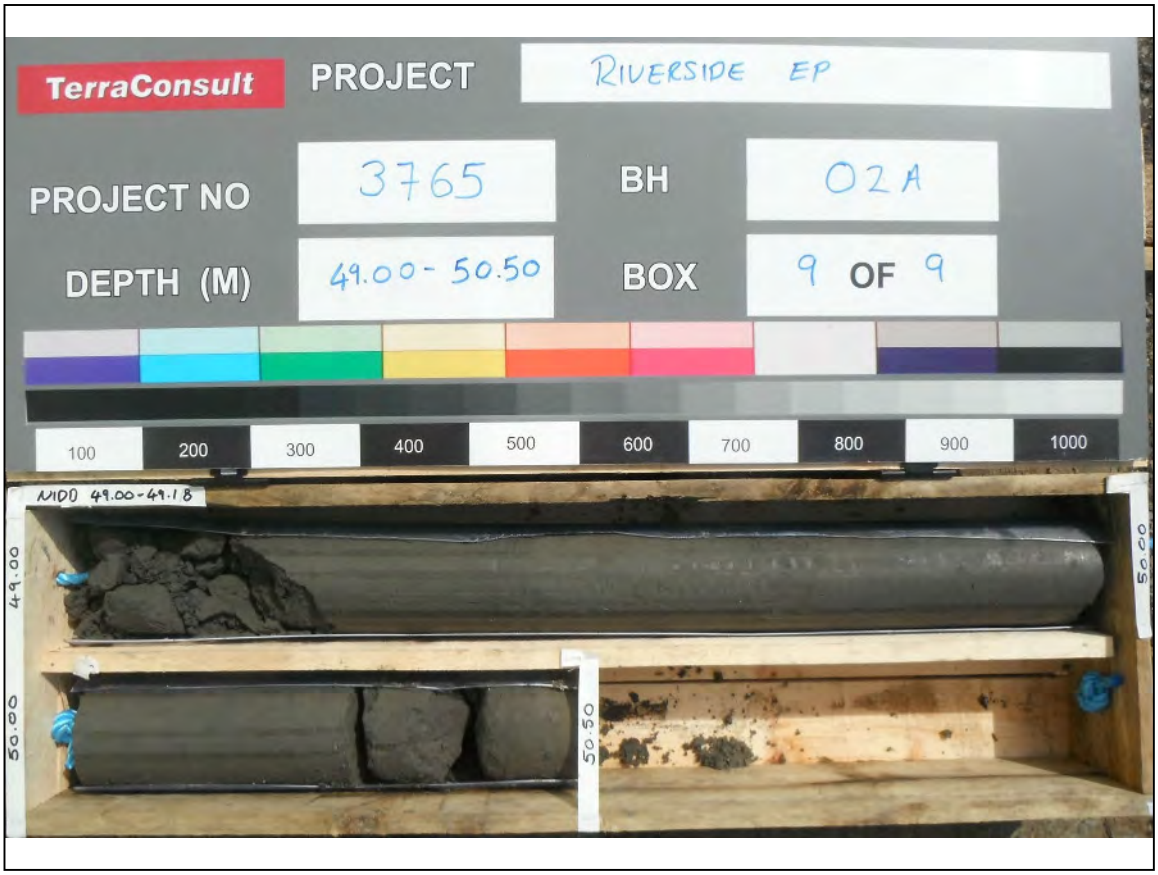
3765 BH02A core photo - box (6)



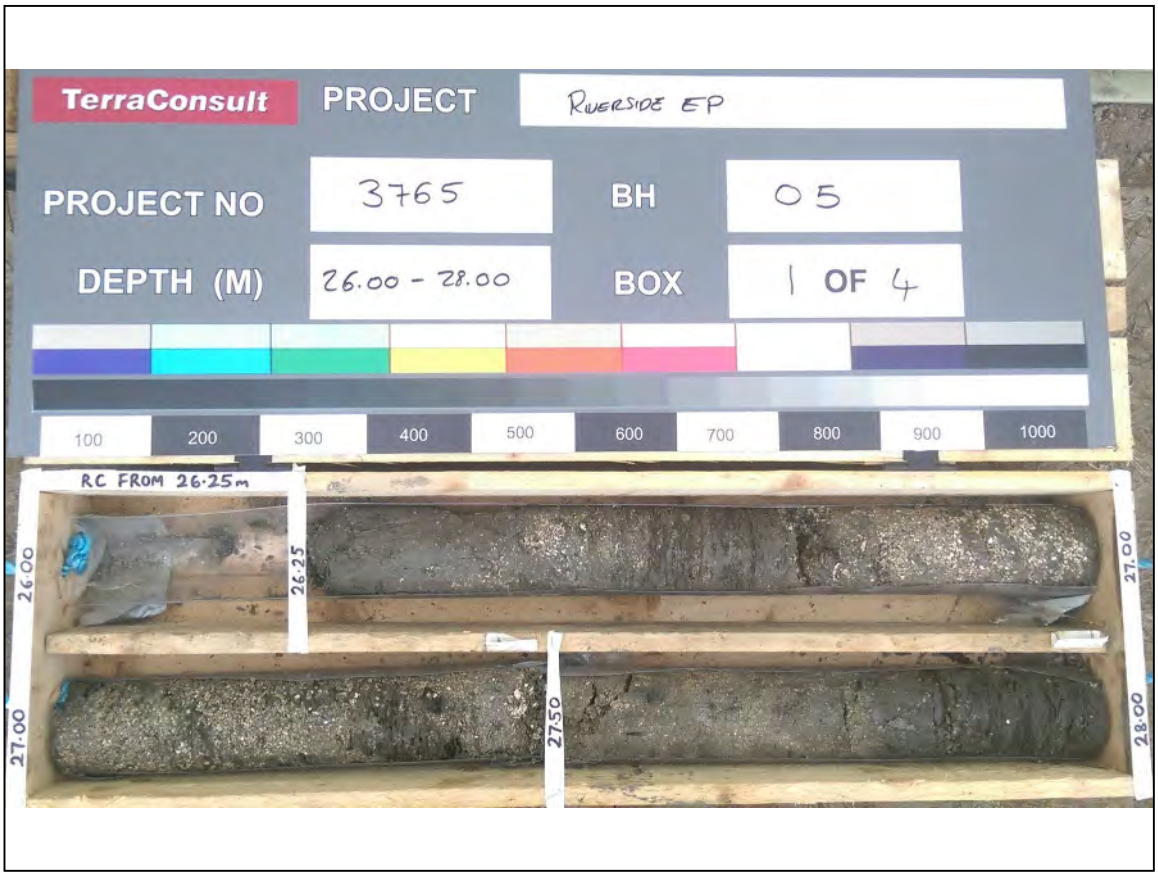
3765 BH02A core photo - box (7)



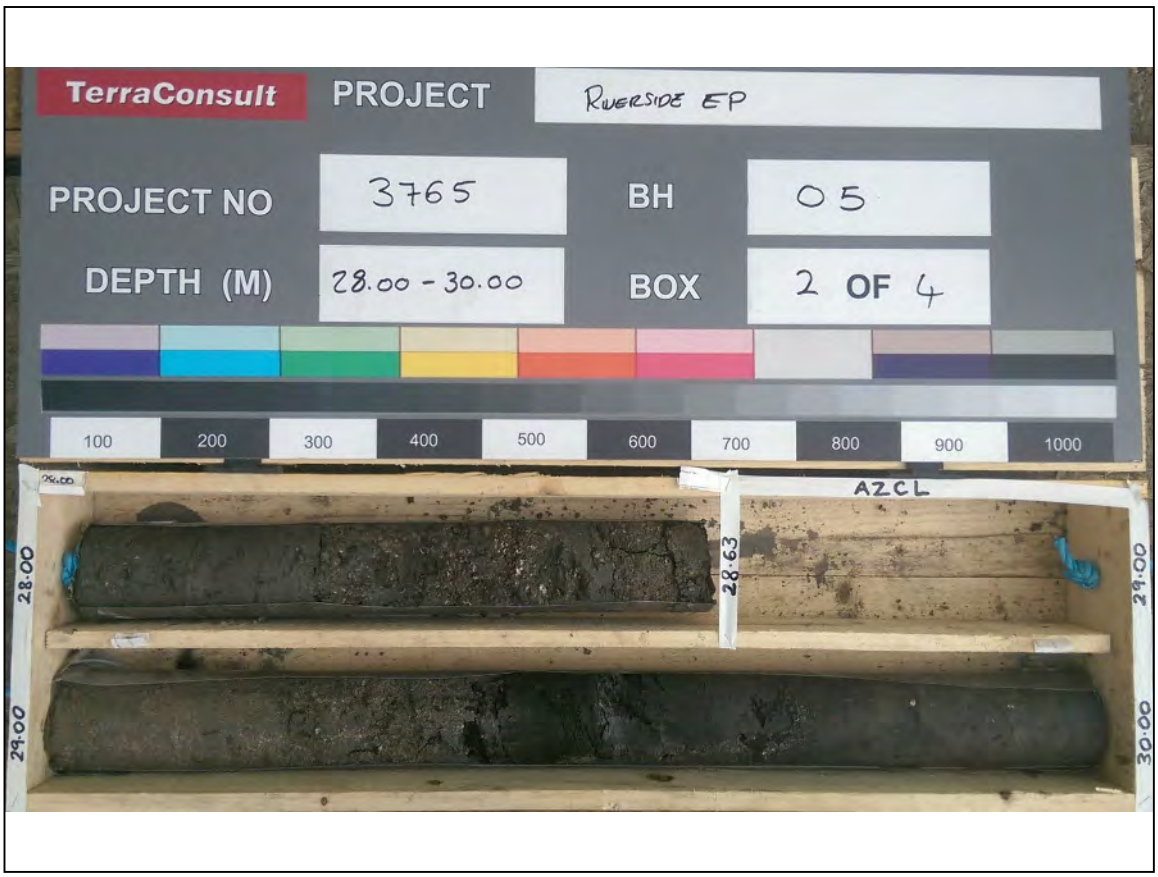
3765 BH02A core photo - box (8)



3765 BH02A core photo - box (9)

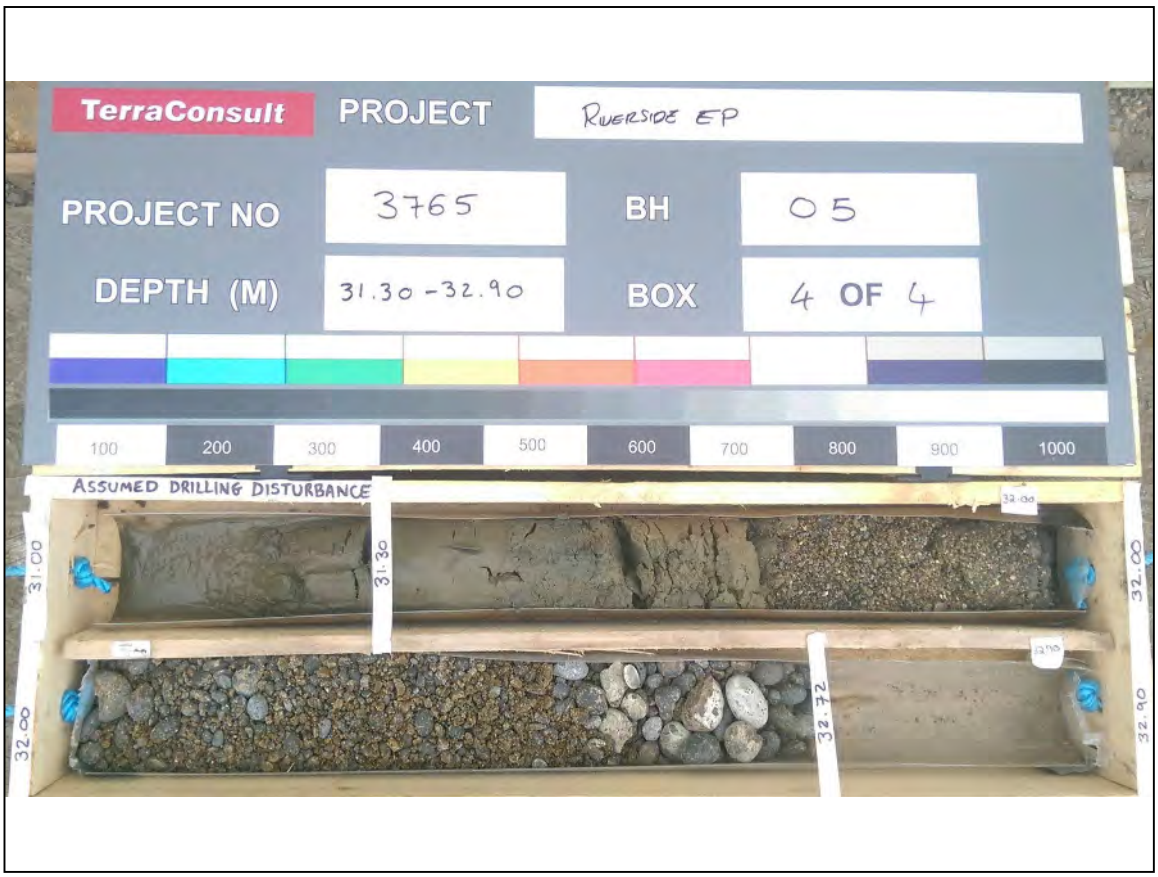


3765 BH05 core photo - box (1)

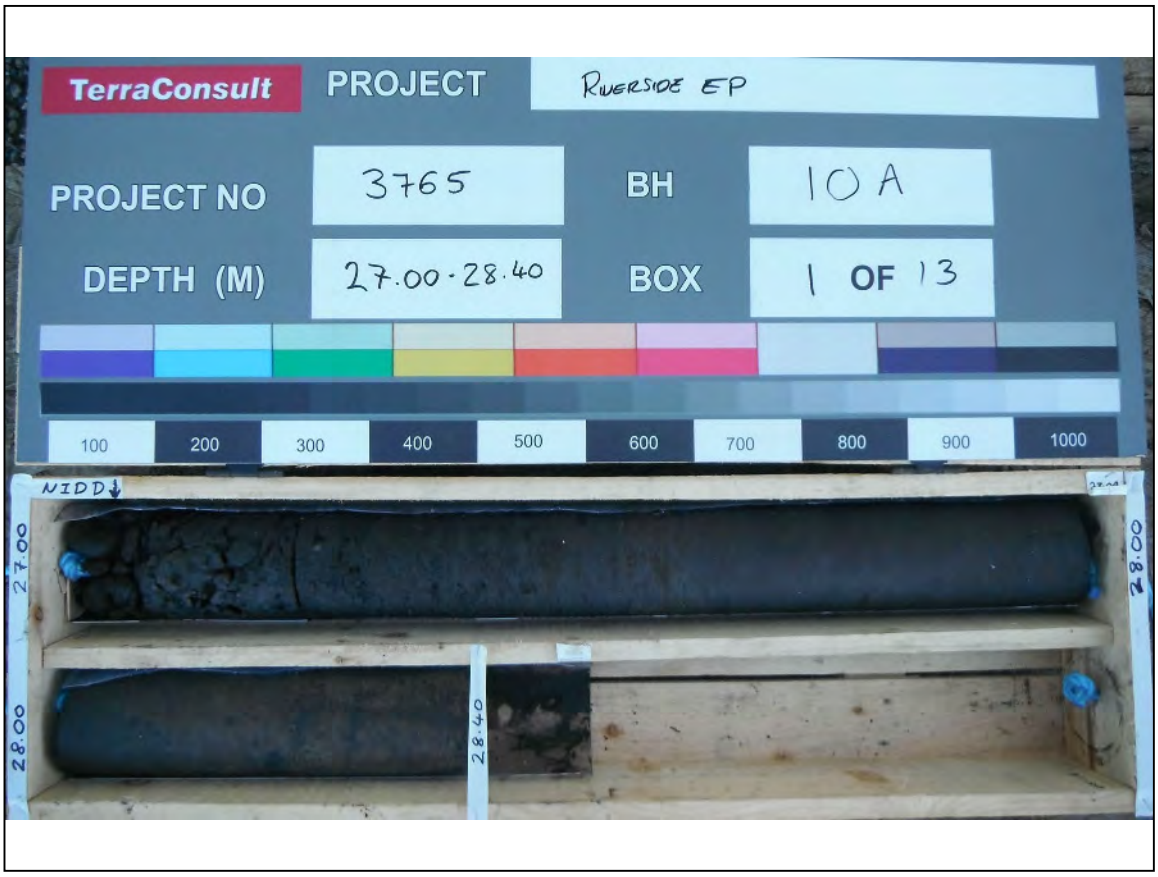


3765 BH05 core photo - box (2)

3765 BH05 core photo - box (3)

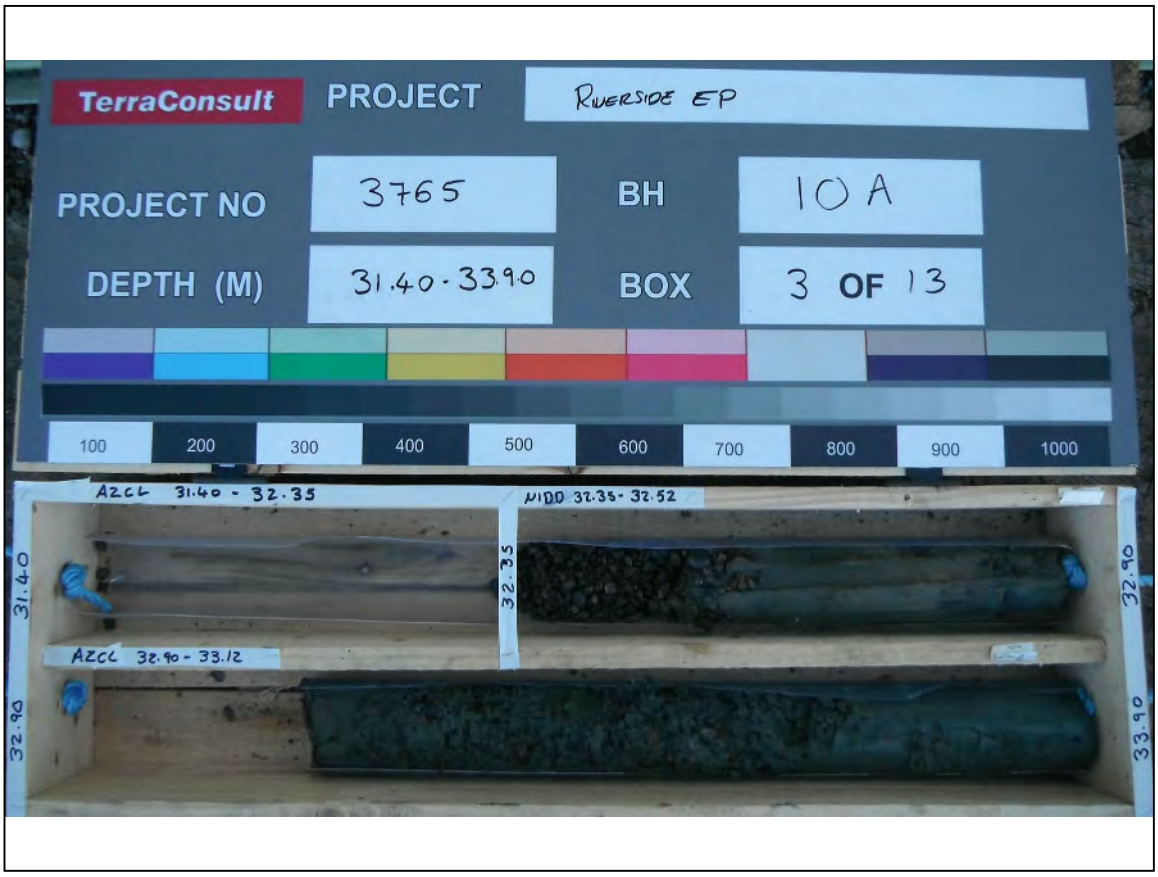


3765 BH05 core photo - box (4)



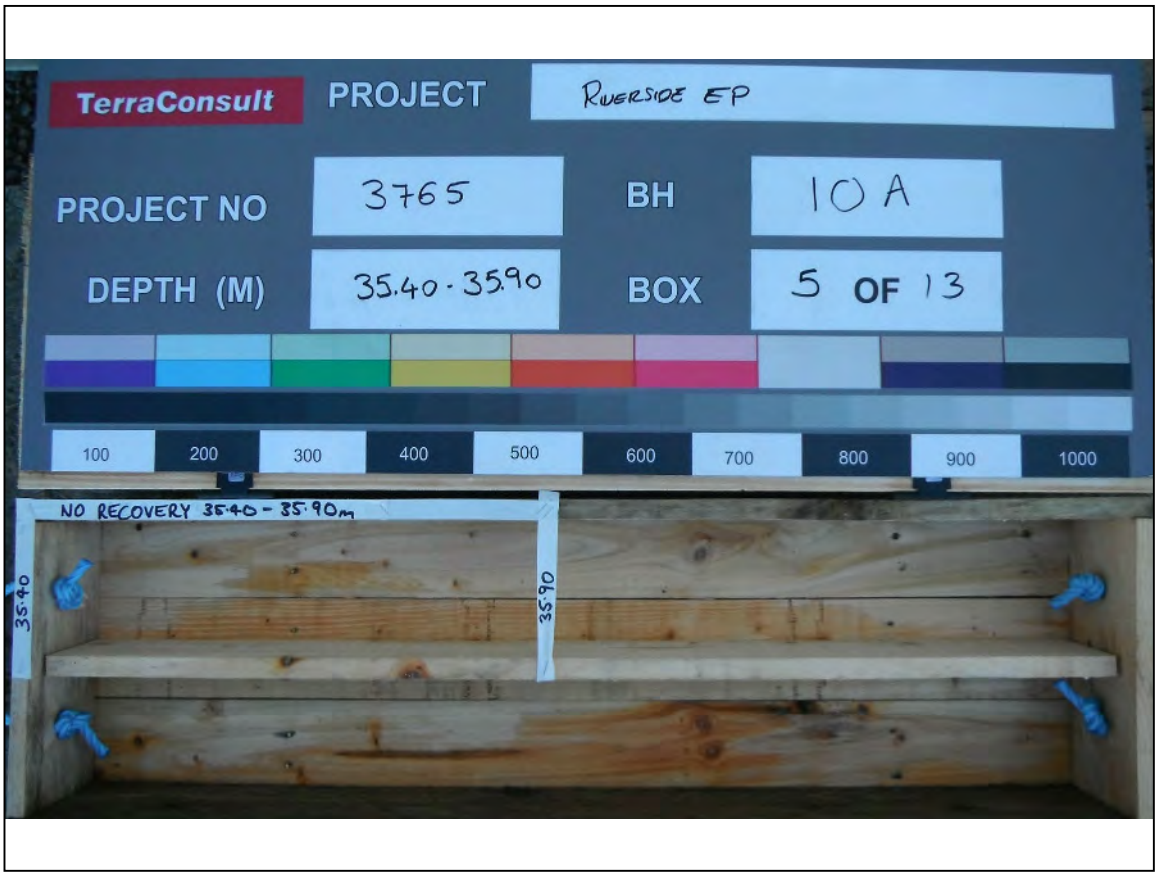
3765 BH10A core photo - box (1)

3765 BH10A core photo - box (2)



3765 BH10A core photo - box (3)

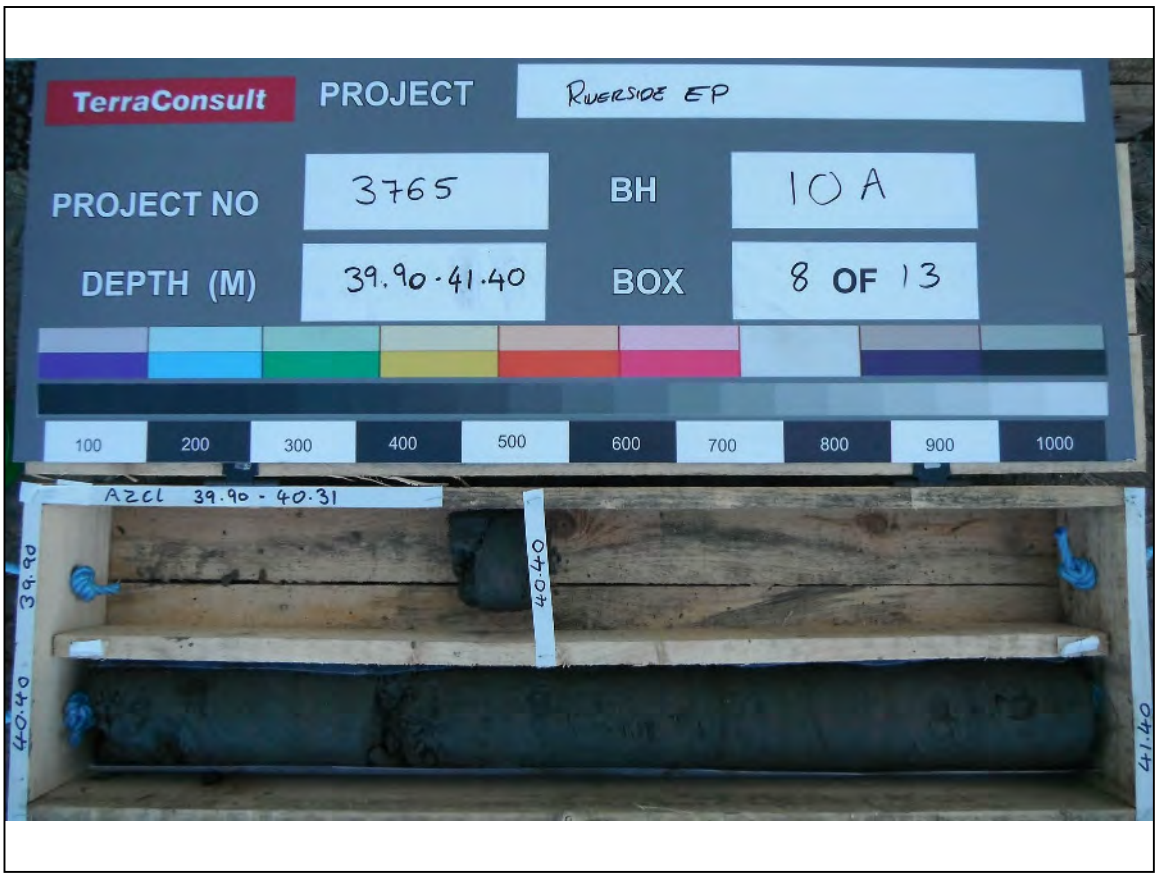
3765 BH10A core photo - box (4)



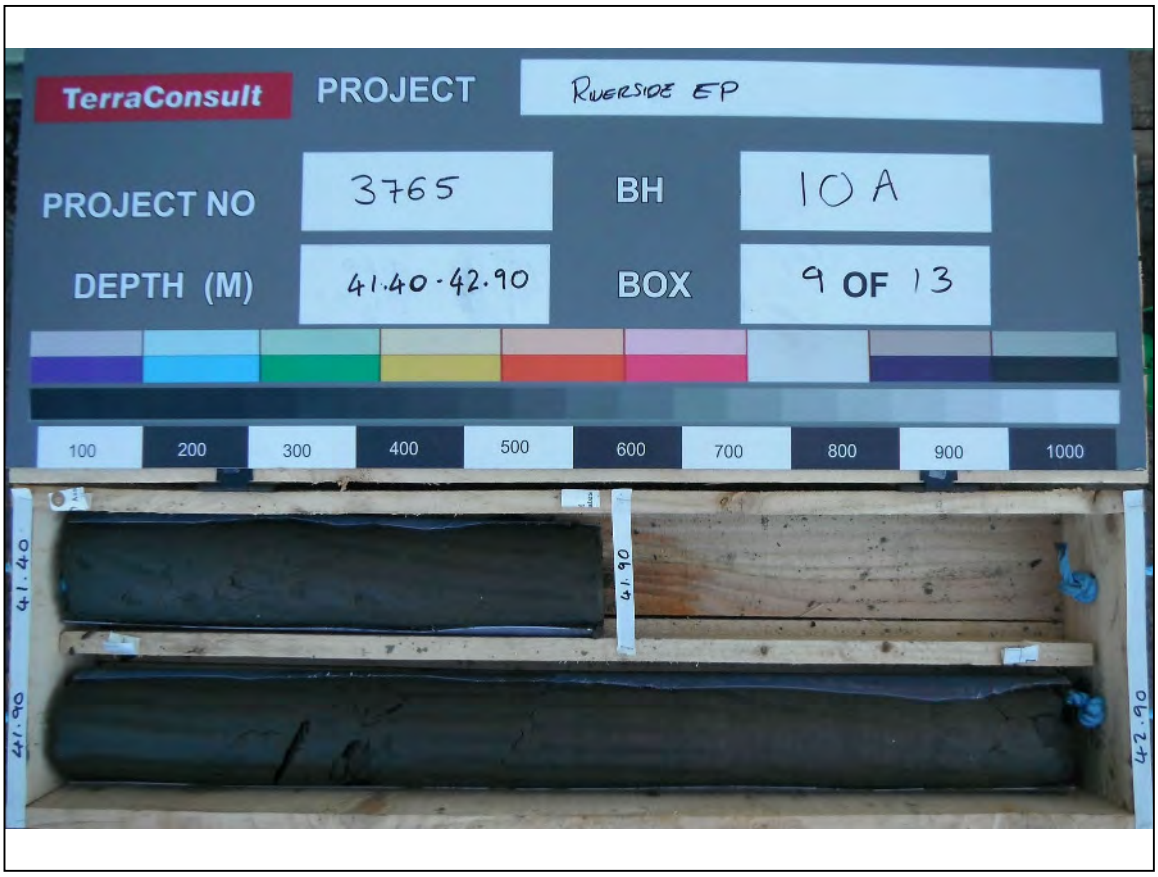
3765 BH10A core photo - box (5)

3765 BH10A core photo - box (6)

3765 BH10A core photo - box (7)

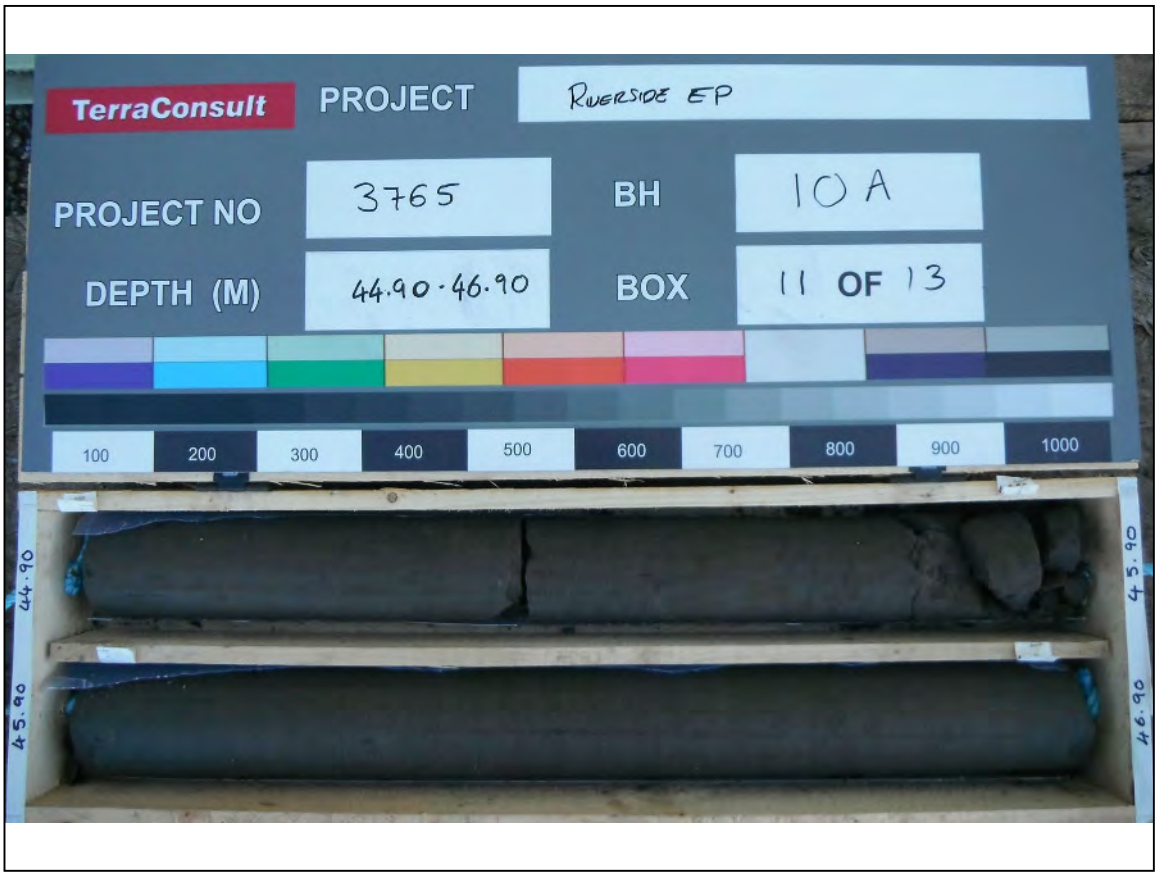


3765 BH10A core photo - box (8)



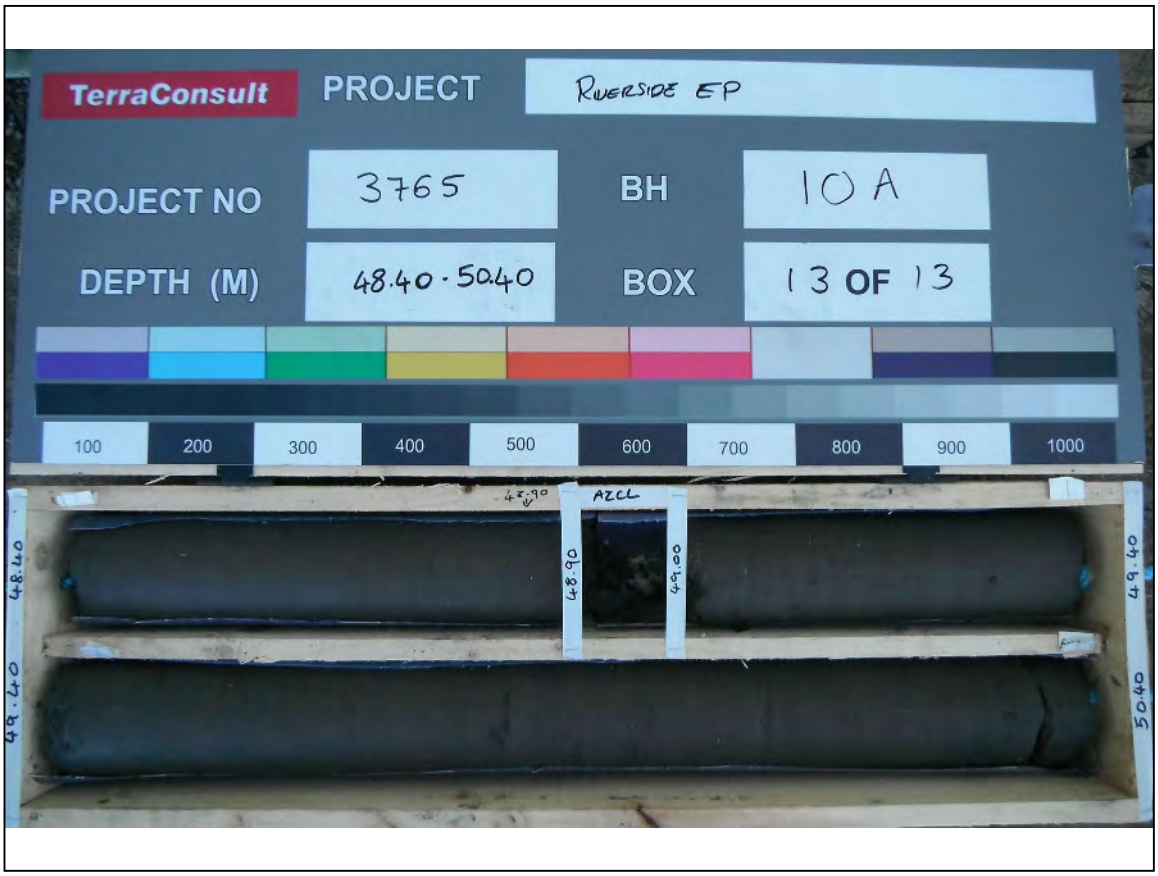
3765 BH10A core photo - box (9)

3765 BH10A core photo - box (10)



3765 BH10A core photo - box (11)

3765 BH10A core photo - box (12)



3765 BH10A core photo - box (13)

APPENDIX C
In Situ Testing Results

Variable head permeability test	BH02, BH10
PID	BH01 – BH06, BH08 – BH13, BH02A, BH10A, TP01, TP02, TP04 – TP06

Variable Head Permeability Test Results

TerraConsult

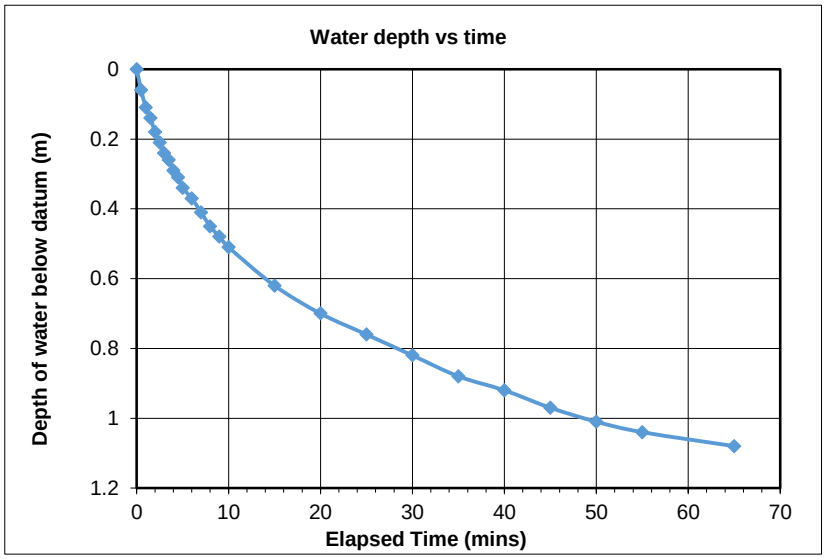
Date:	04/04/2018
Test no:	1
Carried out by:	KG
Ground level: (m OD)	32.70

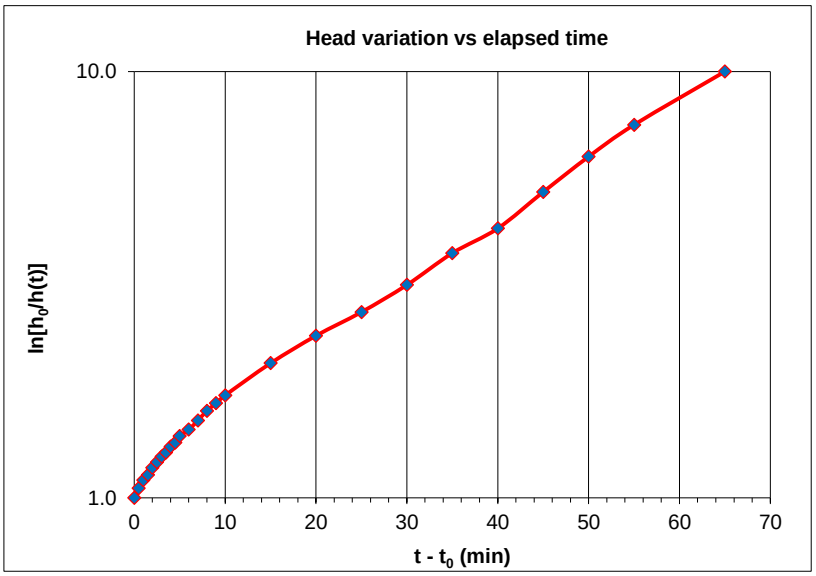
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.25
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	0.00
Top of response zone (m)	0.70
Bottom of response zone (m)	1.20

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	1.20	m
Final head (h(t)) at (t)	0.12	m
Length of response zone *(L)*	0.50	m
Cross sectional area *(S)*	0.05	m^2

Strata description:	Orangish brown slightly silty SAND and GRAVEL.

Elapsed time (mins)	Water below datum	Head of water
0	0.00	1.20
0.5	0.06	1.14
1	0.11	1.09
1.5	0.14	1.06
2	0.18	1.02
2.5	0.21	0.99
3	0.24	0.96
3.5	0.26	0.94
4	0.29	0.91
4.5	0.31	0.89
5	0.34	0.86
6	0.37	0.83
7	0.41	0.79
8	0.45	0.75
9	0.48	0.72
10	0.51	0.69
15	0.62	0.58
20	0.70	0.50
25	0.76	0.44
30	0.82	0.38
35	0.88	0.32
40	0.92	0.28
45	0.97	0.23
50	1.01	0.19
55	1.04	0.16
65	1.08	0.12
0	0.00	1.20
0	0.00	1.20
0	0.00	1.20
0	0.00	1.20
0	0.00	1.20
0	0.00	1.20
0	0.00	1.20
0	0.00	1.20





L/D = 2

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \frac{2\pi L}{ln\left\{(L/D) + \sqrt{\left((L/D)^2 + 1\right)}\right\}}$$

$$= \frac{3.14}{1.39}$$

$$= 2.27$$

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = 8.47E-04 m/s

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH02**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

Variable Head Permeability Test Results

TerraConsult

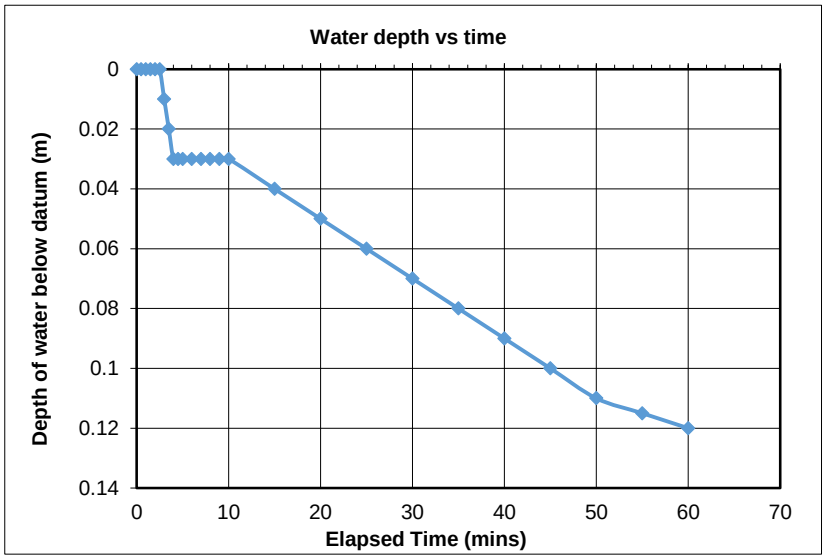
Date:	04/04/2018
Test no:	2
Carried out by:	KG
Ground level: (m OD)	32.70

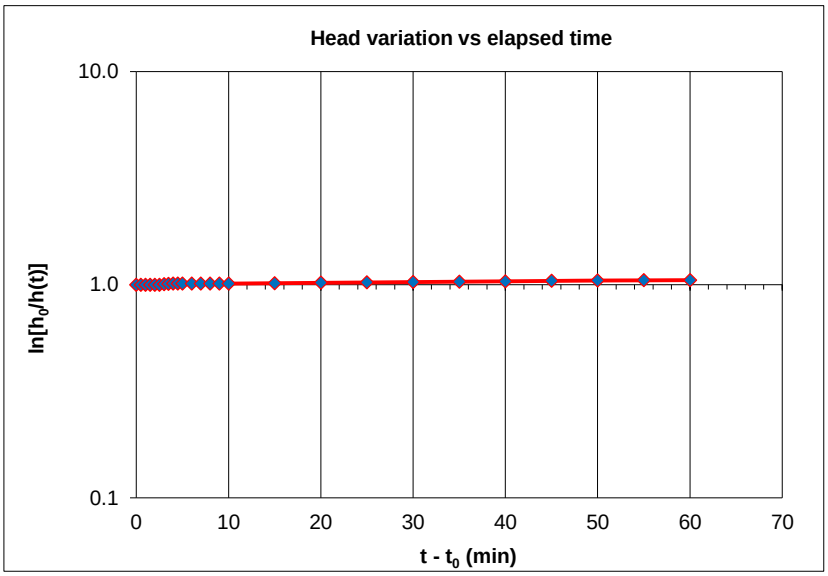
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.25
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	0.00
Top of response zone (m)	2.00
Bottom of response zone (m)	2.50

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	2.50	m
Final head (h(t)) at (t)	2.38	m
Length of response zone *(L)*	0.50	m
Cross sectional area *(S)*	0.05	m^2

Strata description:	Slightly gravely CLAY

Elapsed time (mins)	Water below datum	Head of water
0	0.00	2.50
0.5	0.00	2.50
1	0.00	2.50
1.5	0.00	2.50
2	0.00	2.50
2.5	0.00	2.50
3	0.01	2.49
3.5	0.02	2.48
4	0.03	2.47
4.5	0.03	2.47
5	0.03	2.47
6	0.03	2.47
7	0.03	2.47
8	0.03	2.47
9	0.03	2.47
10	0.03	2.47
15	0.04	2.46
20	0.05	2.45
25	0.06	2.44
30	0.07	2.43
35	0.08	2.42
40	0.09	2.41
45	0.10	2.40
50	0.11	2.39
55	0.12	2.39
60	0.12	2.38
0	0.00	2.50
0	0.00	2.50
0	0.00	2.50
0	0.00	2.50
0	0.00	2.50
0	0.00	2.50
0	0.00	2.50
0	0.00	2.50





L/D = 2

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \frac{2\pi L}{ln\left\{(L/D) + \sqrt{\left((L/D)^2 + 1\right)}\right\}}$$

$$= \frac{3.14}{1.39}$$

$$= 2.27$$

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = 1.81E-05 m/s

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH02**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

Variable Head Permeability Test Results

TerraConsult

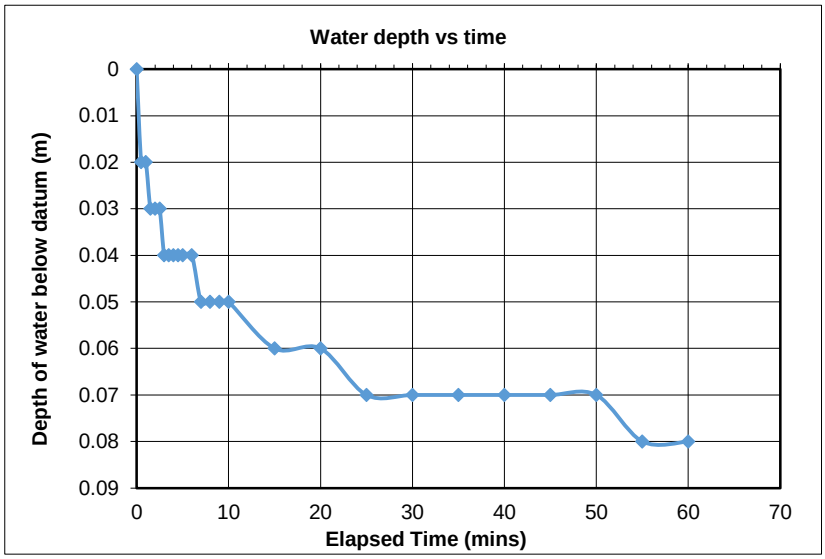
Date:	04/04/2018
Test no:	3
Carried out by:	KG
Ground level: (m OD)	32.70

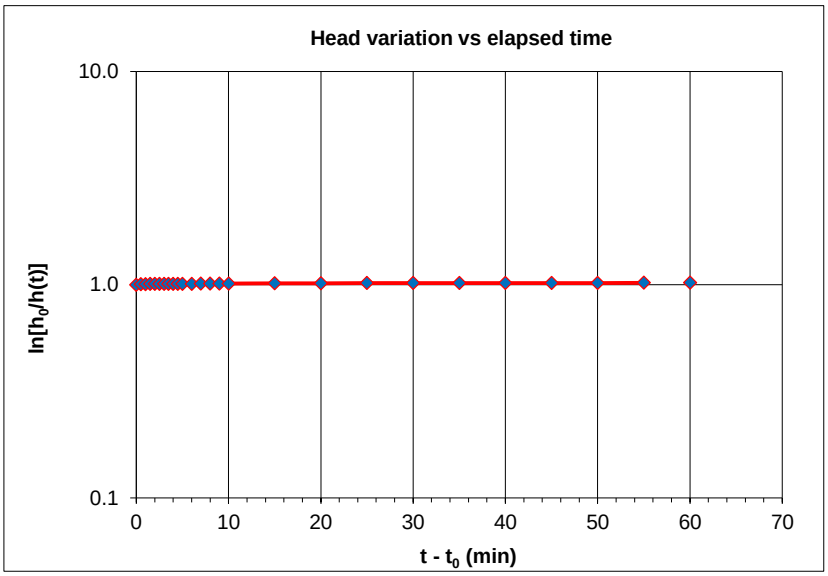
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.25
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	0.00
Top of response zone (m)	3.50
Bottom of response zone (m)	4.00

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	4.00	m
Final head (h(t)) at (t)	3.92	m
Length of response zone *(L)*	0.50	m
Cross sectional area *(S)*	0.05	m^2

Strata description:	Slightly gravely CLAY

Elapsed time (mins)	Water below datum	Head of water
0	0.00	4.00
0.5	0.02	3.98
1	0.02	3.98
1.5	0.03	3.97
2	0.03	3.97
2.5	0.03	3.97
3	0.04	3.96
3.5	0.04	3.96
4	0.04	3.96
4.5	0.04	3.96
5	0.04	3.96
6	0.04	3.96
7	0.05	3.95
8	0.05	3.95
9	0.05	3.95
10	0.05	3.95
15	0.06	3.94
20	0.06	3.94
25	0.07	3.93
30	0.07	3.93
35	0.07	3.93
40	0.07	3.93
45	0.07	3.93
50	0.07	3.93
55	0.08	3.92
60	0.08	3.92





L/D = 2

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \frac{2\pi L}{ln\left\{(L/D) + \sqrt{\left((L/D)^2 + 1\right)}\right\}}$$

$$= \frac{3.14}{1.39}$$

$$= 2.27$$

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = 7.43E-06 m/s

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH02**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

Variable Head Permeability Test Results

TerraConsult

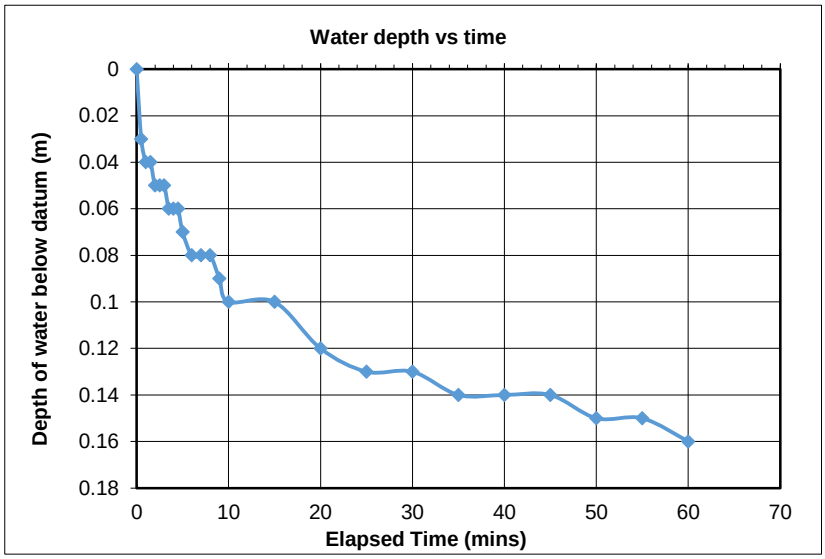
Date:	04/04/2018
Test no:	4
Carried out by:	KG
Ground level: (m OD)	32.70

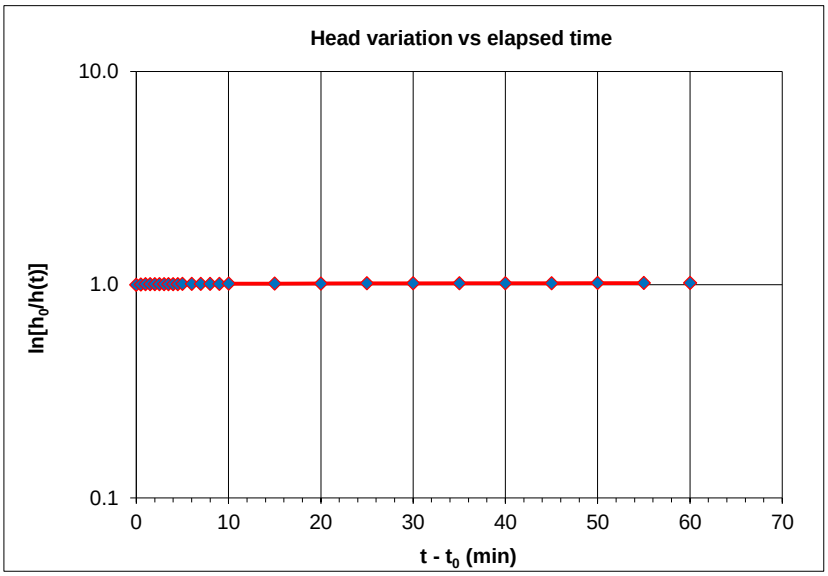
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.25
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	0.00
Top of response zone (m)	8.50
Bottom of response zone (m)	9.00

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	9.00	m
Final head (h(t)) at (t)	8.84	m
Length of response zone *(L)*	0.50	m
Cross sectional area *(S)*	0.05	m^2

Strata description:	CLAY

Elapsed time (mins)	Water below datum	Head of water
0	0.00	9.00
0.5	0.03	8.97
1	0.04	8.96
1.5	0.04	8.96
2	0.05	8.95
2.5	0.05	8.95
3	0.05	8.95
3.5	0.06	8.94
4	0.06	8.94
4.5	0.06	8.94
5	0.07	8.93
6	0.08	8.92
7	0.08	8.92
8	0.08	8.92
9	0.09	8.91
10	0.10	8.90
15	0.10	8.90
20	0.12	8.88
25	0.13	8.87
30	0.13	8.87
35	0.14	8.86
40	0.14	8.86
45	0.14	8.86
50	0.15	8.85
55	0.15	8.85
60	0.16	8.84





L/D = 2

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \frac{2\pi L}{ln\left\{(L/D) + \sqrt{\left((L/D)^2 + 1\right)}\right\}}$$

$$= \frac{3.14}{1.39}$$

$$= 2.27$$

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = 6.60E-06 m/s

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH02**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

Variable Head Permeability Test Results

TerraConsult

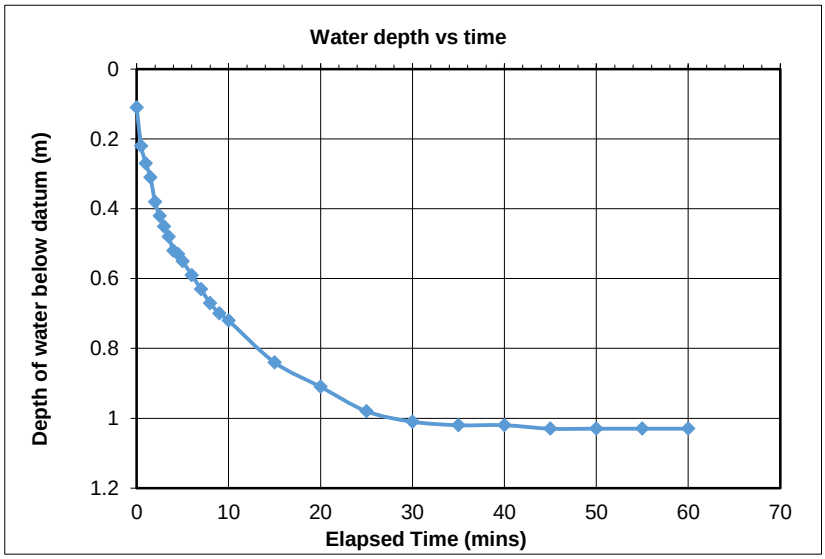
Date:	04/04/2018
Test no:	5
Carried out by:	KG
Ground level: (m OD)	32.70

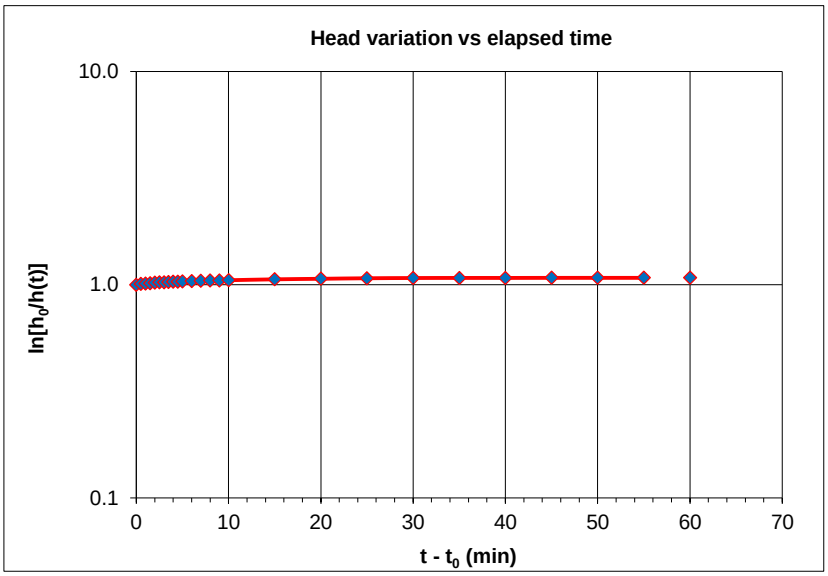
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.20
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	0.11
Top of response zone (m)	12.50
Bottom of response zone (m)	13.00

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	12.89	m
Final head (h(t)) at (t)	11.97	m
Length of response zone *(L)*	0.50	m
Cross sectional area *(S)*	0.03	m^2

Strata description:	Gravelly silty fine to coarse SAND.

Elapsed time (mins)	Water below datum	Head of water
0	0.11	12.89
0.5	0.22	12.78
1	0.27	12.73
1.5	0.31	12.69
2	0.38	12.62
2.5	0.42	12.58
3	0.45	12.55
3.5	0.48	12.52
4	0.52	12.48
4.5	0.53	12.47
5	0.55	12.45
6	0.59	12.41
7	0.63	12.37
8	0.67	12.33
9	0.70	12.30
10	0.72	12.28
15	0.84	12.16
20	0.91	12.09
25	0.98	12.02
30	1.01	11.99
35	1.02	11.98
40	1.02	11.98
45	1.03	11.97
50	1.03	11.97
55	1.03	11.97
60	1.03	11.97





L/D = 2.5

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \frac{2\pi L}{ln\left\{(L/D) + \sqrt{\left((L/D)^2 + 1\right)}\right\}}$$

$$= \frac{3.14}{1.61}$$

$$= 1.95$$

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = 1.99E-05 m/s

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH02**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

Variable Head Permeability Test Results

TerraConsult

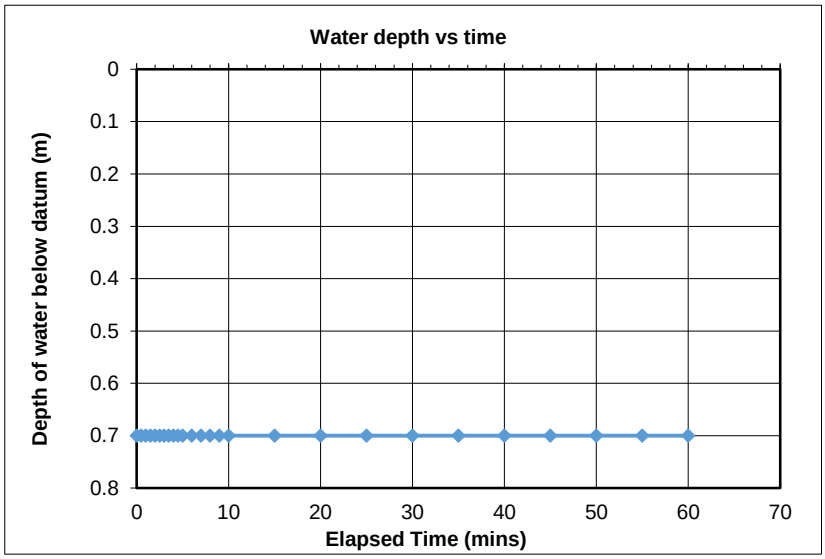
Date:	07/04/2018
Test no:	1
Carried out by:	MF
Ground level: (m OD)	33.41

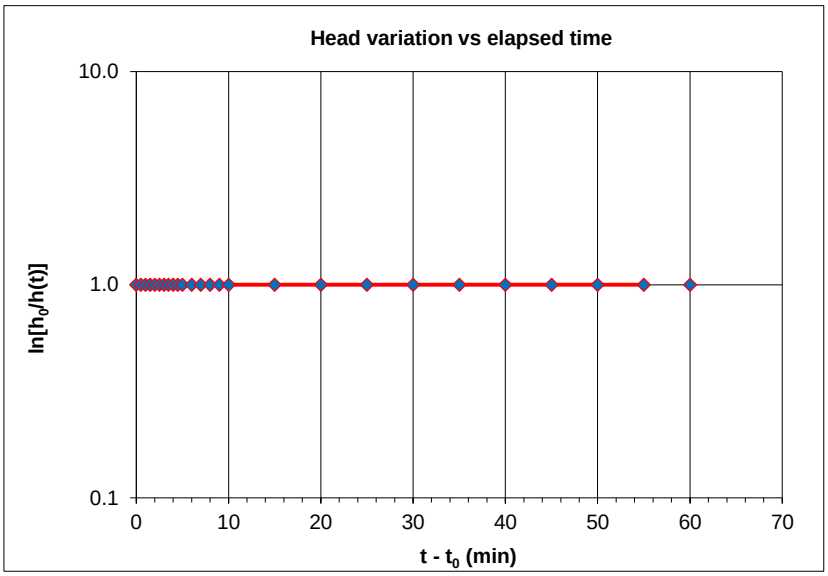
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.25
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	0.70
Top of response zone (m)	1.00
Bottom of response zone (m)	1.20

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	0.50	m
Final head (h(t)) at (t)	0.50	m
Length of response zone *(L)*	0.20	m
Cross sectional area *(S)*	0.05	m^2

Strata description:	CLAY

Elapsed time (mins)	Water below datum	Head of water
0	0.70	0.50
0.5	0.70	0.50
1	0.70	0.50
1.5	0.70	0.50
2	0.70	0.50
2.5	0.70	0.50
3	0.70	0.50
3.5	0.70	0.50
4	0.70	0.50
4.5	0.70	0.50
5	0.70	0.50
6	0.70	0.50
7	0.70	0.50
8	0.70	0.50
9	0.70	0.50
10	0.70	0.50
15	0.70	0.50
20	0.70	0.50
25	0.70	0.50
30	0.70	0.50
35	0.70	0.50
40	0.70	0.50
45	0.70	0.50
50	0.70	0.50
55	0.70	0.50
60	0.70	0.50





L/D = 0.8

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \frac{2\pi L}{ln\left\{(L/D) + \sqrt{\left((L/D)^2 + 1\right)}\right\}}$$

$$= \frac{1.26}{0.47}$$

$$= 2.67$$

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = N/A m/s

UNABLE TO CALCULATE

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:	
Checked by:	JT	Project No:	3765		**BH10**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG		

Variable Head Permeability Test Results

TerraConsult

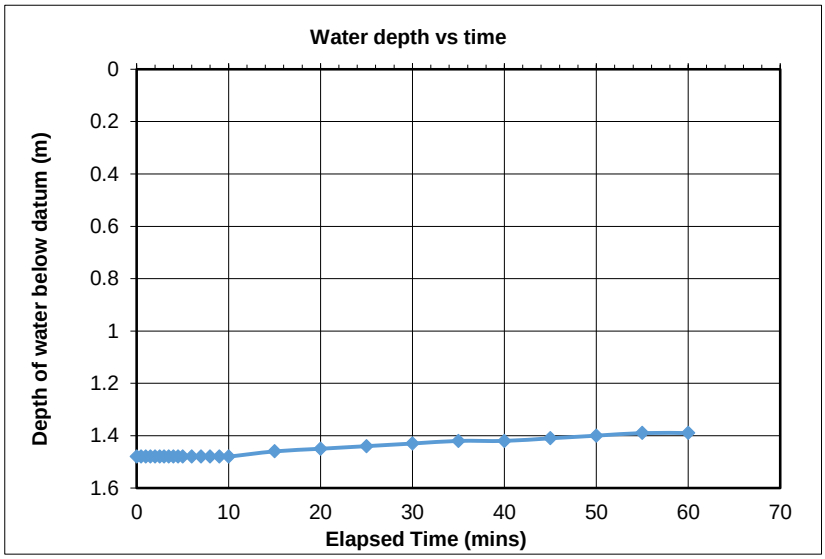
Date:	07/04/2018
Test no:	2
Carried out by:	MF
Ground level: (m OD)	33.41

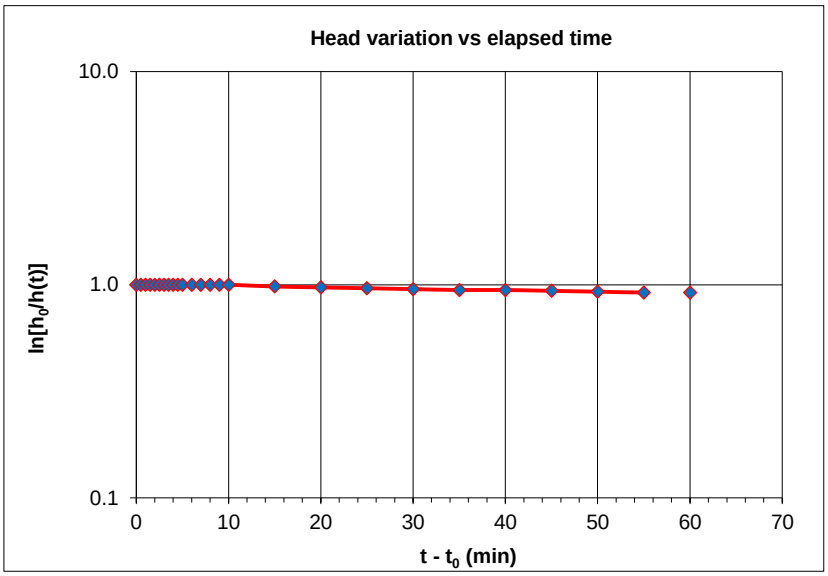
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.25
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	1.48
Top of response zone (m)	2.00
Bottom of response zone (m)	2.50

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	1.02	m
Final head (h(t)) at (t)	1.11	m
Length of response zone *(L)*	0.50	m
Cross sectional area *(S)*	0.05	m^2

Strata description:	CLAY

Elapsed time (mins)	Water below datum	Head of water
0	1.48	1.02
0.5	1.48	1.02
1	1.48	1.02
1.5	1.48	1.02
2	1.48	1.02
2.5	1.48	1.02
3	1.48	1.02
3.5	1.48	1.02
4	1.48	1.02
4.5	1.48	1.02
5	1.48	1.02
6	1.48	1.02
7	1.48	1.02
8	1.48	1.02
9	1.48	1.02
10	1.48	1.02
15	1.46	1.04
20	1.45	1.05
25	1.44	1.06
30	1.43	1.07
35	1.42	1.08
40	1.42	1.08
45	1.41	1.09
50	1.40	1.10
55	1.39	1.11
60	1.39	1.11





L/D = 2

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \frac{2\pi L}{ln\left\{(L/D) + \sqrt{\left((L/D)^2 + 1\right)}\right\}}$$

$$= \frac{3.14}{1.39}$$

$$= 2.27$$

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = N/A m/s

UNABLE TO CALCULATE

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH10**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

Variable Head Permeability Test Results

TerraConsult

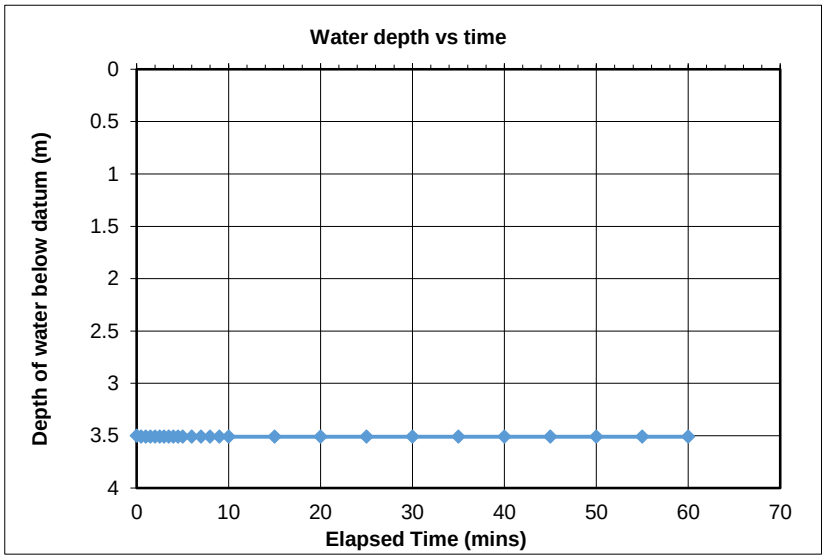
Date:	07/04/2018
Test no:	3
Carried out by:	MF
Ground level: (m OD)	33.41

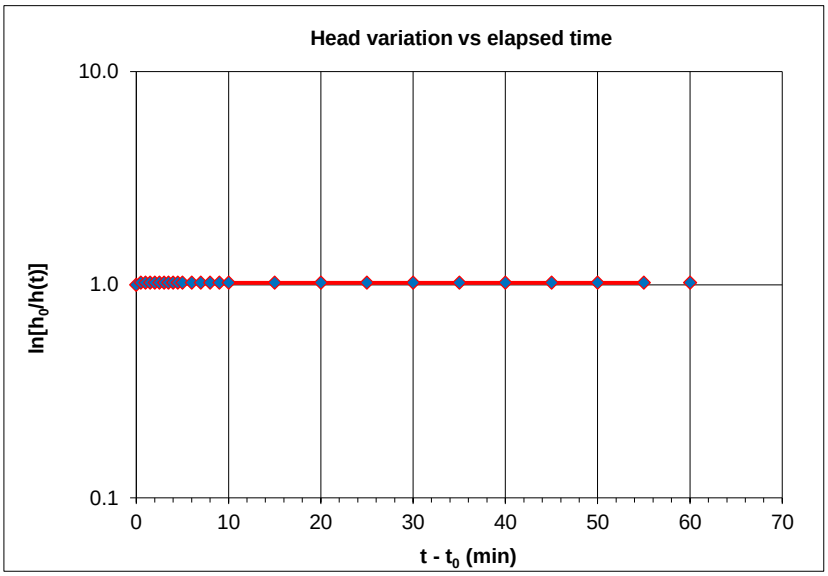
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.25
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	3.50
Top of response zone (m)	4.00
Bottom of response zone (m)	4.00

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	0.50	m
Final head (h(t)) at (t)	0.50	m
Length of response zone *(L)*	0.00	m
Cross sectional area *(S)*	0.05	m^2

Strata description:	CLAY

Elapsed time (mins)	Water below datum	Head of water
0	3.50	0.50
0.5	3.51	0.49
1	3.51	0.49
1.5	3.51	0.49
2	3.51	0.49
2.5	3.51	0.49
3	3.51	0.49
3.5	3.51	0.49
4	3.51	0.49
4.5	3.51	0.49
5	3.51	0.49
6	3.51	0.49
7	3.51	0.49
8	3.51	0.49
9	3.51	0.49
10	3.51	0.49
15	3.51	0.49
20	3.51	0.49
25	3.51	0.49
30	3.51	0.49
35	3.51	0.49
40	3.51	0.49
45	3.51	0.49
50	3.51	0.49
55	3.51	0.49
60	3.51	0.49





L/D = 0

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \pi D$$

F = 0.79

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0 / h(t)\right)}{F(t - t_0)}$$

k = N/A m/s

UNABLE TO CALCULATE

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH10**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

Variable Head Permeability Test Results

TerraConsult

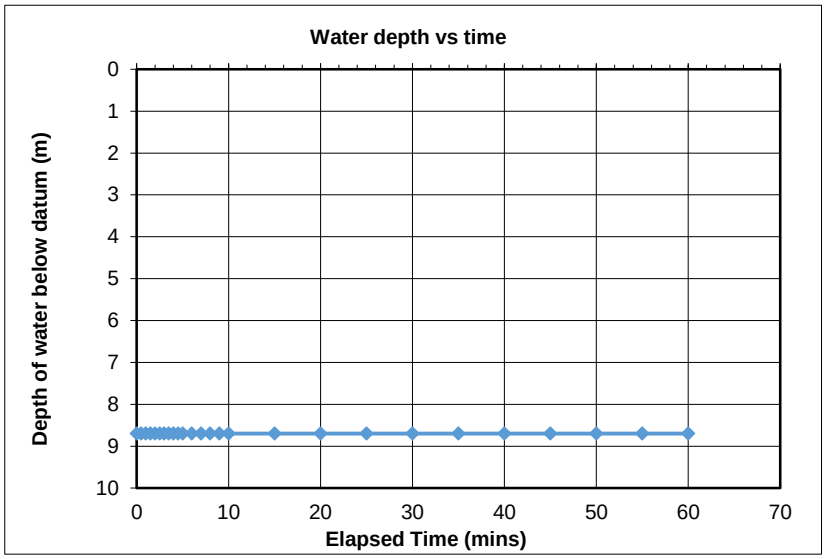
Date:	07/04/2018
Test no:	4
Carried out by:	MF
Ground level: (m OD)	33.41

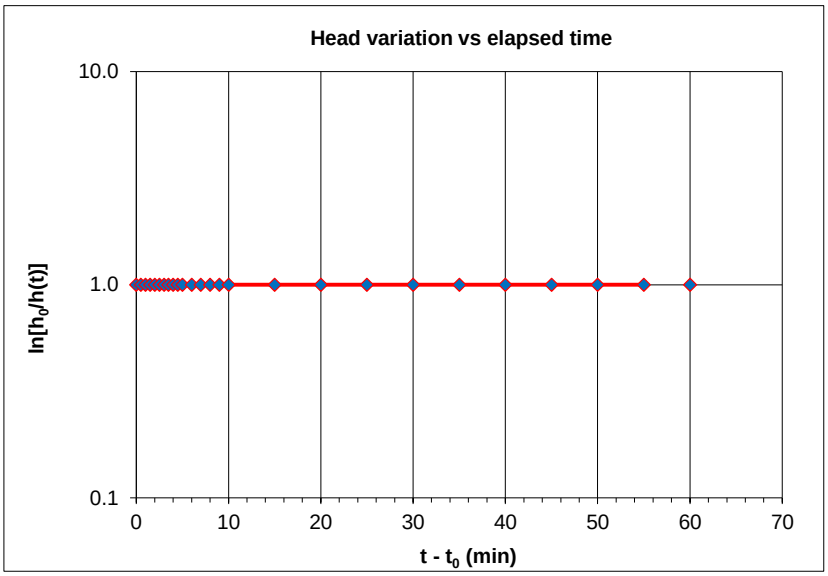
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.25
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	8.70
Top of response zone (m)	9.00
Bottom of response zone (m)	9.00

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	0.30	m
Final head (h(t)) at (t)	0.30	m
Length of response zone *(L)*	0.00	m
Cross sectional area *(S)*	0.05	m^2

Strata description:	CLAY

Elapsed time (mins)	Water below datum	Head of water
0	8.70	0.30
0.5	8.70	0.30
1	8.70	0.30
1.5	8.70	0.30
2	8.70	0.30
2.5	8.70	0.30
3	8.70	0.30
3.5	8.70	0.30
4	8.70	0.30
4.5	8.70	0.30
5	8.70	0.30
6	8.70	0.30
7	8.70	0.30
8	8.70	0.30
9	8.70	0.30
10	8.70	0.30
15	8.70	0.30
20	8.70	0.30
25	8.70	0.30
30	8.70	0.30
35	8.70	0.30
40	8.70	0.30
45	8.70	0.30
50	8.70	0.30
55	8.70	0.30
60	8.70	0.30





L/D = 0

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \pi D$$

F = 0.79

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = N/A m/s

UNABLE TO CALCULATE

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH10**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

Variable Head Permeability Test Results

TerraConsult

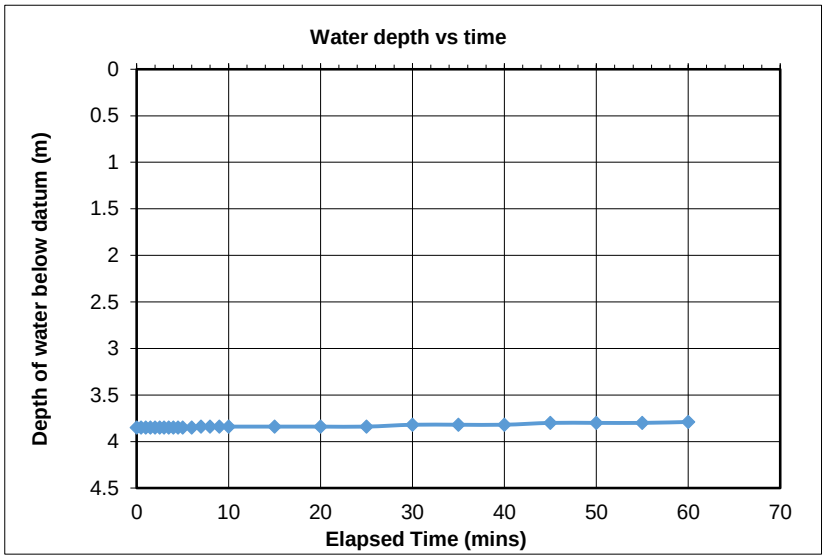
Date:	08/04/2018
Test no:	5
Carried out by:	MF
Ground level: (m OD)	33.41

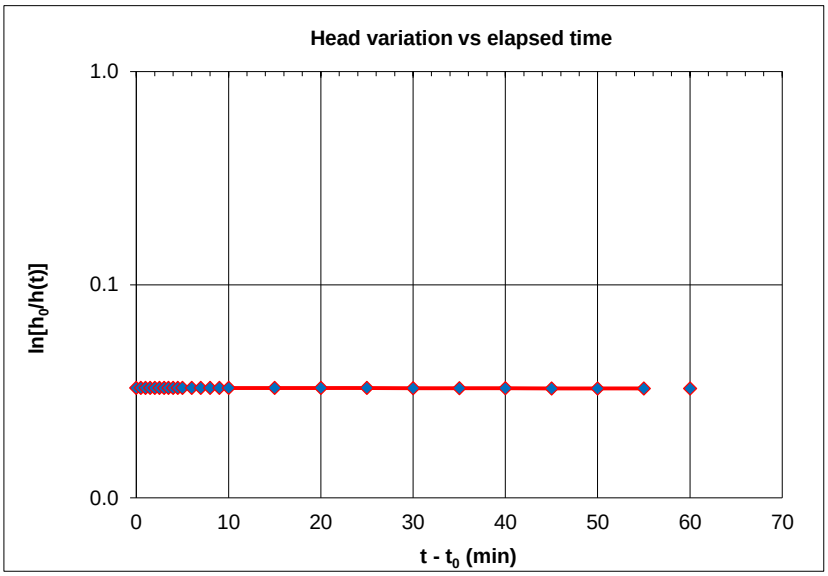
Static water level (m)	n/a
Internal diameter *(D)* (m)	0.20
Length of standpipe below ground level (m)	n/a
Height of water above ground level (m)	n/a
Length of standpipe above ground level (m)	n/a
Water level at start of test (m)	3.85
Top of response zone (m)	13.00
Bottom of response zone (m)	13.00

Time (t_0)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h_0) at (t_0)	0.30	m
Final head (h(t)) at (t)	0.30	m
Length of response zone *(L)*	0.00	m
Cross sectional area *(S)*	0.03	m^2

Strata description:	Sandy silty fine to coarse GRAVEL

Elapsed time (mins)	Water below datum	Head of water
0	3.85	9.15
0.5	3.85	9.15
1	3.85	9.15
1.5	3.85	9.15
2	3.85	9.15
2.5	3.85	9.15
3	3.85	9.15
3.5	3.85	9.15
4	3.85	9.15
4.5	3.85	9.15
5	3.85	9.15
6	3.85	9.15
7	3.84	9.16
8	3.84	9.16
9	3.84	9.16
10	3.84	9.16
15	3.84	9.16
20	3.84	9.16
25	3.84	9.16
30	3.82	9.18
35	3.82	9.18
40	3.82	9.18
45	3.80	9.20
50	3.80	9.20
55	3.80	9.20
60	3.79	9.21





L/D = 0

Shape Factor (F) calculated according to ISO 22282-1:2012

$$F = \pi D$$

F = 0.63

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$k = \frac{S \ln\left(h_0/h(t)\right)}{F(t - t_0)}$$

k = N/A m/s

UNABLE TO CALCULATE

Calculated by:	DD	Project:	Riverside EfW	Exploratory position reference:
Checked by:	JT	Project No:	3765	**BH10**
Issue:	DRAFT	Client:	Hitachi Zosen Inova AG	

PID Test Results Summary

TerraConsult

Exploratory position:	Depth (m)	Test No:	Result (ppmv)
BH01	0.50	1	0.3
BH01	1.00	2	0.3
BH01	1.50	3	0.2
BH01	2.00	4	0.9
BH01	2.50	5	0.6
BH01	3.00	6	0.4
BH01	3.50	7	0.7
BH01	4.00	8	0.7
BH02	0.50	1	0.3
BH02	1.00	2	0.3
BH02	1.50	3	0.2
BH02	2.00	4	0.6
BH02	2.50	5	0.6
BH03	0.60	1	0.0
BH03	1.00	2	0.3
BH03	2.40	3	0.0
BH03	2.80	4	0.0
BH04	0.30	1	0.0
BH04	0.70	2	0.0
BH04	1.50	3	0.0
BH08	0.20	1	0.4
BH08	1.00	2	0.6
BH09	0.25	1	0.2
BH09	0.50	2	0.3
BH09	1.00	3	0.6
BH10	0.20	1	0.5
BH10	0.80	2	0.2
BH13	0.50	1	1.3
BH13	0.60	2	5.9
BH13	1.00	3	0.6
TP02	0.50	1	0.5
TP02	0.90	2	0.6
TP02	1.30	3	0.5
TP02	3.00	4	0.2
TP04	0.80	1	0.2
TP04	1.50	2	0.3
TP05	0.60	1	0.1
TP05	1.30	2	0.3

APPENDIX D
Instrumentation Sampling and Monitoring Records

Sample records

Installation development records

Groundwater and gas monitoring records

Water Sample Summary

TerraConsult

Exploratory position:	Sample type	Sampling round	Sample date
BH02	EW	Round 1	10/05/2018
BH03	EW	Round 1	11/05/2018
BH05	EW	Round 1	11/05/2018
BH08	EW	Round 1	10/05/2018
BH12	EW	Round 1	10/05/2018
BH13	EW	Round 1	10/05/2018
DS	EW	Round 1	11/05/2018
S DITCH	EW	Round 1	11/05/2018
US	EW	Round 1	11/05/2018
W DITCH	EW	Round 1	11/05/2018
BH02	EW	Round 2	07/06/2018
BH03	EW	Round 2	07/06/2018
BH05	EW	Round 2	07/06/2018
BH08	EW	Round 2	07/06/2018
BH12	EW	Round 2	07/06/2018
BH13	EW	Round 2	07/06/2018
DS	EW	Round 2	18/06/2018
S DITCH	EW	Round 2	18/06/2018
US	EW	Round 2	18/06/2018
W DITCH	EW	Round 2	18/06/2018

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project	RIVERSIDE EP
Client	CORY ENERGY
Borehole No	BH02
Site	RIVERSIDE EP.
Date	10/05/18

Purging Data

Initial Water Level, mBGL (a)	1.77
TIME	14:44
Base of Installation, m BGL (b)	
Saturated Depth, m (c) = (b-a)	
Diameter of Installation, mm (d)	
Base of Borehole, m (e)	
Well Volume, litres (f) $(\pi d^2 c/4)x10^{-3}$	
Number of Well Volumes (g)	
Purging Device	Low Flow Pump
Flow Rate, l/min (h) For Steady State	0.1666 (0.5L in 180secs)
Time to purge, min (gf/h)	40
Volume Purged, litres	6.66

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings taken during purging Pump ON 14.50

	14.55	15.00	15.05	15.10	15.20	15.25	15.30
Water Level, mBGL	1.72	1.69	1.69	1.69	1.68	1.68	1.68
Temperature, degC	15.94	15.48	17.69	16.13	15.35	15.28	15.14
pH	6.62	6.69	6.71	6.68	6.69	6.69	6.69
Dissolved O2, mg/l	4.54	4.54	4.27	4.28	4.04	4.04	4.01
Conductivity, uS/~~m~~ cm	1205	1194	1184	1188	1162	1163	1160
Redox Potential, mV	67.4	66.1	62.9	65.9	63.2	62.5	62.5
TDS (mg/L)	603	597	594	594	581	582	579

Sampling Data

Sample Collection Depth, mBGL	5.75	Oil	NONE
Sample No		Appearance and Colour	YELLOWISH
Time Collected (hh:mm)	15.30	Odour	NONE / SLIGHT ORGANIC
Time since purge (minutes)	40	Sediment	NONE
Containers: Number	4	Type	2 x 250ml ; 2 x 40ML

Remarks

Weather: Sunny, Dry.

Notes and Comments:

- SCREENED SECTION 3.0 - 8.5m.
- TUBING INTAKE @ 5.75m bgl.
- Low TIDE @ 3.22pm (Erith)

Name	Signature

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project	RIVERSIDE EP
Client	CORY ENERGY
Borehole No	BH03
Site	RIVERSIDE EP
Date	11/05/18

Purging Data

Initial Water Level, mBGL (a)	2.76 2.74
TIME	8.03 8.17
Base of Installation, m BGL (b)	
Saturated Depth, m (c) = (b-a)	
Diameter of Installation, mm (d)	
Base of Borehole, m (e)	
Well Volume, litres (f) $(\pi d^2 c/4)x10^{-3}$	
Number of Well Volumes (g)	
Purging Device	Low Flow pump
Flow Rate, l/min (h) 0.5L in 10.5min	0.048
Time to purge, min (gf/h)	45
Volume Purged, litres	2.16

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings taken during purging PUMP ON 08.20

TIME	08.30	08.35	08.40	8.50	9.00	9.05	9.15
Water Level, mBGL	2.89	2.975	3.01	3.065	3.13	3.15	3.18
Temperature, degC	14.73	14.19	13.91	14.09	14.01	14.05	14.30
pH	6.54	6.54	6.54	6.55	6.55	6.55	6.55
Dissolved O2, mg/l	1.48	1.47	1.44	1.44	1.43	1.43	1.42
Conductivity, uS/m cm	13190	13083	12920	12900	12890	12910	12900
Redox Potential, mV	58.5	59.1	58.8	55.3	56.9	56.7	56.3
TDS (mg/L)	6447	6451	6454	6457	6453	6454	6459

Sampling Data

Sample Collection Depth, mBGL	6.0	Oil	NONE
Sample No		Appearance and Colour	YELLOWISH
Time Collected (hh:mm)	9.15	Odour	NONE
Time since purge (minutes)		Sediment	NONE.
Containers: Number	4	Type	2 x 250 mL ; 2 x 40mL.

Remarks

Weather: SUNNY, DRY.

Notes and Comments:

- SLOTTED PIPE 3.5 - 8.5 bgl
- TUBING INTAKE @ 6.0m bgl
- PUMP ADJUSTED TO REDUCE WELL DRAWDOWN. STILL DRAWDOWN @ LOWEST FLOW RATE.

Name	Signature

TerraConsult

WATER SAMPLING FIELD RECORD

Project No 3765.

Project RIVERSIDE EP

Client CORY ENERGY

Borehole No BH05 **Site** RIVERSIDE EP

Date 11/05/18

Purging Data

Initial Water Level, mBGL (a) 1.76 1.80
Time 12.34 12.44

Base of Installation, m BGL (b)

Saturated Depth, m (c) = (b-a)

Diameter of Installation, mm (d)

Base of Borehole, m (e)

Well Volume, litres (f) $(\pi d^2 c/4)x10^{-3}$

Number of Well Volumes (g)

Purging Device Low Flow Pump.

Flow Rate, l/min (h) 0.25

Time to purge, min (gf/h)

Volume Purged, litres

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings taken during purging Pump ON 12.44

	TIME 12.54	13.05	13.10	13.15	13.20	13.25	
Water Level, mBGL Tidal Reduction	1.885	1.935	1.96	1.985	2.01	2.03	
Temperature, degC	15.89	15.73	15.71	15.71	15.59	15.73	
pH	7.15	7.15	7.14	7.15	7.15	7.15	
Dissolved O2, mg/l	1.29	1.26	1.25	1.31	1.31	1.30	
Conductivity, ~~uS/m~~ mS/cm	19470	19470	19470	19470	19470	19470	
Redox Potential, mV	108.9	107.4	107.9	106.2	106.4	106.6	
TDS (mg/L)	9737	9738	9732	9730	9736	9736	

Sampling Data

Sample Collection Depth, mBGL 11.75

Sample No

Time Collected (hh:mm) 13.25

Time since purge (minutes)

Containers: Number 4

Oil NONE

Appearance and Colour OPAQUE YELLOWISH BROWN

Odour SLIGHT ORGANIC

Sediment SLIGHT ; V. FINE

Type 2 x 250ml ; 2 x 40ml

Remarks

Weather

Notes and Comments
- SLOTTED PIPE @ 10 - 13.5m bgl
- TUBING INTAKE @ 11.75m bgl.
- WL 10 min AFTER SAMPLE @ 2.09 m TOW.

Name

Signature

WATER SAMPLING FIELD RECORD

TerraConsult

Project No 3765

Project RIVERSIDE EP

Client CORY ENERGY

Borehole No BH08 **Site** RIVERSIDE EP

Date 10/05/18

Purging Data

Initial Water Level, mBGL (a) TIME	1.15 11:29
Base of Installation, m BGL (b)	15.0
Saturated Depth, m (c) = (b-a)	
Diameter of Installation, mm (d)	
Base of Borehole, m (e)	
Well Volume, litres (f) $(\pi d^2 c/4)x10^{-3}$	
Number of Well Volumes (g)	
Purging Device	Low Flow pump.
Flow Rate, l/min (h)	0.25
Time to purge, min (gf/h)	50
Volume Purged, litres	12.5

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings taken during purging pump ON 11.30

	11.30	11.35	11.40	11.45	11.50	12.00	12.10	12.2
Water Level, mBGL Tidal Reduction	1.15	1.17	1.19	1.195	1.21	1.24	1.27	1.3
Temperature, degC	15.62	16.10	16.28	16.22	15.57	16.26	16.31	16.6
pH	6.67	6.67	6.69	6.68	6.69	6.70	6.70	6.7
Dissolved O2, mg/l	1.42	1.31	1.28	1.26	1.28	1.26	1.25	1.24
Conductivity, uS/~~m~~cm	16720	16670	16620	16600	16630	16560	16540	1662
Redox Potential, mV	74.6	71.9	69.7	68.7	68.3	69.2	74.5	75.
TDS (mg/L)	8353	8344	8308	8306	8322	8278	8292	830

SEE WELL DEVELOPMENT RECORD 09/05/18

Sampling Data

Sample Collection Depth, mBGL	12.5	Oil	NONE
Sample No		Appearance and Colour	YELLOWISH
Time Collected (hh:mm)	12.20	Odour	NONE / SLIGHT ORGANIC
Time since ~~purge~~ Start of pump (minutes)	50	Sediment	NONE
Containers: Number	4	Type	2 x 250mL; 2x 40mL

Remarks

Weather: SUNNY, DRY. 15°C

Notes and Comments:

- Screened 10 - 15m
- Tubing intake @ 12.5m bgl
- WL 10 mins after Sample & Stopping pump - 1.345m

Name [redacted]

Signature [redacted]

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project	RIVERSIDE EP
Client	CORY ENERGY
Borehole No	BH12
Site	RIVERSIDE EP
Date	10.05.18

Purging Data

Initial Water Level, mBGL (a)	0.87 0.80
TIME	08:58 09:50
Base of Installation, m BGL (b)	
Saturated Depth, m (c) = (b-a)	
Diameter of Installation, mm (d)	
Base of Borehole, m (e)	
Well Volume, litres (f) $(\pi d^2 c/4)x10^{-3}$	
Number of Well Volumes (g)	
Purging Device	LOW FLOW PUMP
Flow Rate, l/min (h) (125 secs for 500 ml)	0.25
Time to purge, min (gf/h)	—
Volume Purged, litres	13.75

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings taken during purging PUMP ON 09:50

	09:58	10:05	10:10	10:15	10:20	10:25	10:35	10:45
Water Level, mBGL	0.79	0.79	0.795	0.795	0.80	0.80	0.805	0.81
Temperature, degC	14.56	14.52	15.15	14.82	14.94	15.19	14.93	15.29
pH	6.61	6.63	6.63	6.69	6.72	6.73	6.72	6.72
Dissolved O2, mg/l	1.32	1.30	1.28	1.30	1.29	1.28	1.28	1.28
Conductivity, uS/~~cm~~	14950	14770	14620	14620	14610	15810	16830	16820
Redox Potential, mV	79.0	77.0	75.6	78.4	80.0	80.4	81.0	81.6
TDS (mg/L)	7490	7391	7335	7319	7313	8025	8406	8422

SEE WELL DEVELOPMENT RECORD 09.05.18

Sampling Data

Sample Collection Depth, mBGL	18.0	Oil	NONE
Sample No		Appearance and Colour	YELLOWISH
Time Collected (hh:mm)	10:45	Odour	NONE / SLIGHT ORGANIC
Time since purge (minutes)	55	Sediment	NONE
Containers: Number	4	Type	2 x 250ml; 2 x 40ml

Remarks

Weather: SUNNY, DRY, 17°C

Notes and Comments:
- SCREENED SECTION OF WELL 11.5-25.5m
- TUBING INTAKE AT 18.0m BGL
- HIGH TIDE AT ~10.00 AM

Name	[redacted]
Signature	

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project	RIVERSIDE EP
Client	CORY ENERGY
Borehole No	BH13
Site	RIVERSIDE EP
Date	10/05/18

Purging Data

Initial Water Level, mBGL (a)	3.34 3.03
Time	16.25 16.44
Base of Installation, m BGL (b)	
Saturated Depth, m (c) = (b-a)	
Diameter of Installation, mm (d)	
Base of Borehole, m (e)	
Well Volume, litres (f) $(\pi d^2 c/4)x10^{-3}$	
Number of Well Volumes (g)	
Purging Device	Low Flow Pump
Flow Rate, l/min (h)	0.25
Time to purge, min (gf/h)	55
Volume Purged, litres	13.75

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings taken during purging Pump ON 16.44

	16.50	17.00	17.05	17.10	17.15	17.25	17.35	17.45
Water Level, mBGL	3.01	3.00	3.00	2.99	2.985	2.985	2.98	2.98
Temperature, degC	17.33	16.86	16.45	16.19	15.62	15.28	15.25	15.47
pH	6.58	6.68	6.71	6.72	6.72	6.73	6.72	6.73
Dissolved O2, mg/l	1.70	1.45	1.45	1.42	1.46	1.48	1.44	1.39
Conductivity, uS/cm	15880	15780	15890	15900	15820	15720	15680	15840
Redox Potential, mV	64.2	66.2	68.4	73.5	75.3	76.1	76.7	76.7
TDS (mg/L)	7949	7893	7956	7956	7902	7842	7853	7904

Sampling Data

Sample Collection Depth, mBGL	5.00	Oil	NONE
Sample No		Appearance and Colour	TURBID, OPAQUE, YELLOWISH BROWN
Time Collected (hh:mm)	17.45	Odour	NONE / SLIGHT ORGANIC
Time since purge (minutes)		Sediment	V. FINE
Containers: Number	4	Type	2x 250ml ; 2x 40ml

Remarks

Weather: SUNNY, DRY, 17°C

Notes and Comments:
- SLOTTED PIPE 2.0m - 8.0m
- TUBING INTAKE @ 5.0m bgl.

Name	Signature

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project No	Riverside Ep
Client	CORK.
Borehole No	BH02
Site	Riverside Ep.
Date	07/06/18

Purging Data

initial Water Level, m.bgl (a)	1.34 1.36
Time	11.40 11.45
Base of Installation, m.bgl (b)	8.43.
Sturated Depth, m (c) = (b-a)	
Diameter of installation, mm (d)	
Base of Borehole, m (e)	
Well volume, litres (f) $(pd^2c/4)x10^{-3}$	
Number of well volumes (g)	
Purging Device	Low Flow.
Flow Rate, l/min (h)	0.25.
Time to Purge, min (gf/h)	
Volume Purged, litres	

Guideline Water Volumes	
Standpipe Diameter (mm)	**Volume (litres/m)**
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings Taken During Purging Pump ON 11.45

Time Taken	11.50	11.55	12.00	12.05	12.10		
Water Level, m.bgl	1.46	1.47	1.48	1.49	1.5		
Temperature, degC	18.7	18.9	18.7	18.2	18.3		
pH	7.24	7.22	7.19	7.19	7.18		
Dissolved O2, mg/l	1.12	0.88	0.87	0.62	0.53		
Conductivity, uS/m	1700	1197	1151	1114	1117		
Redox Potential, mV	-80.6	-50.0	-41.9	-27.8	-22.1		

Sampling Data

Sample Collection Depth, m.bgl	5.75.	Oil	NONE
Sample No		Appearance and colour	clear
Time Collected (hh:mm)	12.10	Odour	NONE
Time Since Purge (minutes)		Sediment	NONE.
Containers: Number	4	Type	2x 250ml 2x 60ml

Remarks

Weather	
Notes and Comments	

Name	Signature

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project No	RIVERSIDE EP.
Client	CORY.
Borehole No	BH03
Site	RIVERSIDE EP
Date	07/06/18.

Purging Data

initial Water Level, m.bgl (a)	2.54
Time	13.26
Base of Installation, m.bgl (b)	8.91
Sturated Depth, m (c) = (b-a)	
Diameter of installation, mm (d)	
Base of Borehole, m (e)	
Well volume, litres (f) $(pd^2c/4)x10^{-3}$	
Number of well volumes (g)	
Purging Device	Low Flow
Flow Rate, l/min (h)	~~Low~~
Time to Purge, min (gf/h)	
Volume Purged, litres	

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings Taken During Purging PUMP ON 13.34

Time Taken	13.40	13.45	13.50	13.55			
Water Level, m.bgl	2.71	2.79	2.81	2.84			
Temperature, degC	22.0	22.0	21.7	21.9			
pH	6.69	6.71	6.70	6.70			
Dissolved O2, mg/l	0.33	0.08	0.07	0.05			
Conductivity, uS/m	11317	11255	11145	11116			
Redox Potential, mV	-116.3	-121.1	-118.5	-111.0			

Sampling Data

Sample Collection Depth, m.bgl	6.0	Oil	None
Sample No		Appearance and colour	Slightly opaque yellowish grey
Time Collected (hh:mm)	13.55	Odour	Slightly organic, slightly Sulphurous.
Time Since Purge (minutes)		Sediment	~~Use~~ Slightly Silty
Containers: Number	4	Type	2 x 250 ml 2 x 60 ml.

Remarks

Weather	
Notes and Comments	

Name	Signature

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project ~~No~~	RIVERSIDE EP.
Client	CORY
Borehole No	BH05
Site	RIVERSIDE EP.
Date	07/06/18.

Purging Data

initial Water Level, m.bgl (a)	2.82
Time	14.10
Base of Installation, m.bgl (b)	13.51
Sturated Depth, m (c) = (b-a)	
Diameter of installation, mm (d)	
Base of Borehole, m (e)	
Well volume, litres (f) ($pd^2c/4)x10^{-3}$	
Number of well volumes (g)	
Purging Device	Low Flow
Flow Rate, l/min (h)	0.25.
Time to Purge, min (gf/h)	
Volume Purged, litres	

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings Taken During Purging Pump on 14.15.

Time Taken	14.20	14.25	14.30	14.35	14.40		
Water Level, m.bgl	2.80	2.80	2.80	2.80	2.80		
Temperature, degC	16.7	16.6	16.7	16.5	16.6		
pH	6.99	6.99	7.00	7.00	7.01		
Dissolved O2, mg/l	0.14	0.13	0.12	0.10	0.11		
Conductivity, uS/m	15398	15480	15518	15561	15620		
Redox Potential, mV	-154.4	-154.6	-155.0	-155.1	-154.8		

Sampling Data

Sample Collection Depth, m.bgl	11.75.	Oil	NONE
Sample No		Appearance and colour	Slightly opaque, yellowish
Time Collected (hh:mm)	14.40	Odour	Slightly ~~opaque, yellowish~~ organic
Time Since Purge (minutes)		Sediment	Slightly silty
Containers: Number	4	Type	2x 250 ml 2x 60ml.

Remarks

Weather	
Notes and Comments	Tide rising

Name	
Signature	

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project ~~No~~	RIVERSIDE. EP.
Client	CORY
Borehole No	BH08
Site	Riverside EP.
Date	07/06/18

Purging Data

initial Water Level, m.bgl (a)	1.10 1.15
Time	9.19 9.34
Base of Installation, m.bgl (b)	14.88
Sturated Depth, m (c) = (b-a)	
Diameter of installation, mm (d)	
Base of Borehole, m (e)	
Well volume, litres (f) ($pd^2c/4)x10^{-3}$	
Number of well volumes (g)	
Purging Device	Low Flow
Flow Rate, l/min (h)	0.25
Time to Purge, min (gf/h)	
Volume Purged, litres	

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings Taken During Purging Pump ON: 9.34

Time Taken	9.44	9.50	9.55	10.00	10.05	10.10	
Water Level, m.bgl	1.175	1.20	1.215	1.23	1.25	1.265	
Temperature, degC	17.1	15.8	15.6	15.6	15.7	15.8	
pH	6.82	6.79	6.80	6.80	6.80	6.80	
Dissolved O2, mg/l	0.39	0.19	0.18	0.21	0.17	0.15	
Conductivity, uS/~~m~~ cm	13676	13608	13721	13781	13823	13889	
Redox Potential, mV	-97.6	-100.9	-105.6	-107.7	-109.4	-110.4	

Sampling Data

Sample Collection Depth, m.bgl	17.5	Oil	NONE
Sample No		Appearance and colour	clear, slightly yellowish
Time Collected (hh:mm)	10.10.	Odour	Slightly organic
Time Since Purge (minutes)		Sediment	NONE
Containers: Number	4	Type	2 x 250ml, 2 x 60ml.

Remarks

Weather	
Notes and Comments	Tidally influenced. ~~5~~ mins after pump off 1.29m dip.

Name	Signature

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project	RIVERSIDE EP
Client	CORY
Borehole No	BH12
Site	RIVERSIDE EP
Date	07/06/18

Purging Data

initial Water Level, m.bgl (a)	1.13
Time	10.40
Base of Installation, m.bgl (b)	~~29.78~~ 29.70.
Sturated Depth, m (c) = (b-a)	
Diameter of installation, mm (d)	
Base of Borehole, m (e)	
Well volume, litres (f) $(pd^2c/4)x10^{-3}$	
Number of well volumes (g)	
Purging Device	Low Flow
Flow Rate, l/min (h)	
Time to Purge, min (gf/h)	
Volume Purged, litres	

Guideline Water Volumes

Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings Taken During Purging Pump on 10.46

Time Taken	10.50	10.55	11.00	11.05	11.10	11.15	
Water Level, m.bgl	1.165	1.17	1.185	1.20	1.22	1.24	
Temperature, degC	16.9	16.8	17.0	16.8	16.9	16.6	
pH	6.81	6.81	6.80	6.81	6.80	6.80	
Dissolved O2, mg/l	0.50	0.43	0.31	0.18	0.15	0.14	
Conductivity, uS/m	11450	11332	11224	11103	11096	11038	
Redox Potential, mV	-68.1	-65.3	-29.7	-12.2	-12.2	-7.4	

Sampling Data

Sample Collection Depth, m.bgl	18.0	Oil	NONE.
Sample No		Appearance and colour	clear, slightly yellowish
Time Collected (hh:mm)	11.15.	Odour	Slightly organic
Time Since Purge (minutes)		Sediment	NONE.
Containers: Number	4	Type	2x 250ml 2x 60ml

Remarks

Weather

Notes and Comments: Dip 5 mins after pump off. ~~dip~~ 1.26m.

Name

Signature

TerraConsult

WATER SAMPLING FIELD RECORD

Project No	3765
Project No	RIVERSIDE EP.
Client	CORY
Borehole No	BH13
Site	RIVERSIDE
Date	07/06/18.

Purging Data

initial Water Level, m.bgl (a)	1.60 1.36
Time	~~12.33~~ 12.33 12.40
Base of Installation, m.bgl (b)	7.98
Sturated Depth, m (c) = (b-a)	
Diameter of installation, mm (d)	
Base of Borehole, m (e)	
Well volume, litres (f) $(pd^2c/4)x10^{-3}$	
Number of well volumes (g)	
Purging Device	Low Flow
Flow Rate, l/min (h)	0.25
Time to Purge, min (gf/h)	
Volume Purged, litres	

Guideline Water Volumes	
Standpipe Diameter (mm)	Volume (litres/m)
19	0.3
25	0.5
50	2
100	8
150	18
200	31
300	71

NB: well volume is defined as water within standpipe tubing (not borehole)

Readings Taken During Purging pump on 12.40

Time Taken	12.45	12.50	12.55	13.00	13.05		
Water Level, m.bgl	1.42	1.40	1.46	1.52	1.54		
Temperature, degC	18.9	22.5	21.5	22.2	21.9		
pH	6.61	6.64	6.65	6.65	6.65		
Dissolved O2, mg/l	0.38	0.15	0.15	0.17	0.16		
Conductivity, uS/m	11875	13252	12999	13258	13329		
Redox Potential, mV	-21.8	-52.0	-54.9	-62.9	-64.9		

Sampling Data

Sample Collection Depth, m.bgl	5.0	Oil	NONE
Sample No		Appearance and colour	Turbid yellowish brown
Time Collected (hh:mm)	13.05	Odour	~~None~~ Slightly organic
Time Since Purge (minutes)		Sediment	Slightly silty
Containers: Number	4	Type	2x 250ml 2x 60ml.

Remarks

Weather	
Notes and Comments	

Name	Signature

Gas & Groundwater Monitoring Record

TerraConsult

Project No:	3765	Project:	Riverside EfW
Date:	30/05/2018		
Operator:	DG		
Equipment used (include s/n):	Dipmeter		

State of Ground:	Dry
Wind :	4-9mph
Wind direction:	ENE
Cloud cover:	Partly sunny
Precipitation:	None
Pressure trend:	Steady

Borehole ID	Inst ID	Barometric Pressure (mbars)	Air temp (oC)	Depth of Installation (m BGL)	Time of Reading hh:mm	Depth to Groundwater (m BGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH4 (% vol)	CH4 (% LEL)	O2 (% vol)	CO2 (% vol)	CO (ppm)	H2S (ppm)	Nitrogen (%vol)	Remarks
Detection limits:																
BH02	1	1013		8.42	11:10	1.32	54.00	7.0	0	<<<	20.5	0.6	0	0		
BH03	1	1013		8.91	11:33	2.37	0.00	0.0	0	0.0	16	2.2	0	0		
BH05	1	1013		13.52	11:48	2.39	140.00	15.4	0	<<<	19	0.1	0	0		
BH08	1	1013		14.87	10:16	2.04	-90.00	-14.7	0	0.0	18.8	1	0	0		
BH11	1	1013		9.01	10:25	0.60	-25.00	-4.9	0.1	3.8	16.8	3.4	0	0		
BH12	1	1013		29.72	10:44	1.58	-185.00	-22.3	0	<<<	20.2	0.4	0	0		
BH13	1	1013		7.98	10:02	0.69	-41.00	-5.8	10.9	>>>	11.7	5.7	0	0		
BH01	1			5.95	11:18	3.12										
BH04	1			2.6	11:44	1.71										
BH09	1			2.04	11:01	0.80										

Gas & Groundwater Monitoring Record

TerraConsult

Project No:	3765	Project:	Riverside EfW
Date:	11/06/2018		
Operator:	DG		
Equipment used (include s/n):	Dipmeter		

State of Ground:	Dry
Wind :	8 mph
Wind direction:	ENE
Cloud cover:	None
Precipitation:	None
Pressure trend:	

Borehole ID	Inst ID	Barometric Pressure (mbars)	Air temp (oC)	Depth of Installation (m BGL)	Time of Reading hh:mm	Depth to Groundwater (m BGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH4 (% vol)	CH4 (% LEL)	O2 (% vol)	CO2 (% vol)	CO (ppm)	H2S (ppm)	Nitrogen (%vol)	Remarks
Detection limits:																
BH02	1	1014		8.9	10:34	1.37	-11.00	-3.0	0	<<<.<	20.4	0.3	0	0		
BH03	1	1014		2.59	11:24	2.39	0.00	0.0	0.3	9.0	16.8	3.7	0	0		
BH05	1	1014		13.51	11:12	1.90	0.00	0.0	0	<<<.<	20.3	0.2	0	0		
BH08	1	1016		14.88	09:48	1.67	-22.90	-29.2	0	<<<.<	20.3	0.6	0	0		
BH11	1	1015		9.01	09:57	0.63	-21.00	-5.5	0	0.0	18.9	2.3	0	0		
BH12	1	1014		29.7	10:14	1.21	-35.00	-6.4	0	<<<.<	20.3	0.6	0	0		
BH13	1	1015		7.95	10:57	0.79	194.00	22.3	2.5	58.8	17.8	3.6	0	0		
BH01				5.95	10:40	3.18										
BH04				2.59	11:18	1.61										
BH09				2.04	10:24	0.92										

Gas & Groundwater Monitoring Record

TerraConsult

Project No:	3765	Project:	Riverside EfW
Date:	28/06/2018		
Operator:	DG		
Equipment used (include s/n):	Dipmeter		

State of Ground:	Dry
Wind :	8 mph
Wind direction:	NE
Cloud cover:	Low Clouds becoming sunny
Precipitation:	None
Pressure trend:	Steady

Borehole ID	Inst ID	Barometric Pressure (mbars)	Air temp (oC)	Depth of Installation (m BGL)	Time of Reading hh:mm	Depth to Groundwater (m BGL)	Differential Pressure (Pa)	FlowRate (l/hr)	CH4 (% vol)	CH4 (% LEL)	O2 (% vol)	CO2 (% vol)	CO (ppm)	H2S (ppm)	Nitrogen (%vol)	Remarks
Detection limits:																
BH02		1025		8.9	11:51	1.40	0.00	0.2	0	0.0	19.8	0.7	0	0		
BH03		1023		2.59	12:55	2.38	5.00	1.3	0	0.0	17	2	0	0		
BH05		Could not open well cover														
BH06		1023			13:10	2.01	5.00	1.2	0	0.0	20.2	0.2	0	0		
BH08		1024		14.88	12:10	1.46	4.00	6.7	0	0.0	20	0.8	0	0		
BH11		1024		9.01	11:02	0.64	0.00	0.0	0	0.0	17.5	3.2	0	0		
BH12		1024		29.7	11:14	1.36	0.00	69.4	0	0.0	20.1	0.7	0	0		
BH13		1023		7.95	12:27	0.55	6.00	10.7	0	0.0	18.8	2.8	0	0		
BH01				5.95	11:42	3.36										
BH04				2.59	13:22	1.68										
BH09				2.04	11:30	0.89										

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH01	12/04/18	16.00	6.00	5.95	2.66	
BH01	13/04/18	13.20	6.00	5.95	2.68	
BH01	16/04/18	16.30	6.00	5.95	2.80	
BH01	17/04/18	14.45	6.00	5.95	3.17	
BH01	18/04/18	15.10	6.00	5.95	2.98	
BH01	19/04/18	14.57	6.00	5.95	3.27	
BH01	20/04/18	12.15	6.00	5.95	3.41	
BH01	24/04/18	16.27	6.00	5.95	3.30	
BH01	25/04/18	11.59	6.00	5.95	2.74	
BH01	26/04/18	16.03	6.00	5.95	2.95	
BH01	27/04/18	12.18	6.00	5.95	2.87	
BH01	02/05/18	8.33	6.00	5.95	2.99	
BH01	02/05/18	16.47	6.00	5.95	2.92	
BH01	03/05/18	10.07	6.00	5.94	3.06	
BH01	04/05/18	8.51	6.00	5.94	3.06	
BH01	08/05/18	16.55	6.00	5.94	3.14	

Issue: DRAFT	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG	Ref:	**Monitoring Records**

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH02	12/04/18	15.50	8.50	8.52	1.33	
BH02	13/04/18	13.10	8.50	8.52	1.08	
BH02	16/04/18	16.20	8.50	8.50	1.17	
BH02	17/04/18	14.39	8.50	8.50	1.21	
BH02	19/04/18	14.35	8.50	8.47	1.27	
BH02	20/04/18	12.10	8.50	8.45	0.82	
BH02	24/04/18	16.23	8.50	8.45	1.34	
BH02	25/04/18	12.03	8.50	8.48	1.34	
BH02	26/04/18	15.57	8.50	8.48	1.33	
BH02	27/04/18	12.13	8.50	8.48	1.33	
BH02	04/05/18	8.45	8.50	8.48	1.32	
BH02	08/05/18	16.50	8.50	8.47	1.36	

Issue: DRAFT	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG	Ref:	**Monitoring Records**

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH03	19/04/18	15.20	8.50	8.90	2.41	
BH03	20/04/18	12.26	8.50	8.91	2.42	
BH03	24/04/18	16.56	8.50	8.88	2.42	
BH03	25/04/18	15.28	8.50	8.88	2.41	
BH03	26/04/18	11.50	8.50	8.90	2.40	
BH03	27/04/18	12.44	8.50	8.90	2.39	
BH03	02/05/18	8.50	8.50	8.89	2.38	
BH03	03/05/18	10.56	8.50	8.90	2.38	
BH03	04/05/18	10.33	8.50	8.90	2.39	
BH03	08/05/18	16.15	8.50	8.90	2.40	

Issue: DRAFT	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG	Ref:	**Monitoring Records**

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH04	19/04/18	15.25	2.00	2.02	1.52	
BH04	20/04/18	12.30	2.00	2.02	1.29	
BH04	24/04/18	17.00	2.00	2.02	1.18	
BH04	25/04/18	15.25	2.00	2.04	1.18	
BH04	26/04/18	11.54	2.00	2.02	1.17	
BH04	27/04/18	12.50	2.00	2.02	1.18	
BH04	02/05/18	8.55	2.00	2.03	1.15	
BH04	03/05/18	11.00	2.00	2.02	1.13	
BH04	04/05/18	10.36	2.00	2.03	1.12	
BH04	08/05/18	16.20	2.00	2.03	1.15	

Issue: DRAFT	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG	Ref:	**Monitoring Records**

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH05	24/04/18	16.49	13.50	13.50	2.72	
BH05	25/04/18	15.35	13.50	13.51	2.86	
BH05	26/04/18	11.47	13.50	13.51	0.55	
BH05	27/04/18	12.40	13.50	13.51	1.40	
BH05	02/05/18	9.00	13.50	13.51	3.05	
BH05	03/05/18	10.53	13.50	13.51	3.25	
BH05	04/05/18	10.30	13.50	13.51	3.16	
BH05	08/05/18	16.10	13.50	13.51	2.31	

Issue: DRAFT	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG	Ref:	**Monitoring Records**

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH08	12/04/18	15.20	15.00	14.88	1.42	
BH08	13/04/18	12.50	15.00	14.88	0.92	
BH08	16/04/18	16.00	15.00	14.88	1.06	
BH08	17/04/18	14.23	15.00	14.88	1.19	
BH08	18/04/18	14.50	15.00	14.88	1.16	
BH08	19/04/18	14.10	15.00	14.88	0.59	
BH08	20/04/18	11.41	15.00	14.88	2.18	
BH08	24/04/18	15.52	15.00	14.88	1.91	
BH08	25/04/18	12.43	15.00	14.88	1.38	
BH08	26/04/18	15.35	15.00	14.88	1.72	
BH08	27/04/18	11.50	15.00	14.88	1.08	
BH08	02/05/18	8.02	15.00	14.88	1.76	
BH08	02/05/18	16.24	15.00	14.88	0.99	
BH08	03/05/18	10.34	15.00	14.88	2.13	
BH08	04/05/18	8.21	15.00	14.88	1.64	
BH08	08/05/18	16.33	15.00	14.88	1.48	

Issue: DRAFT	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG	Ref:	**Monitoring Records**

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH09	18/04/18	15.09	2.00	2.05	0.73	
BH09	19/04/18	14.30	2.00	2.05	0.78	
BH09	20/04/18	12.03	2.00	2.05	0.80	
BH09	24/04/18	16.14	2.00	2.05	0.84	
BH09	25/04/18	12.09	2.00	2.05	0.84	
BH09	26/04/18	15.53	2.00	2.05	0.85	
BH09	27/04/18	12.10	2.00	2.04	0.86	
BH09	02/05/18	8.24	2.00	2.04	0.83	
BH09	02/05/18	16.40	2.00	2.04	0.83	
BH09	03/05/18	10.18	2.00	2.04	0.83	
BH09	04/05/18	8.40	2.00	2.03	0.84	
BH09	08/05/18	16.45	2.00	2.03	0.85	

Issue: DRAFT	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG	Ref:	**Monitoring Records**

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH11	06/04/18	14.17	9.00	9.03	0.64	
BH11	07/04/18	15.05	9.00	9.04	0.65	
BH11	10/04/18	10.15	9.00	9.04	0.64	
BH11	11/04/18	16.55	9.00	9.02	0.64	
BH11	12/04/18	15.30	9.00	9.03	0.62	
BH11	13/04/18	13.00	9.00	9.03	0.62	
BH11	16/04/18	16.35	9.00	9.03	0.64	
BH11	17/04/18	14.31	9.00	9.02	0.64	
BH11	18/04/18	14.56	9.00	9.01	0.65	
BH11	19/04/18	14.15	9.00	9.02	0.66	
BH11	20/04/18	11.46	9.00	9.02	0.64	
BH11	24/04/18	15.59	9.00	9.01	0.64	
BH11	25/04/18	12.35	9.00	8.99	0.64	
BH11	26/04/18	15.40	9.00	9.01	0.64	
BH11	27/04/18	12.00	9.00	9.01	0.64	
BH11	02/05/18	8.07	9.00	9.01	0.62	
BH11	02/05/18	16.29	9.00	9.01	0.61	
BH11	03/05/18	10.29	9.00	9.01	0.63	
BH11	04/05/18	8.28	9.00	9.01	0.64	
BH11	08/05/18	16.37	9.00	9.01	0.63	

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH12	06/04/18	14.26	29.50	29.85	1.42	
BH12	07/04/18	15.25	29.50	29.88	1.45	
BH12	10/04/18	10.30	29.50	29.88	1.43	
BH12	11/04/18	17.01	29.50	29.80	1.51	
BH12	12/04/18	15.35	29.50	29.82	1.26	
BH12	13/04/18	13.25	29.50	29.78	0.66	
BH12	16/04/18	16.10	29.50	29.82	0.89	
BH12	17/04/18	14.35	29.50	29.83	0.80	
BH12	18/04/18					Flooded
BH12	19/04/18	15.40	29.50	29.78	0.84	
BH12	20/04/18	11.55	29.50	29.80	1.87	
BH12	24/04/18	16.05	29.50	29.78	1.55	
BH12	25/04/18	12.20	29.50	29.78	1.07	
BH12	26/04/18	13.45	29.50	29.78	1.48	
BH12	27/04/18	12.05	29.50	29.78	0.69	
BH12	02/05/18	8.12	29.50	29.79	1.54	
BH12	02/05/18	16.34	29.50	29.79	0.74	
BH12	03/05/18	10.24	29.50	29.79	1.79	
BH12	04/05/18	8.32	29.50	29.79	1.44	
BH12	08/05/18	16.40	29.50	29.78	1.11	

Groundwater Monitoring Record

TerraConsult

Exploratory position:	Date:	Time:	Installed depth (m):	Checked depth (m):	Reading (m)	Comments:
BH13	12/04/18	15.12	8.00	7.99	0.75	
BH13	13/04/18	12.40	8.00	8.00	0.63	
BH13	16/04/18	15.54	8.00	7.98	0.61	
BH13	17/04/18	14.17	8.00	7.98	0.61	
BH13	18/04/18	14.44	8.00	7.98	0.60	
BH13	19/04/18	14.00	8.00	7.98	0.60	
BH13	20/04/18	11.32	8.00	7.98	0.60	
BH13	24/04/18	15.43	8.00	7.98	0.53	
BH13	25/04/18	12.47	8.00	7.98	0.53	
BH13	26/04/18	15.30	8.00	7.98	0.54	
BH13	27/04/18	11.40	8.00	7.98	0.53	
BH13	02/05/18	8.53	8.00	7.98	0.50	
BH13	02/05/18	16.17	8.00	7.98	0.48	
BH13	03/05/18	10.39	8.00	7.98	0.51	
BH13	04/05/18	8.15	8.00	7.98	0.52	
BH13	08/05/18	16.28	8.00	7.98	0.50	

Issue:	DRAFT	Project:	Riverside EfW	Ref:
		Project No:	3765	**Monitoring Records**
		Client:	Hitachi Zosen Inova AG	

APPENDIX E
Geotechnical Laboratory Test Results

Classification tests

Chemical and electro-chemical tests

Compaction related tests

Compressibility tests

Consolidation tests

Shear strength tests (total stress)

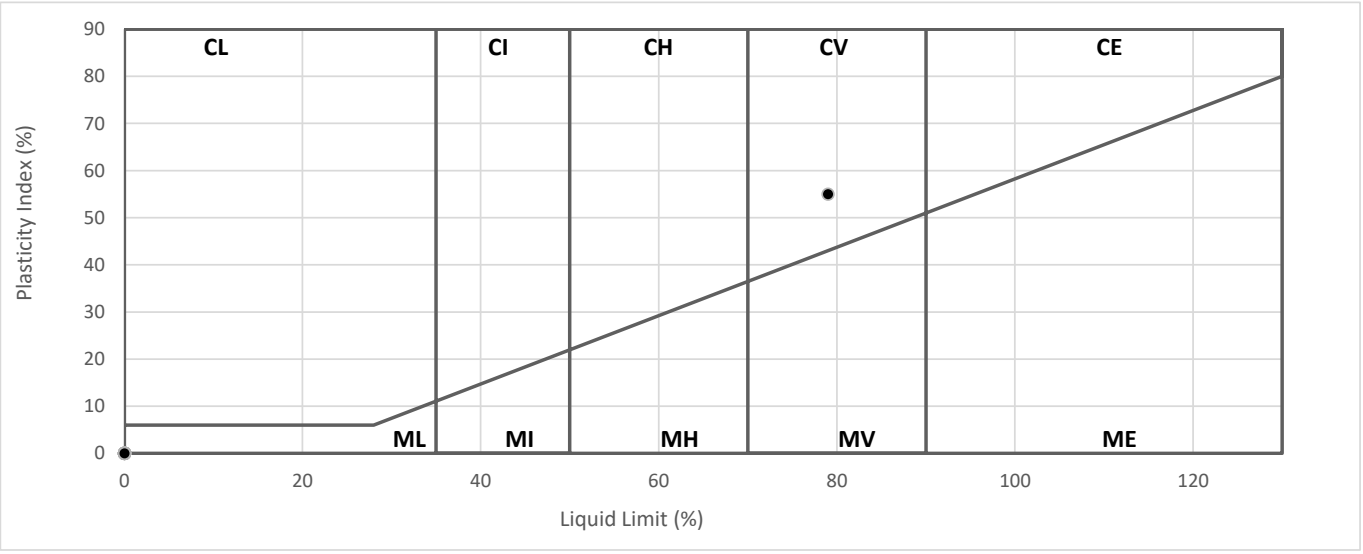
Shear strength tests (effective stress)

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**39466**	
Site Name	**Riverside**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
BH01		D	2.50	-		41					
BH01		D	4.45	-		137					
BH01		B	8.50	-		35					
BH01		D	16.00	-		31					
BH01		D	19.00	-		28					
BH01		D	28.70	-		19					
BH01		D	29.95	-		19					
BH02		B	2.00	-		30					
BH02		D	7.30	-		87					
BH02		B	9.50	-		23					
BH02		D	13.95	-		26					
BH02		D	18.00	-		26	79	24	55	100	CV Very High Plasticity
BH02		D	29.20	-		30					
BH02A		D	36.20	-		24					
BH02A		D	44.00	-		18					
BH03		D	4.50	-		161					
BH03		D	7.00	-		57					
BH03		D	9.00	-		106					
BH03		D	27.00	-		25					
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	08-07-18	Emma Sharp	[redacted]
DB	Approved	09-07-18	Paul Evans	

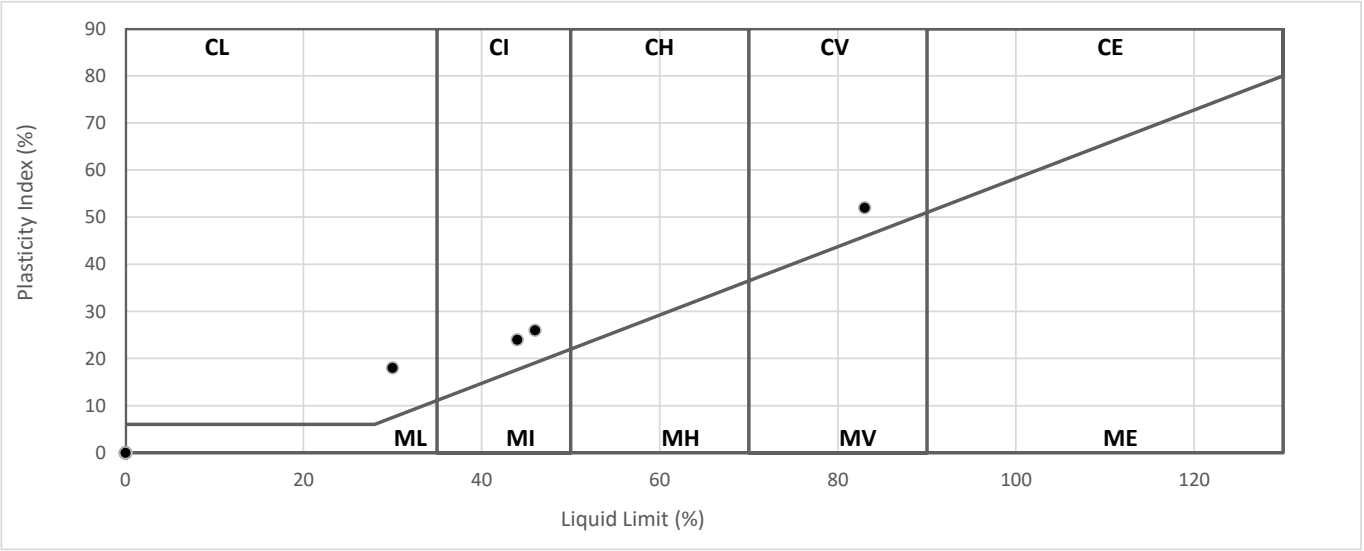
UKAS TESTING
2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**39466**	
Site Name	**Riverside**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
BH04		B	0.50	-		23					
BH04		D	1.95	-		42					
BH04		D	3.00	-		275					
BH04		D	7.50	-		138					
BH04		U	9.00	-		219					
BH04		D	13.30	-		25					
BH04		D	15.00	-		30					
BH04		D	18.00	-		25	44	20	24	100	CI Intermediate Plasticity
BH05		D	25.50	-		23	46	20	26	77	CI Intermediate Plasticity
BH05		D	2.80	-		268					
BH05		D	16.95	-		27					
BH05		D	19.50	-		26					
BH05		U	27.84	-		7.8	30	12	18	34	CL Low Plasticity
BH05		D	29.50	-		34	83	31	52	100	CV Very High Plasticity
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	08-07-18	Emma Sharp	[redacted]
DB	Approved	09-07-18	Paul Evans	

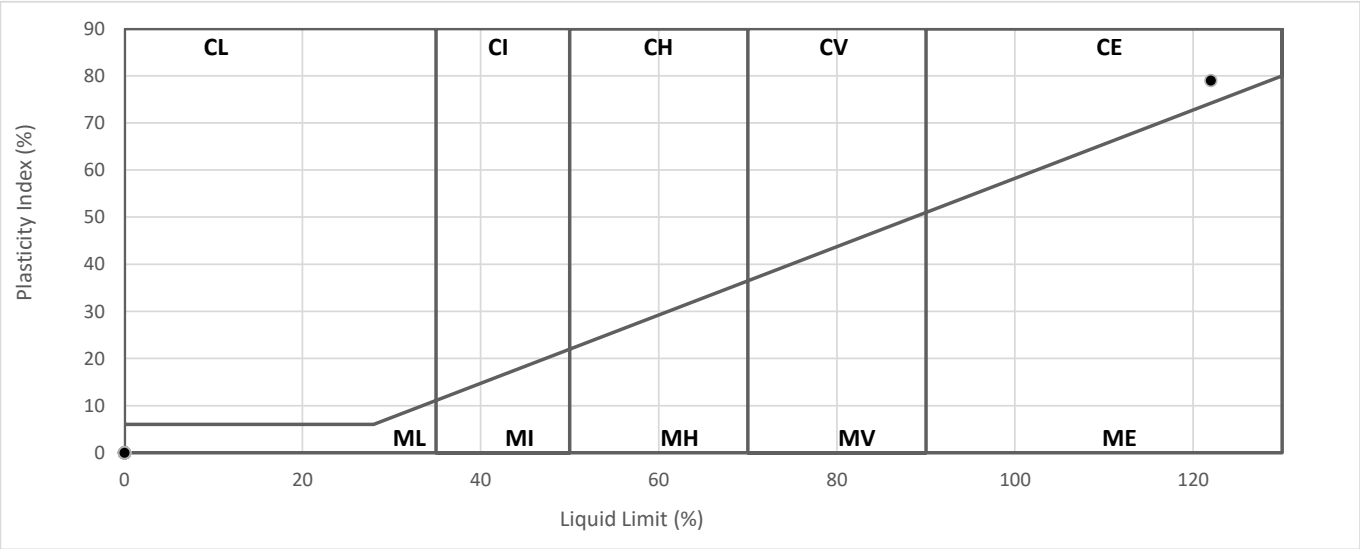
UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**39466**	
Site Name	**Riverside**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
BH08		D	1.50	-		44					
BH08		D	4.00	-		326					
BH08		D	7.50	-		108					
BH08		U	16.50	-		35					
BH08		U	19.50	-		173					
BH09		D	2.00	-		38					
BH09		D	6.00	-		119					
BH09		D	15.50	-		26					
BH09		U	30.50	-		5.4					
BH10		D	1.50	-		77					
BH10		D	4.50	-		111					
BH10		D	9.50	-		68					
BH10		UT	16.50	-		108	122	43	79	100	CE Extremely High Plasticity
BH10		D	27.00	-		34					
BH10		D	29.00	-		8.3					
BH11		D	1.10	-		35					
BH11		D	2.50	-							
BH11		D	3.50	-		394					
BH11		D	9.00	-		46		NP			
BH11		D	26.30	-		23					
BH11		U	27.00	-		20					
BH11		D	28.20	-		46					
BH11		D	30.60	-		11					
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	27-06-18	Emma Sharp	[redacted]
DB	Approved	28-06-18	Paul Evans	

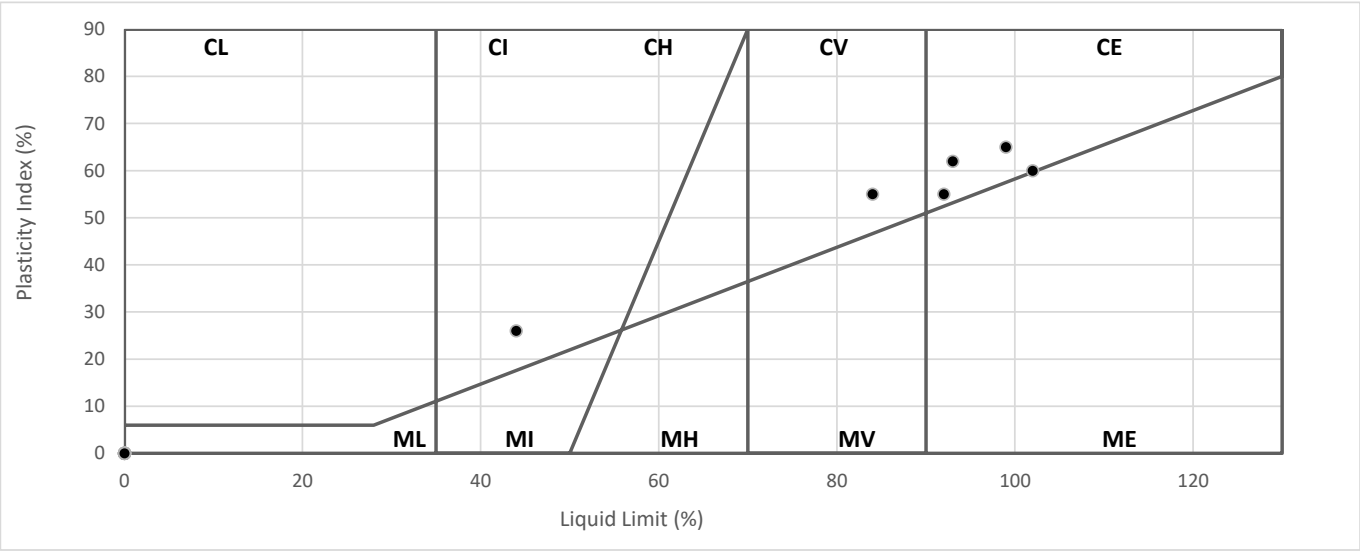
UKAS TESTING 2788

GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	**39466**	
Site Name	**Riverside**	

Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
BH12		D	1.50	-		53					
BH12		D	3.50	-		296					
BH12		D	5.00	-		159					
BH12		D	8.50	-		89					
BH12		U	26.00	-		43					
BH12		U	27.50	-		11					
BH13		D	1.50	-		54					
BH13		D	2.50	-		263					
BH13		D	7.50	-		224					
BH13		B	19.50	-		108					
BH13		D	28.50	-		23					
BH13		D	30.00	-		15	44	18	26	100	CI Intermediate Plasticity
TP01		D	3.00	-		42	99	34	65	100	CE Extremely High Plasticity
TP02		B	3.00	-		48	84	29	55	100	CV Very High Plasticity
TP04		B	2.50	-		78	92	37	55	100	CE Extremely High Plasticity
TP05		B	1.60	-		51	93	31	62	100	CE Extremely High Plasticity
TP06		SD	2.90	-		93	102	42	60	100	CE Extremely High Plasticity
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

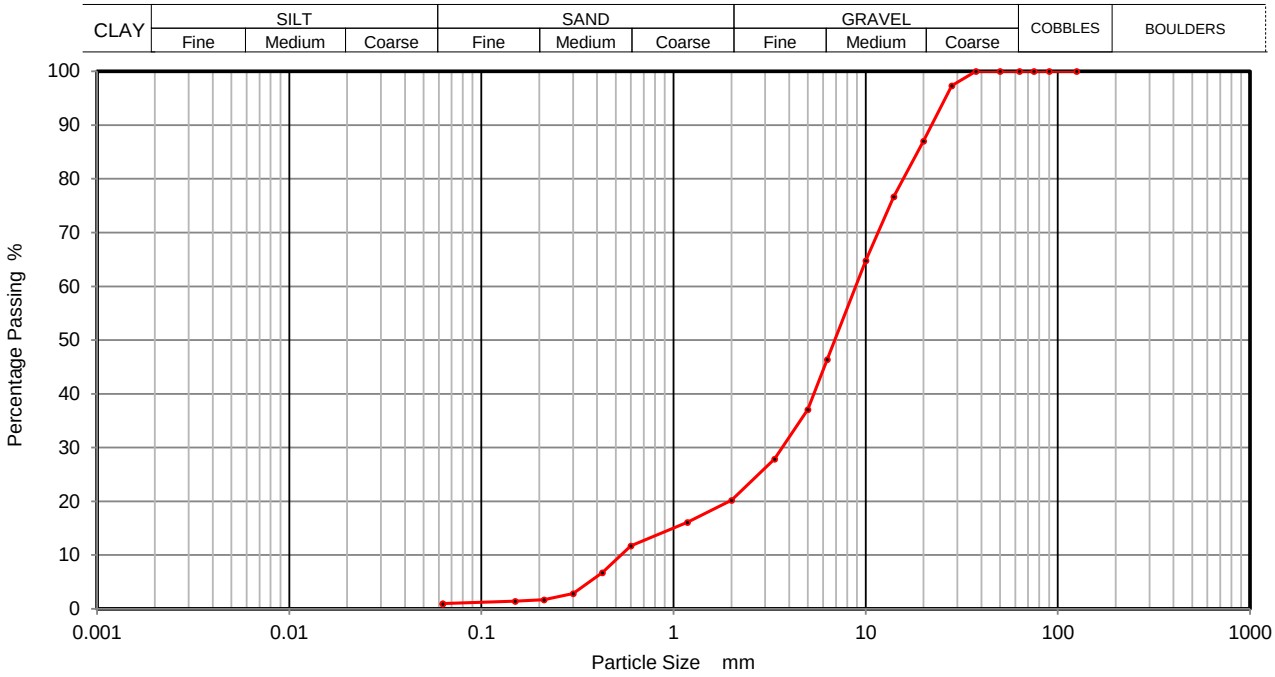
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	08-07-18	Emma Sharp	[redacted]
DB	Approved	09-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	13.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	97		
20	87		
14	77		
10	65		
6.3	46		
5	37		
3.35	28		
2	20		
1.18	16		
0.6	12		
0.425	7		
0.3	3		
0.212	2		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	80
Sand	19
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

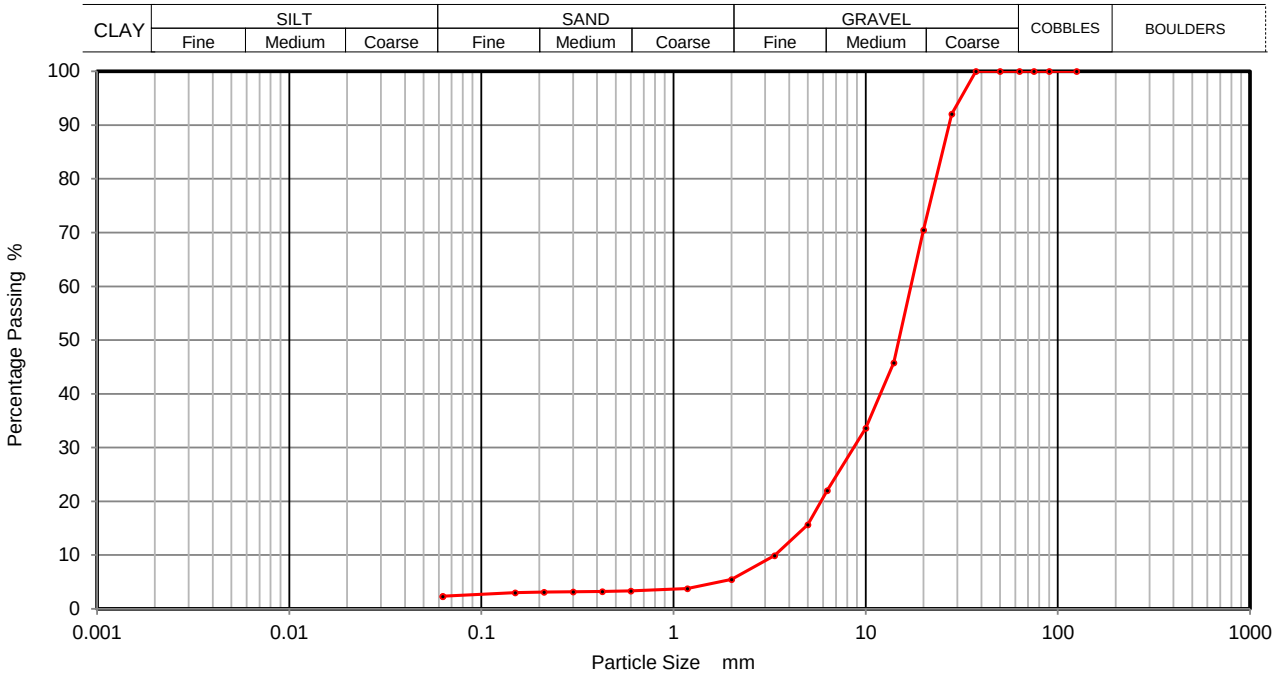
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	01-07-18	Emma Sharp	[redacted]
RO/MH	Approved	02-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine slightly sandy fine to coarse GRAVEL.	Depth Top	26.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	92		
20	71		
14	46		
10	34		
6.3	22		
5	16		
3.35	10		
2	5		
1.18	4		
0.6	3		
0.425	3		
0.3	3		
0.212	3		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	95
Sand	3
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

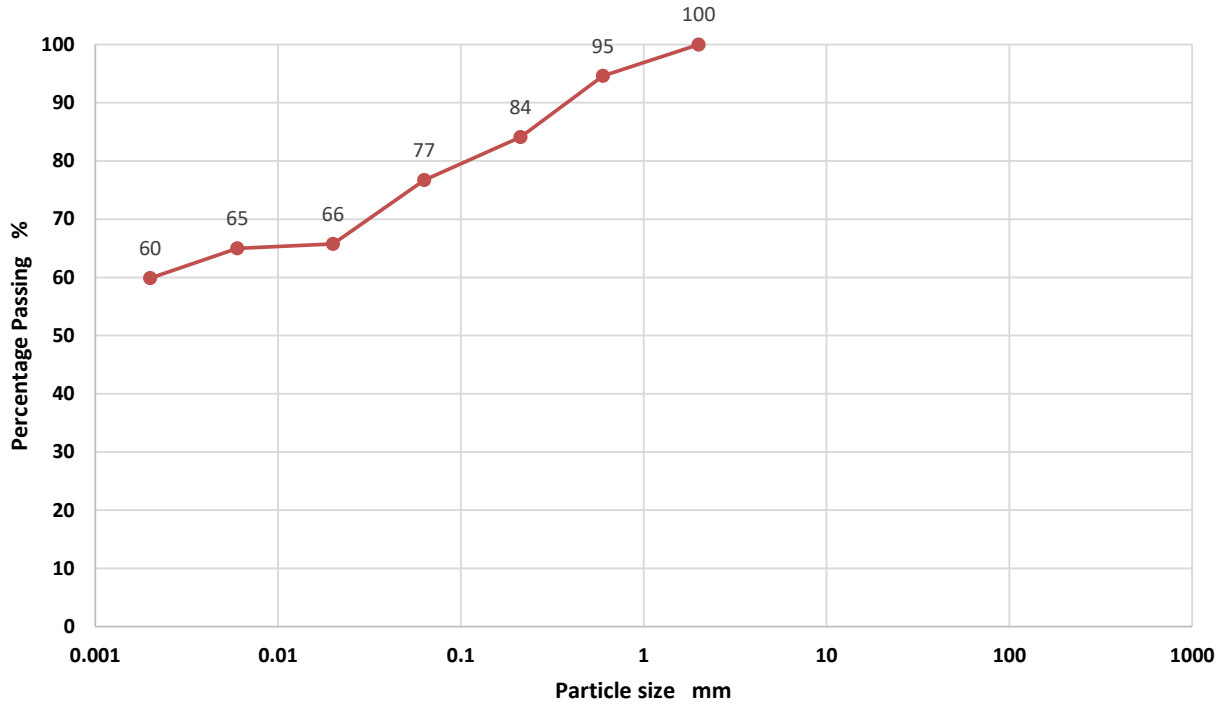
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	01-07-18	Emma Sharp	[redacted]
RO/MH	Approved	02-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	39466
		Borehole/Pit No.	BH2
Site Name	Riverside	Sample No.	
Soil Description	Grey silty sandy CLAY.	Depth Top	9.50
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	95
0.212	84
0.063	77

Sedimentation Analysis

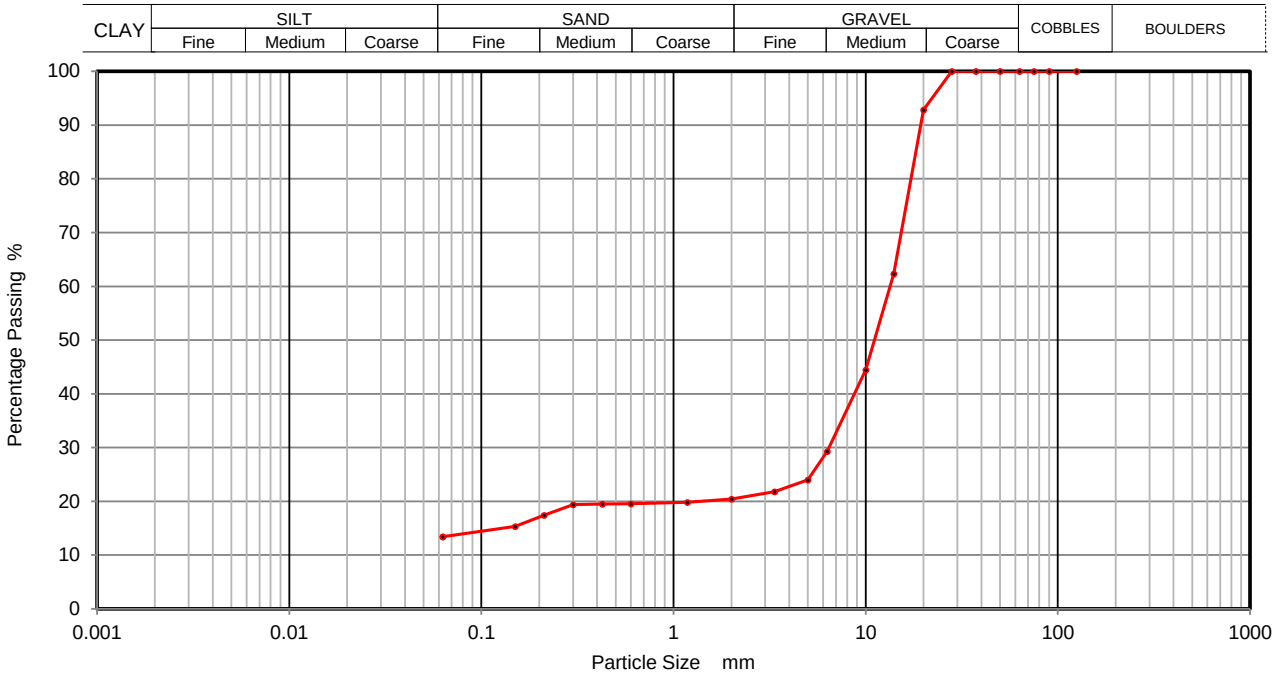
Particle Diameter	Percentage Passing
0.02	66
0.006	65
0.002	60

Soil Fraction	Total Percentage
Gravel	0
Sand	23
Silt	17
Clay	60

Operators	Checked	08-07-18	Emma Sharp	[redacted]
RO	Approved	09-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown fine sandy silty clayey fine to coarse GRAVEL.	Depth Top	21.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	62		
10	44		
6.3	29		
5	24		
3.35	22		
2	20		
1.18	20		
0.6	20		
0.425	19		
0.3	19		
0.212	17		
0.15	15		
0.063	13		

Sample Proportions	% dry mass
Cobbles	0
Gravel	80
Sand	7
Silt and Clay	13

Grading Analysis	
Uniformity Coefficient	

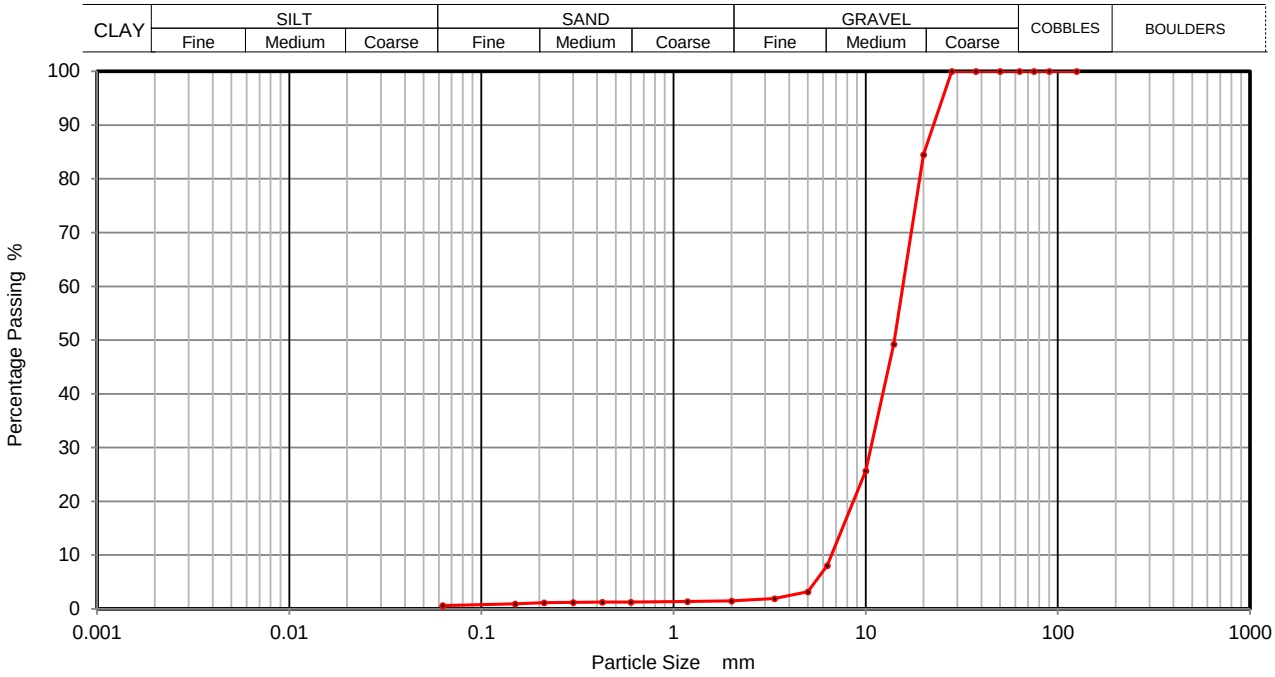
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	01-07-18	Emma Sharp	[redacted]
RO/MH	Approved	02-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse GRAVEL.	Depth Top	27.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	84		
14	49		
10	26		
6.3	8		
5	3		
3.35	2		
2	1		
1.18	1		
0.6	1		
0.425	1		
0.3	1		
0.212	1		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	99
Sand	0
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

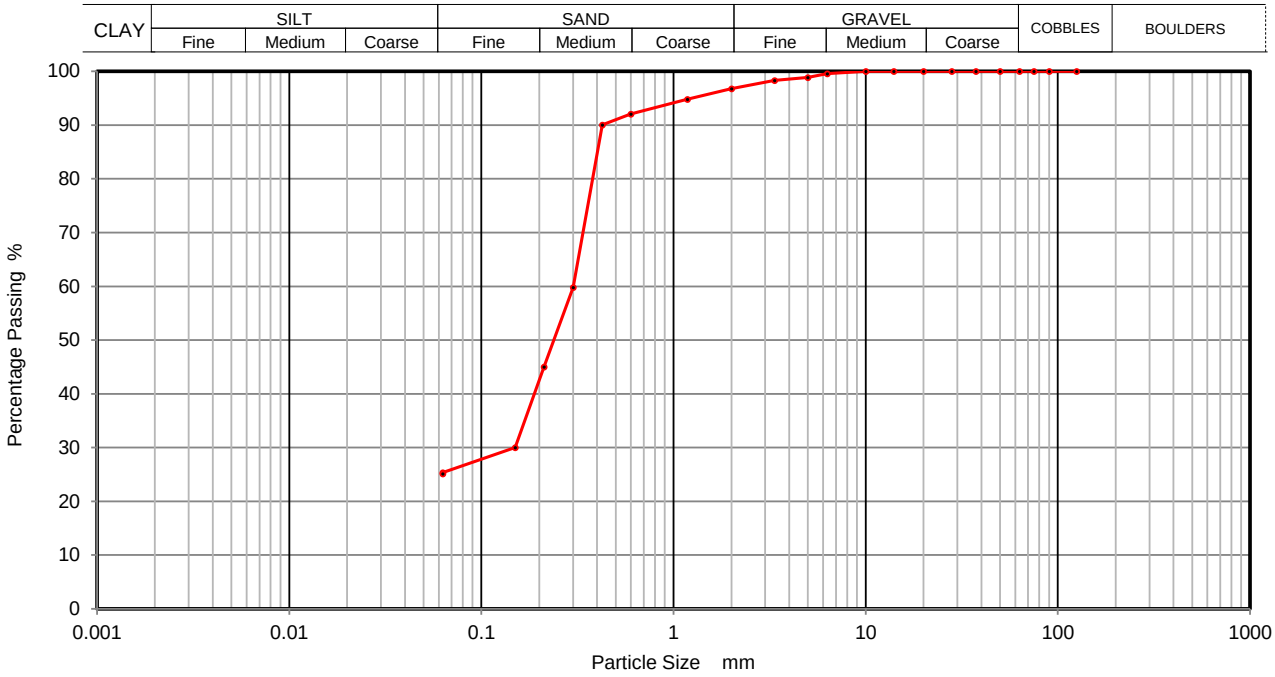
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	01-07-18	Emma Sharp	[redacted]
RO/MH	Approved	02-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH02A
Site Name	Riverside	Sample No.	
Soil Description	Brown fine slightly gravelly silty clayey fine to coarse SAND.	Depth Top	39.35
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	98		
2	97		
1.18	95		
0.6	92		
0.425	90		
0.3	60		
0.212	45		
0.15	30		
0.063	25		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	72
Silt and Clay	25

Grading Analysis	
Uniformity Coefficient	

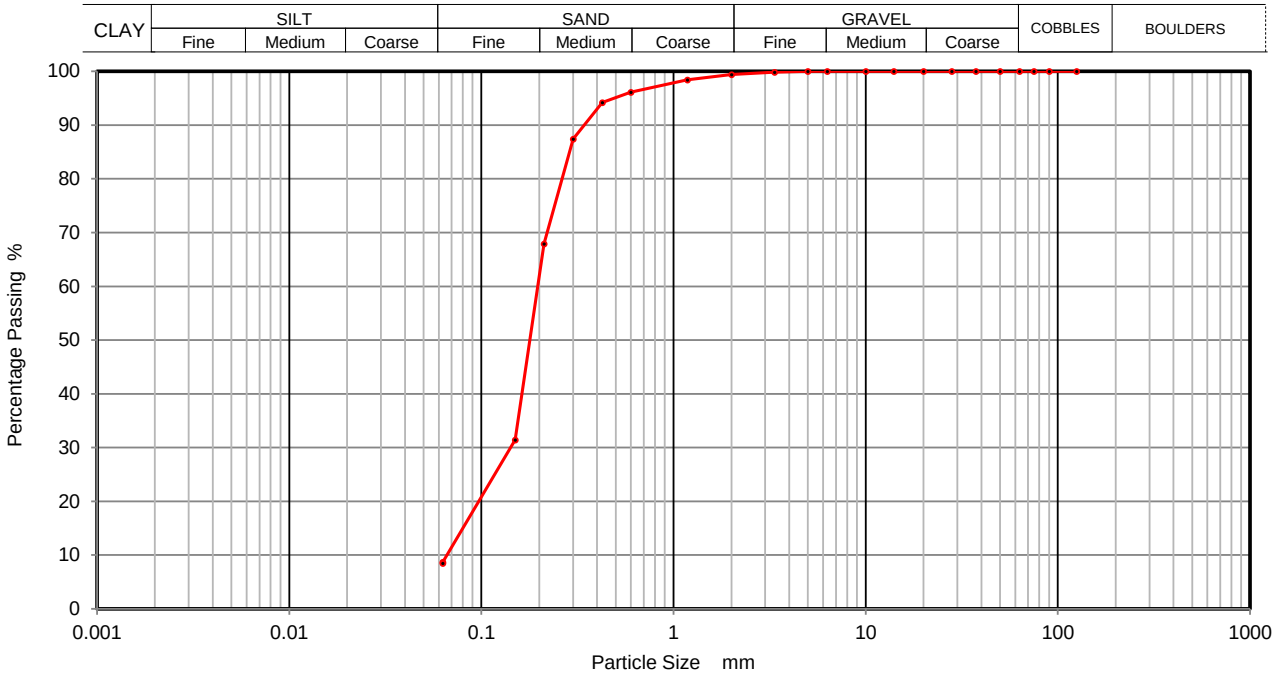
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	02-07-18	Emma Sharp	[redacted]
RO/MH	Approved	03-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH02A
Site Name	Riverside	Sample No.	
Soil Description	Brown fine slightly gravelly silty fine to coarse SAND.	Depth Top	45.50
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	98		
0.6	96		
0.425	94		
0.3	87		
0.212	68		
0.15	31		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	90
Silt and Clay	9

Grading Analysis	
Uniformity Coefficient	

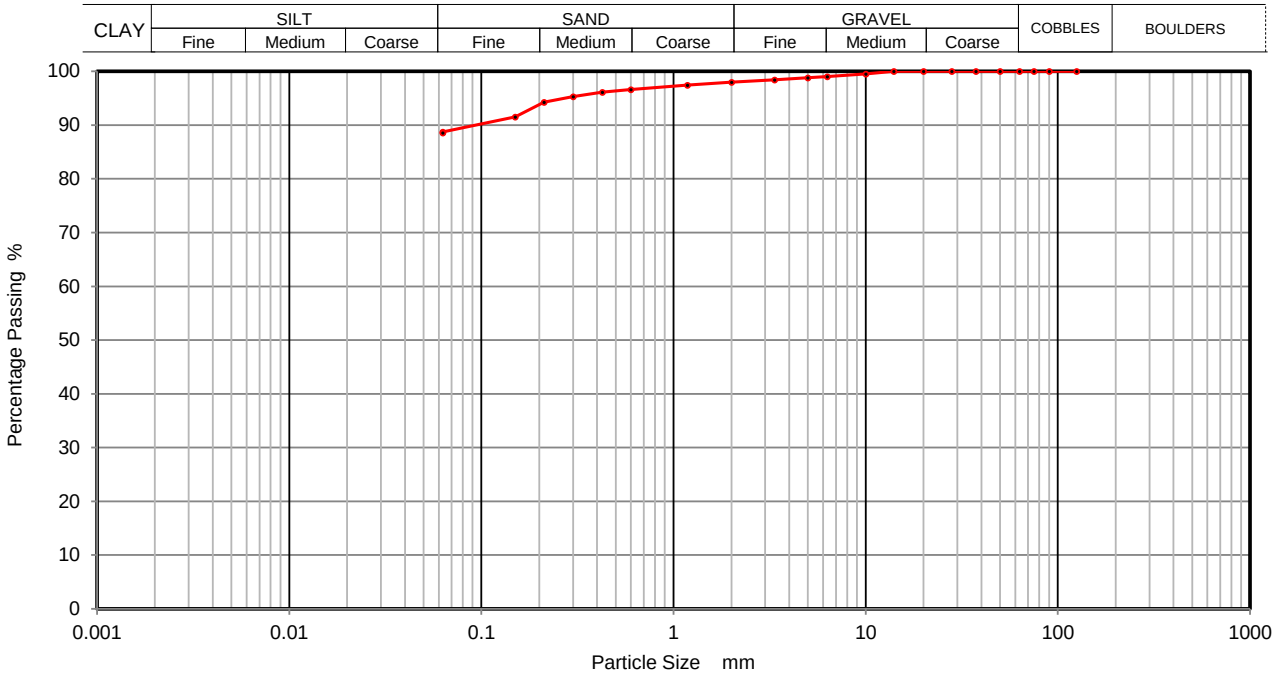
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	02-07-18	Emma Sharp	[redacted]
RO/MH	Approved	03-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH03
Site Name	Riverside	Sample No.	
Soil Description	Brown fine slightly gravelly fine to coarse slightly sandy silty CLAY.	Depth Top	11.50
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	97		
0.6	97		
0.425	96		
0.3	95		
0.212	94		
0.15	91		
0.063	89		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	9
Silt and Clay	89

Grading Analysis	
Uniformity Coefficient	

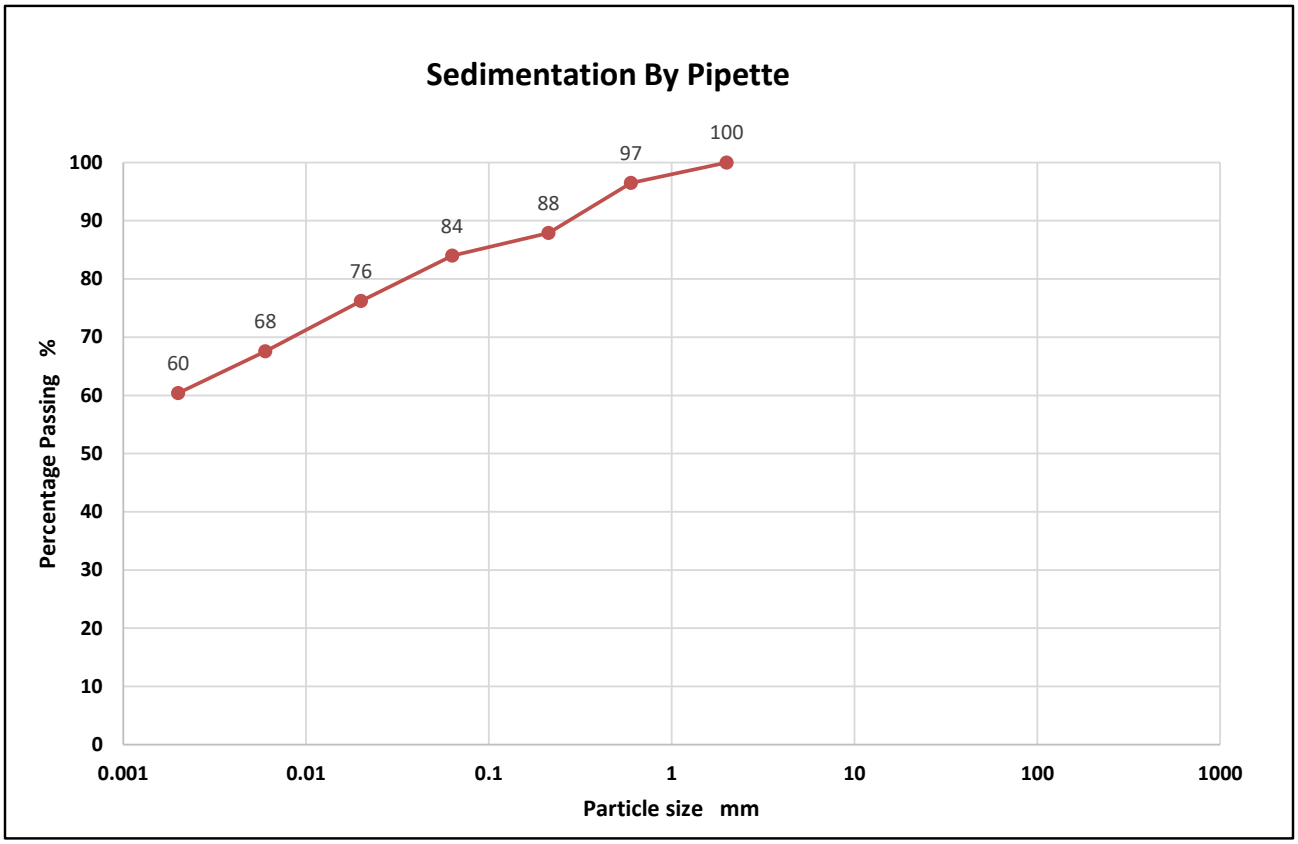
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	02-07-18	Emma Sharp	[redacted]
RO/MH	Approved	03-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	39466
		Borehole/Pit No.	BH3
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top	13.50
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	97
0.212	88
0.063	84

Sedimentation Analysis

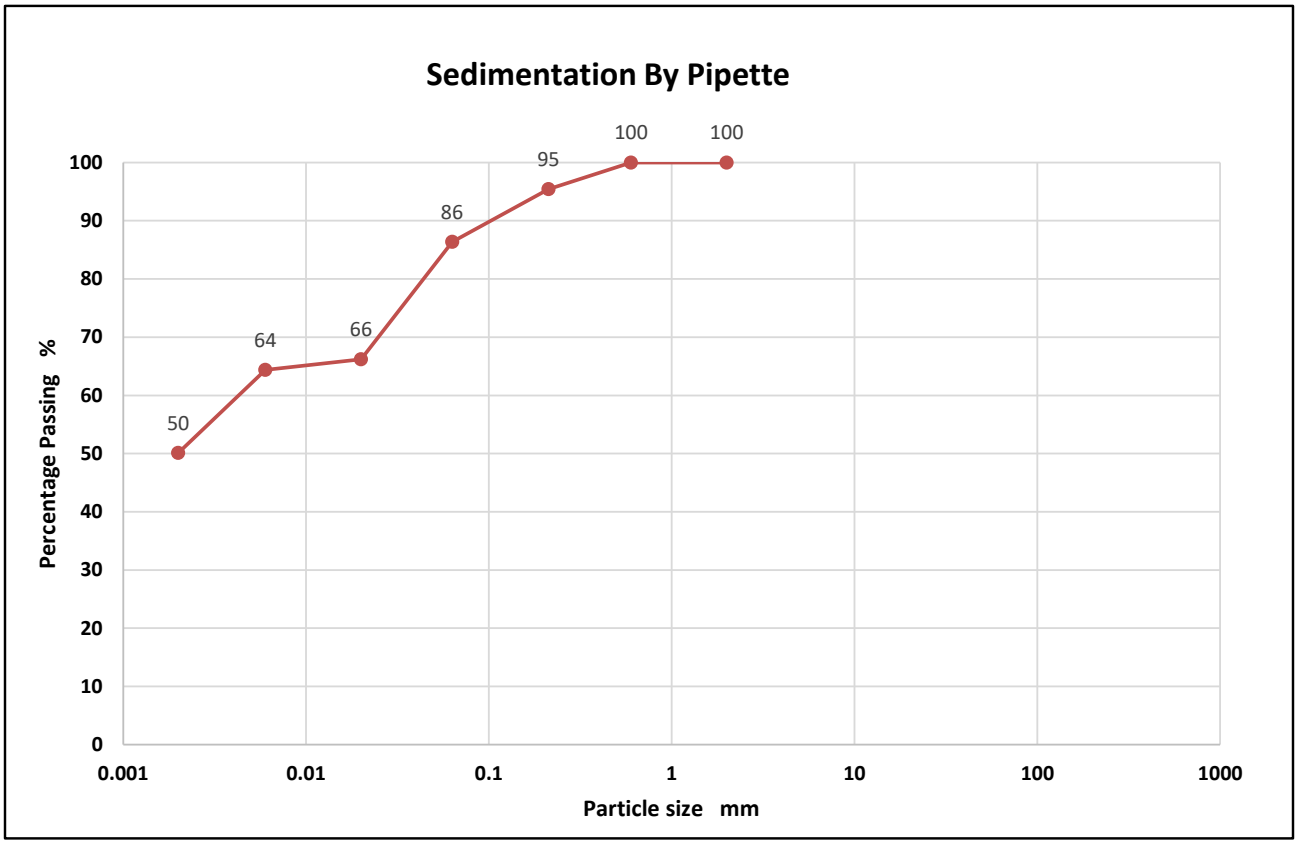
Particle Diameter	Percentage Passing
0.02	76
0.006	68
0.002	60

Soil Fraction	Total Percentage
Gravel	0
Sand	16
Silt	24
Clay	60

Operators	Checked	08-07-18	Emma Sharp	[redacted]
RO	Approved	09-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	39466
		Borehole/Pit No.	BH3
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top	29.50
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	95
0.063	86

Sedimentation Analysis

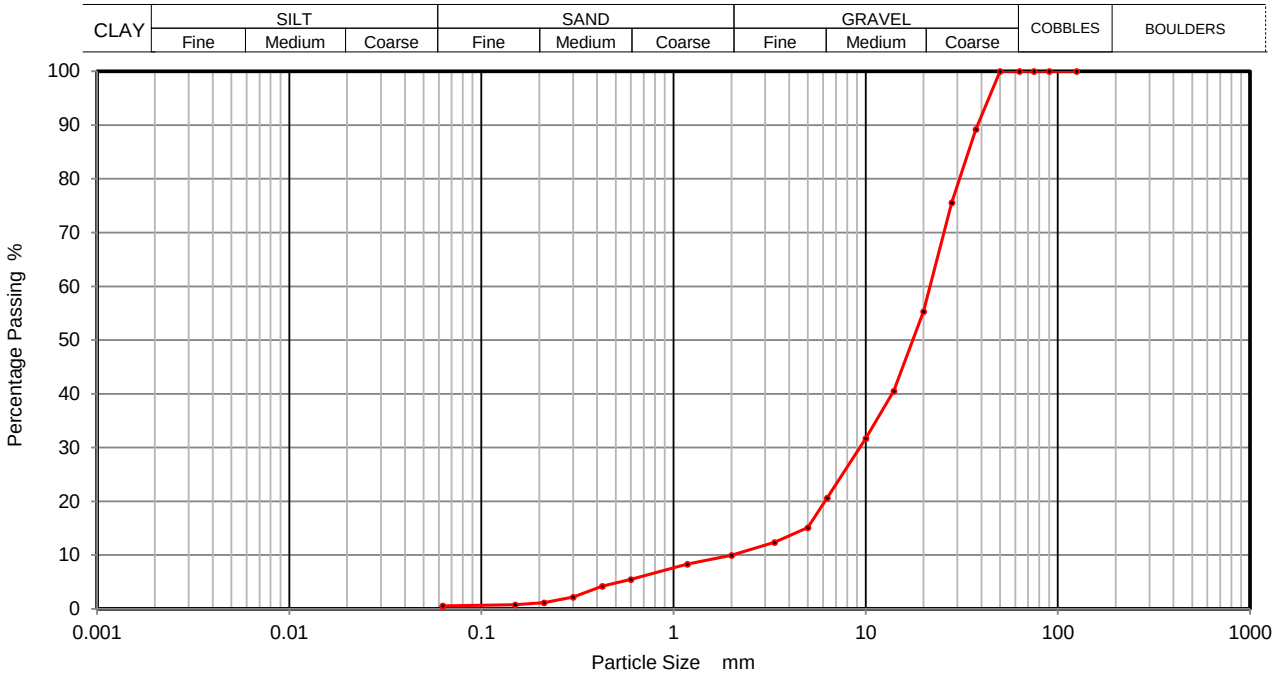
Particle Diameter	Percentage Passing
0.02	66
0.006	64
0.002	50

Soil Fraction	Total Percentage
Gravel	0
Sand	14
Silt	36
Clay	50

Operators	Checked	08-07-18	Emma Sharp	[redacted]
RO	Approved	09-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine slightly sandy fine to coarse GRAVEL.	Depth Top	10.50
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	89		
28	76		
20	55		
14	41		
10	32		
6.3	21		
5	15		
3.35	12		
2	10		
1.18	8		
0.6	6		
0.425	4		
0.3	2		
0.212	1		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	90
Sand	9
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

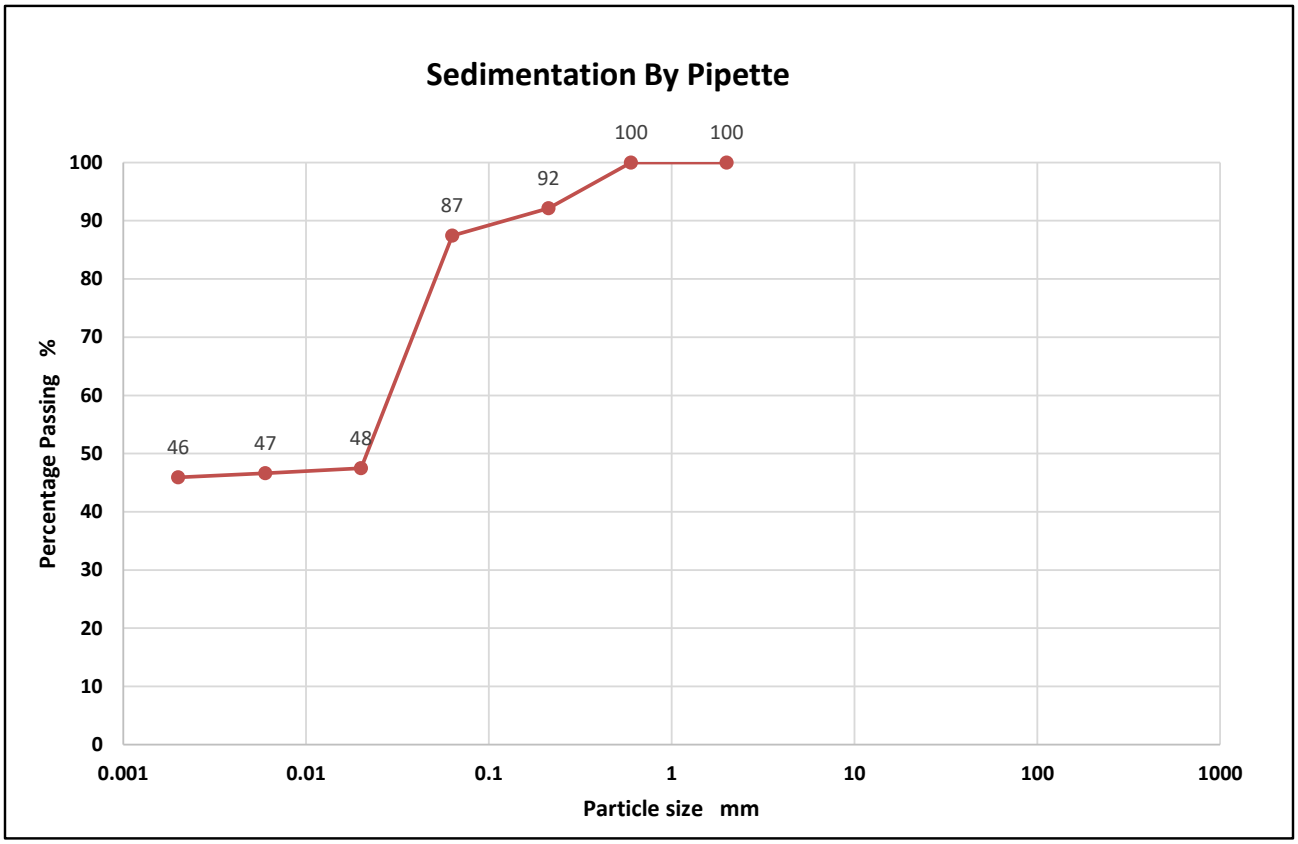
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	02-07-18	Emma Sharp	[redacted]
RO/MH	Approved	03-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	39466
		Borehole/Pit No.	BH4
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top	18.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	92
0.063	87

Sedimentation Analysis

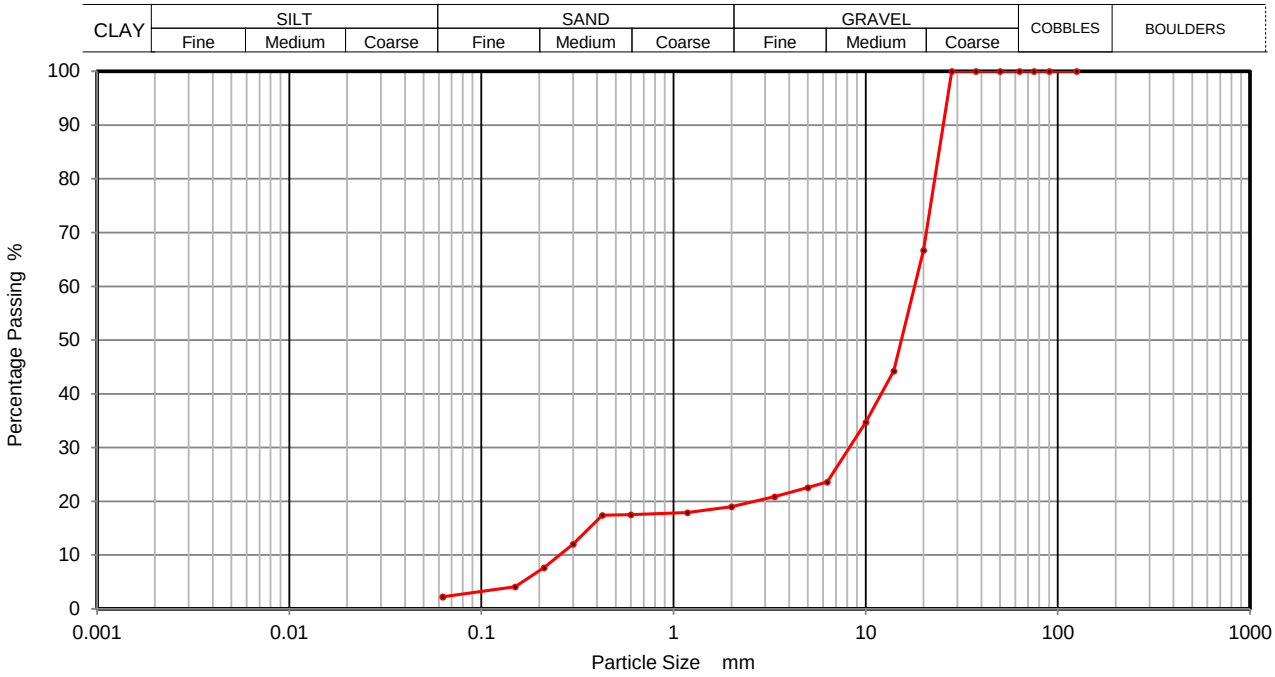
Particle Diameter	Percentage Passing
0.02	48
0.006	47
0.002	46

Soil Fraction	Total Percentage
Gravel	0
Sand	13
Silt	42
Clay	46

Operators	Checked	08-07-18	Emma Sharp
RO	Approved	09-07-18	Ben Sharp

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	21.00
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	67		
14	44		
10	35		
6.3	24		
5	23		
3.35	21		
2	19		
1.18	18		
0.6	18		
0.425	17		
0.3	12		
0.212	8		
0.15	4		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	81
Sand	17
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

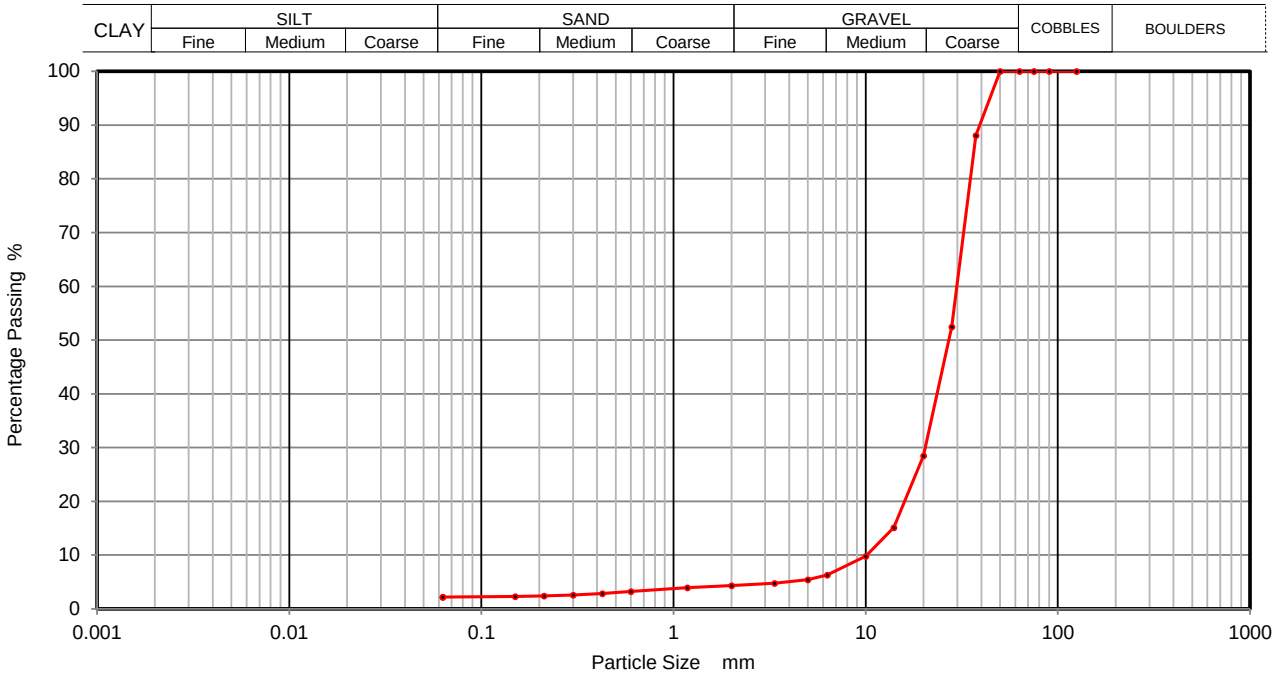
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	02-07-18	Emma Sharp	[redacted]
RO/MH	Approved	03-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse slightly sandy fine to coarse GRAVEL.	Depth Top	10.50
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	88		
28	52		
20	28		
14	15		
10	10		
6.3	6		
5	5		
3.35	5		
2	4		
1.18	4		
0.6	3		
0.425	3		
0.3	3		
0.212	2		
0.15	2		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	96
Sand	2
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

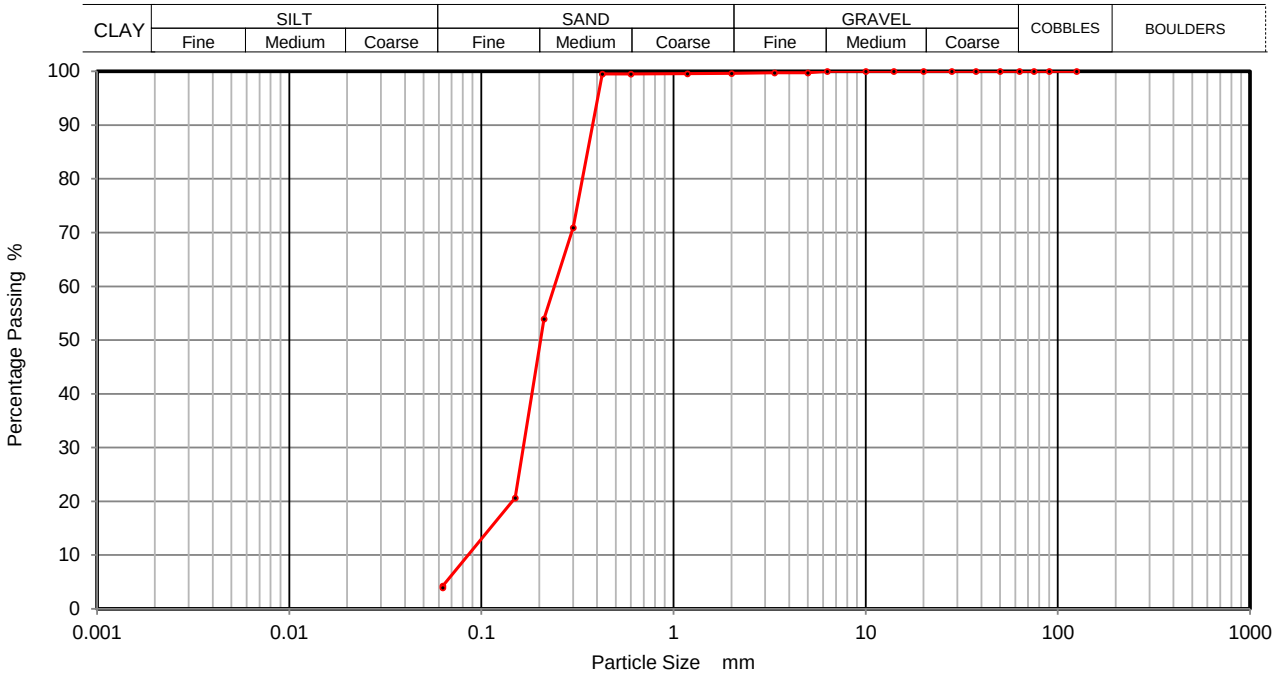
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to medium SAND.	Depth Top	22.50
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	71		
0.212	54		
0.15	21		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	96
Silt and Clay	4

Grading Analysis	
Uniformity Coefficient	

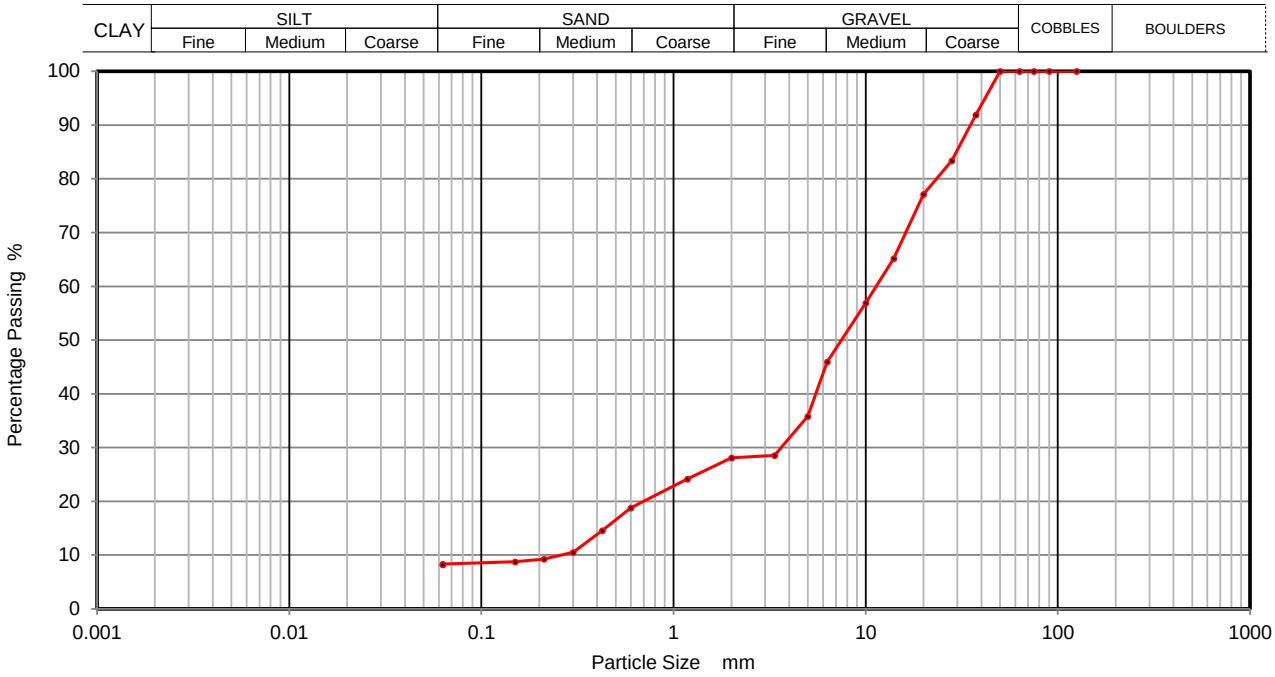
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	10.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	92		
28	83		
20	77		
14	65		
10	57		
6.3	46		
5	36		
3.35	29		
2	28		
1.18	24		
0.6	19		
0.425	15		
0.3	10		
0.212	9		
0.15	9		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	72
Sand	20
Silt and Clay	8

Grading Analysis	
Uniformity Coefficient	

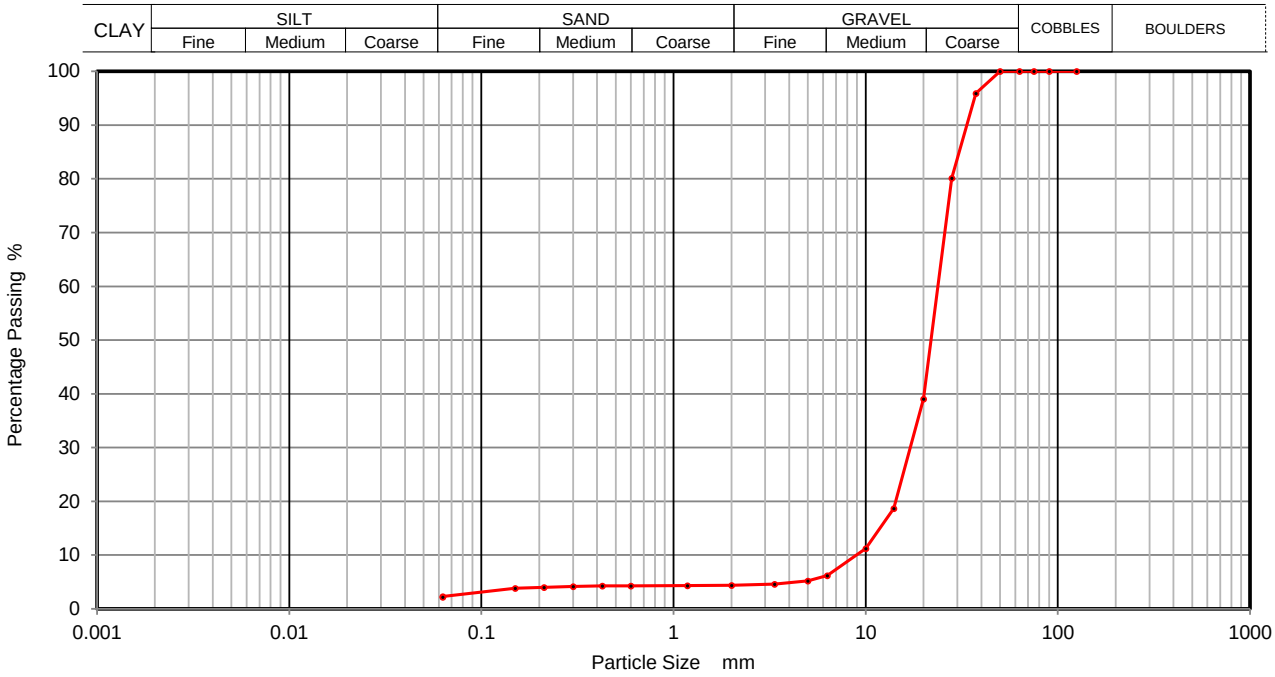
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse slightly sandy fine to coarse GRAVEL.	Depth Top	17.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	96		
28	80		
20	39		
14	19		
10	11		
6.3	6		
5	5		
3.35	5		
2	4		
1.18	4		
0.6	4		
0.425	4		
0.3	4		
0.212	4		
0.15	4		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	96
Sand	2
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

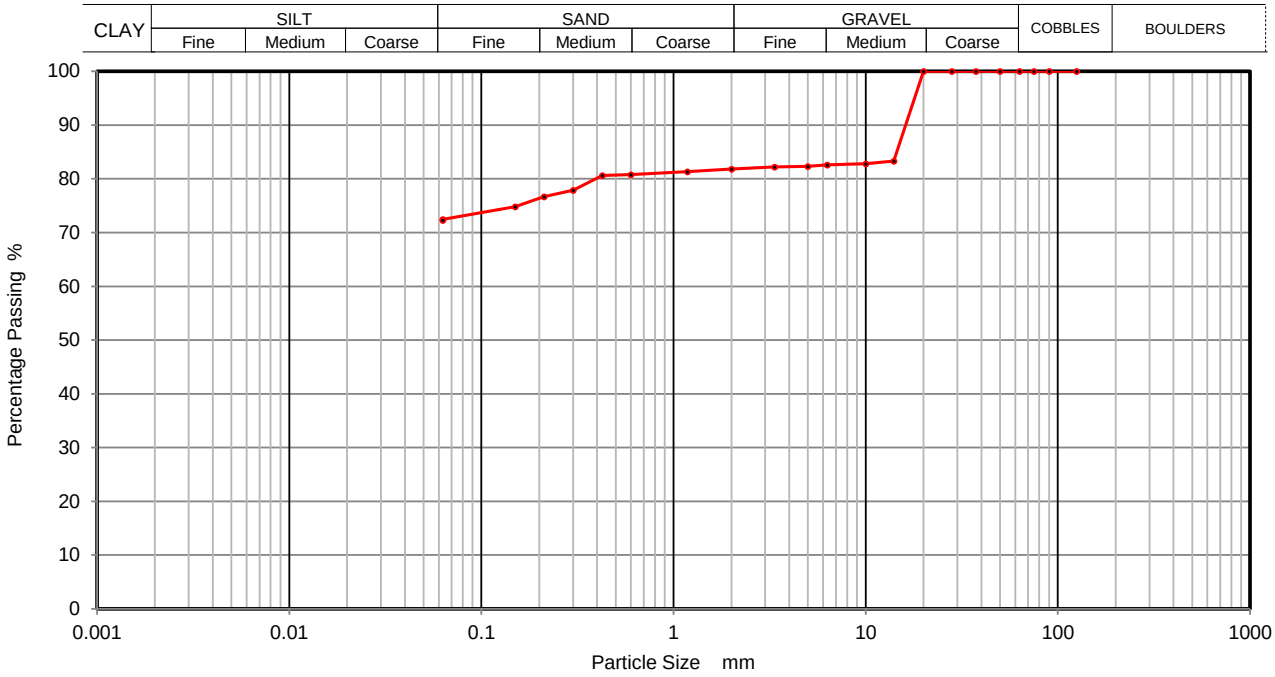
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Grey fine to coarse sandy fine to coarse gravelly silty CLAY.	Depth Top	21.50
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	83		
10	83		
6.3	83		
5	82		
3.35	82		
2	82		
1.18	81		
0.6	81		
0.425	81		
0.3	78		
0.212	77		
0.15	75		
0.063	72		

Sample Proportions	% dry mass
Cobbles	0
Gravel	18
Sand	10
Silt and Clay	72

Grading Analysis	
Uniformity Coefficient	

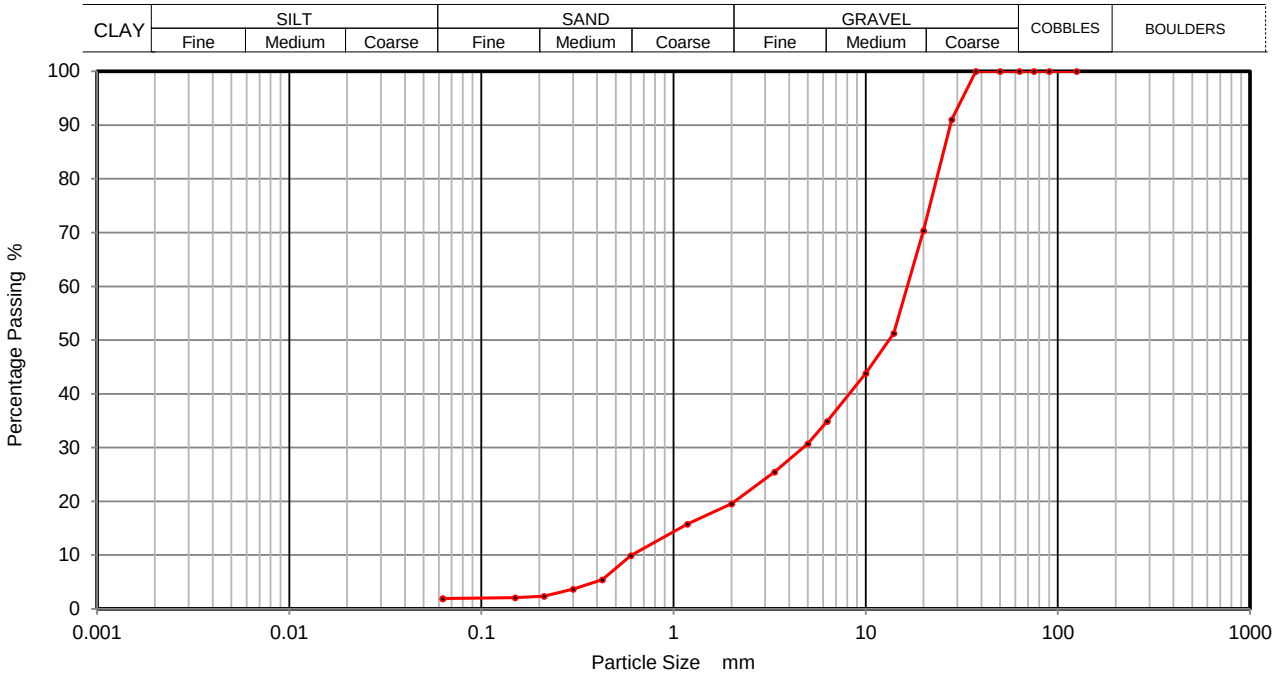
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	12.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	91		
20	70		
14	51		
10	44		
6.3	35		
5	31		
3.35	25		
2	20		
1.18	16		
0.6	10		
0.425	5		
0.3	4		
0.212	2		
0.15	2		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	80
Sand	18
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

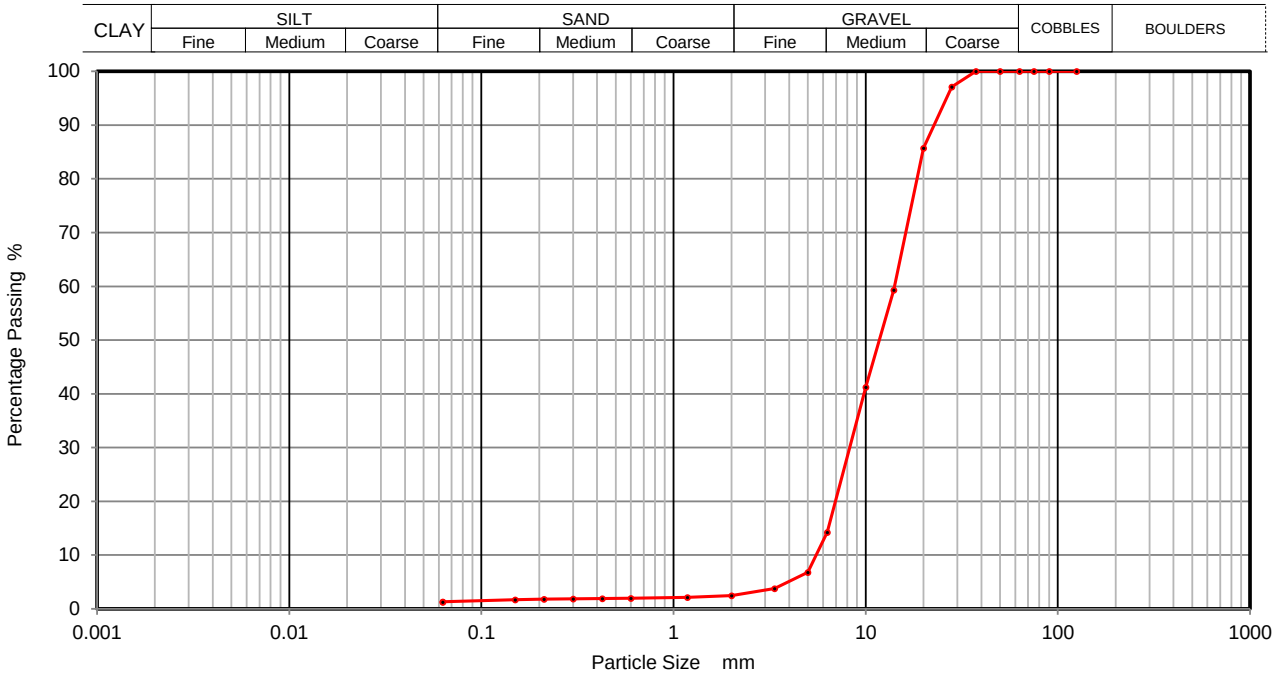
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to medium slightly sandy fine to coarse GRAVEL.	Depth Top	24.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	97		
20	86		
14	59		
10	41		
6.3	14		
5	7		
3.35	4		
2	2		
1.18	2		
0.6	2		
0.425	2		
0.3	2		
0.212	2		
0.15	2		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	98
Sand	1
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

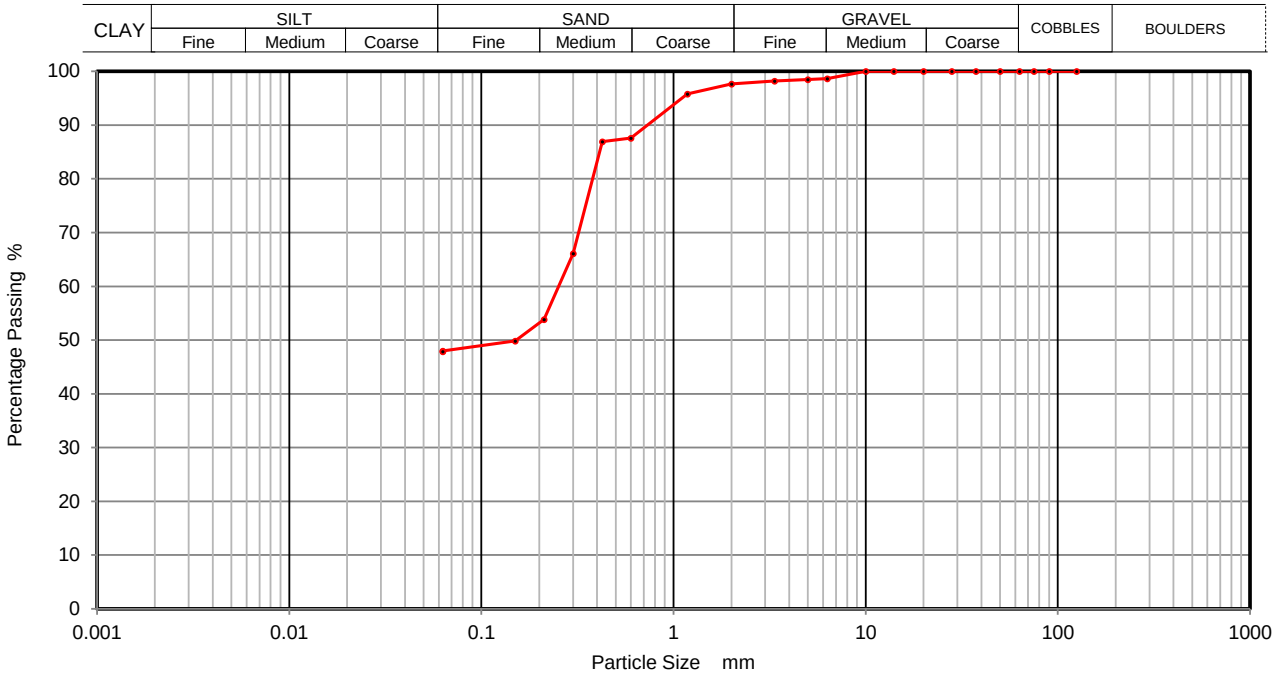
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH10A
Site Name	Riverside	Sample No.	
Soil Description	Grey fine slightly gravelly silty clayey fine to coarse SAND.	Depth Top	35.90
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	98		
2	98		
1.18	96		
0.6	88		
0.425	87		
0.3	66		
0.212	54		
0.15	50		
0.063	48		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	50
Silt and Clay	48

Grading Analysis	
Uniformity Coefficient	

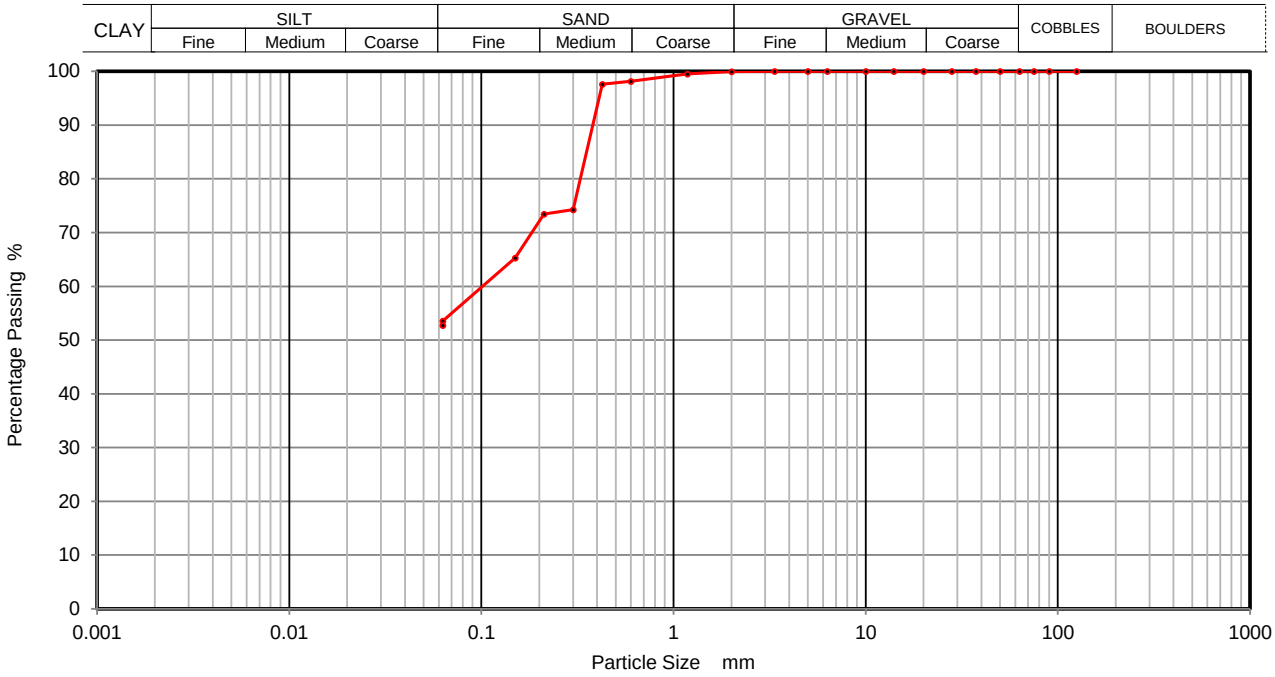
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH10A
Site Name	**Riverside**	Sample No.	
Soil Description	Grey fine to coarse sandy silty CLAY.	Depth Top	46.40
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	98		
0.3	74		
0.212	73		
0.15	65		
0.063	54		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	46
Silt and Clay	54

Grading Analysis	
Uniformity Coefficient	

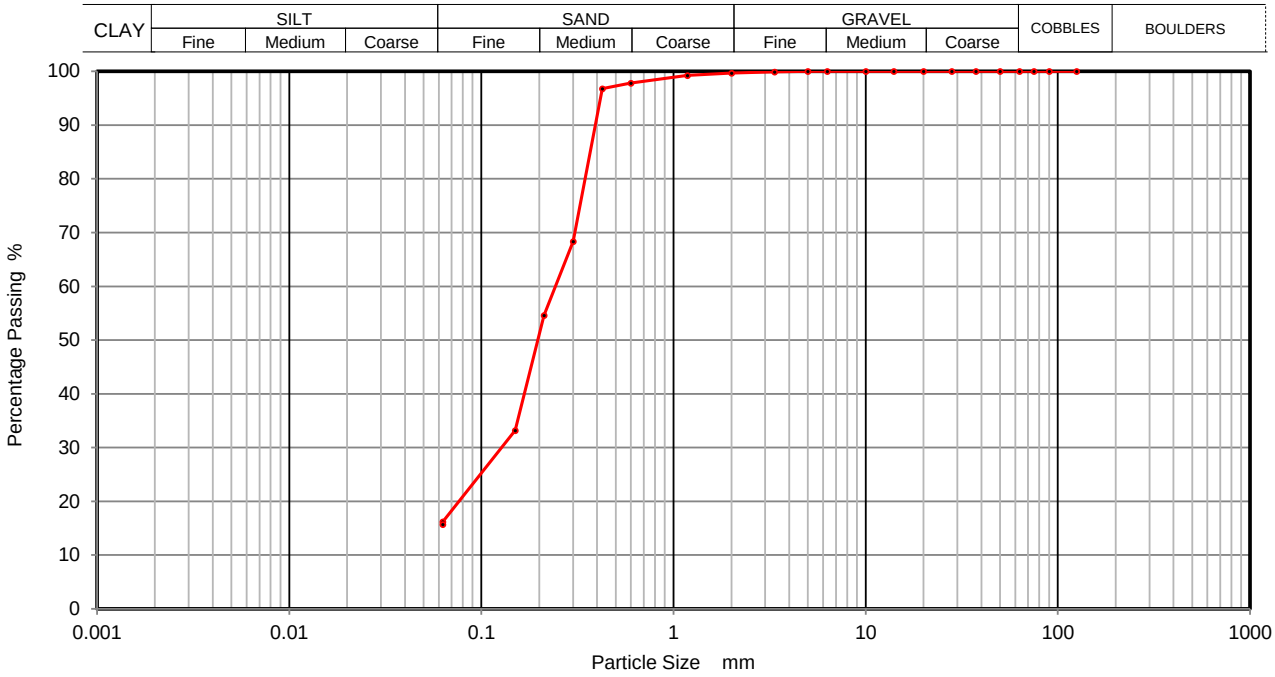
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH10A
Site Name	Riverside	Sample No.	
Soil Description	Brown silty clayey fine to coarse SAND.	Depth Top	49.40
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	97		
0.3	68		
0.212	55		
0.15	33		
0.063	16		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	84
Silt and Clay	16

Grading Analysis	
Uniformity Coefficient	

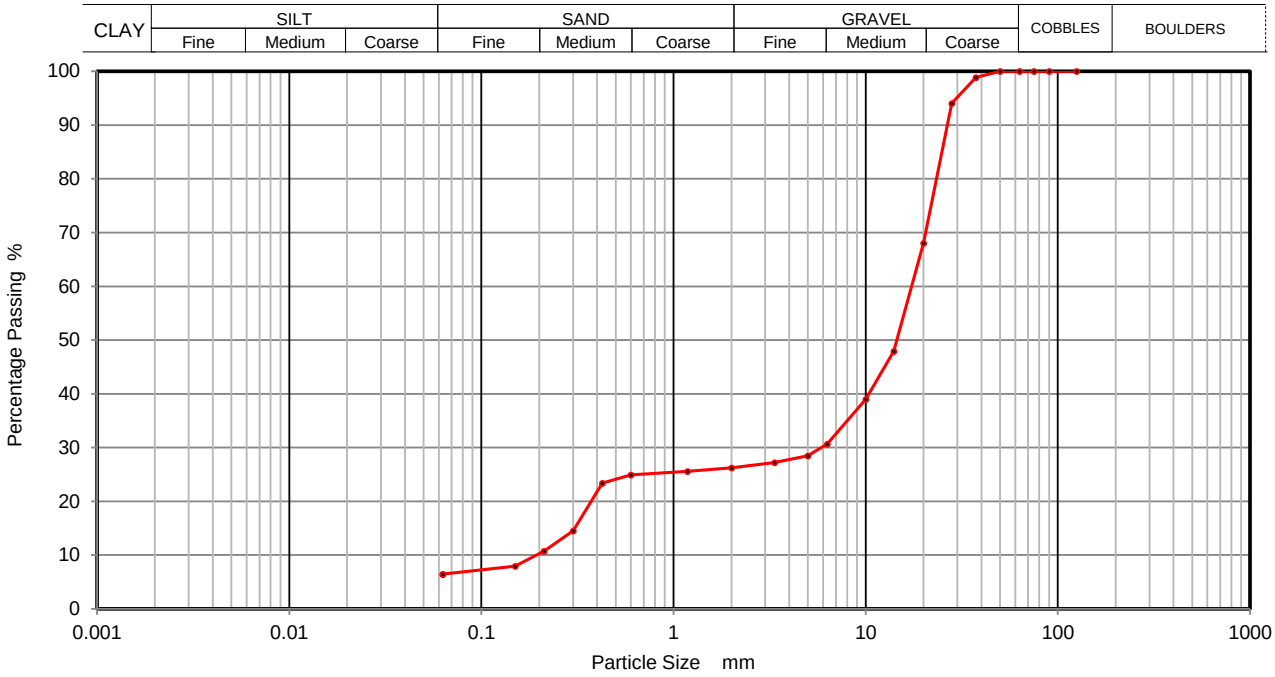
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Grey silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	31.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	99		
28	94		
20	68		
14	48		
10	39		
6.3	31		
5	28		
3.35	27		
2	26		
1.18	26		
0.6	25		
0.425	23		
0.3	15		
0.212	11		
0.15	8		
0.063	6		

Sample Proportions	% dry mass
Cobbles	0
Gravel	74
Sand	20
Silt and Clay	6

Grading Analysis	
Uniformity Coefficient	

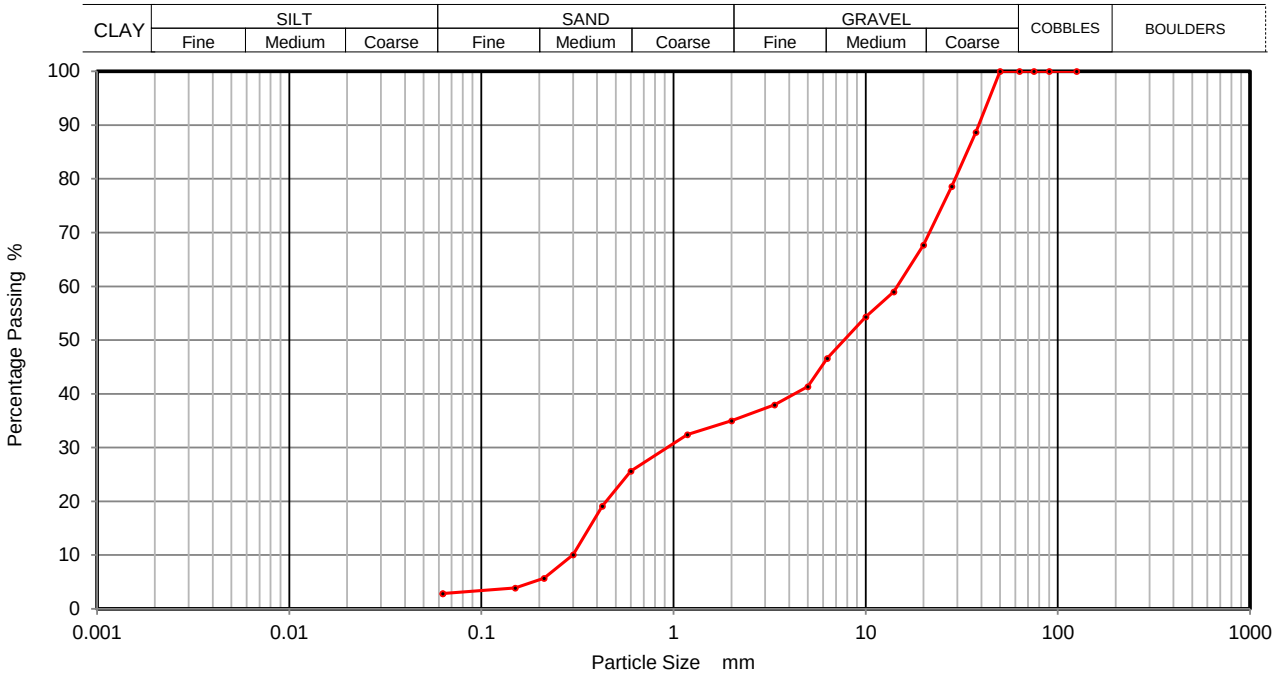
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH12
Site Name	Riverside	Sample No.	
Soil Description	Grey silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	10.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	89		
28	79		
20	68		
14	59		
10	54		
6.3	47		
5	41		
3.35	38		
2	35		
1.18	32		
0.6	26		
0.425	19		
0.3	10		
0.212	6		
0.15	4		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	65
Sand	32
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

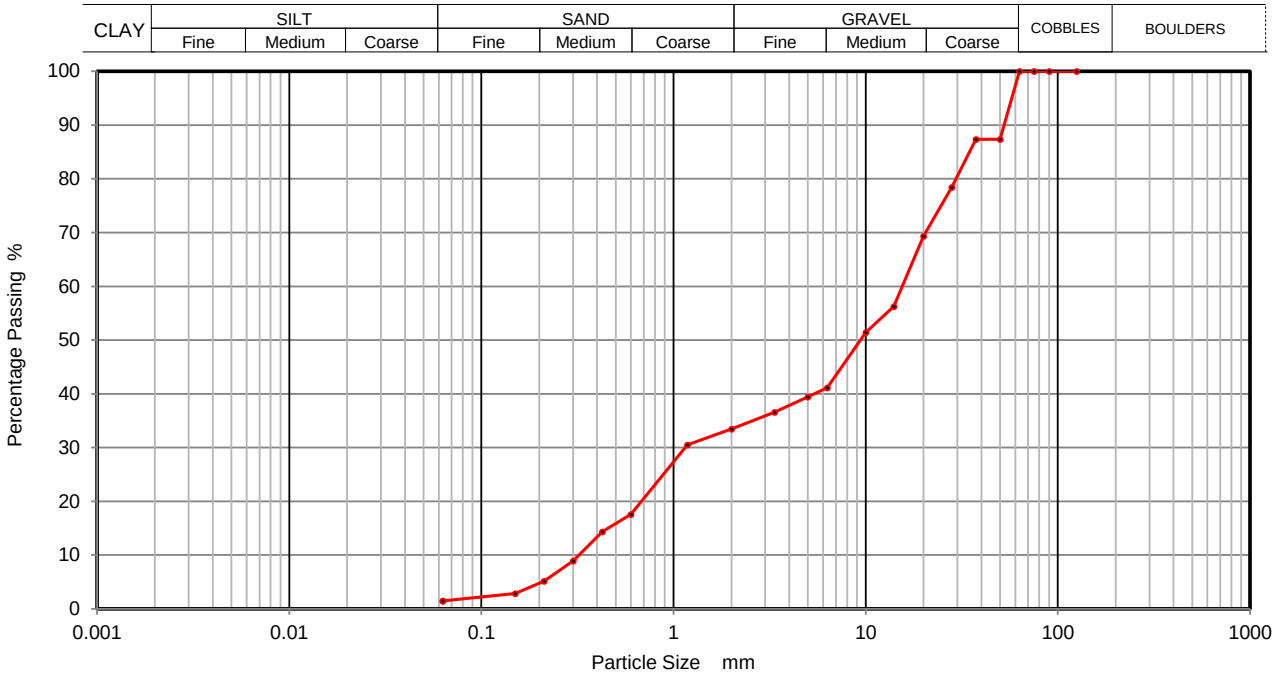
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH12
Site Name	Riverside	Sample No.	
Soil Description	Grey silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	17.50
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	87		
37.5	87		
28	78		
20	69		
14	56		
10	51		
6.3	41		
5	39		
3.35	37		
2	33		
1.18	30		
0.6	18		
0.425	14		
0.3	9		
0.212	5		
0.15	3		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	67
Sand	32
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

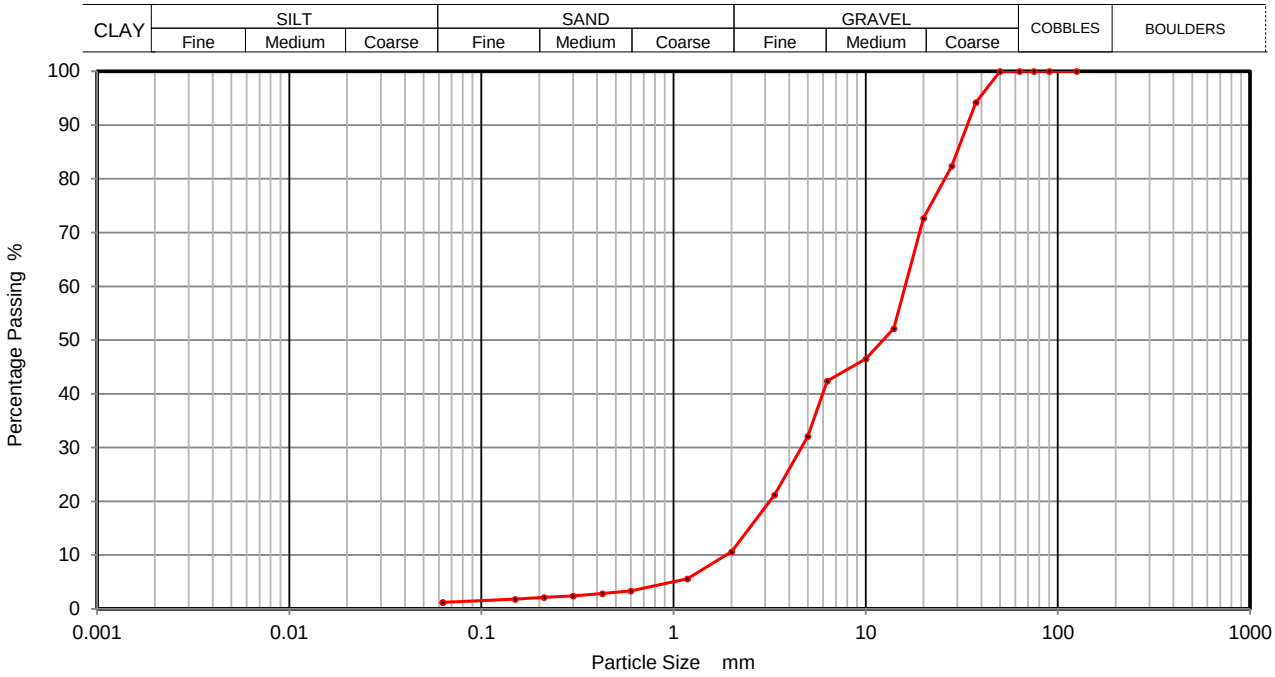
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH12
Site Name	Riverside	Sample No.	
Soil Description	Grey silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	25.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	94		
28	82		
20	73		
14	52		
10	46		
6.3	42		
5	32		
3.35	21		
2	11		
1.18	6		
0.6	3		
0.425	3		
0.3	2		
0.212	2		
0.15	2		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	89
Sand	10
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

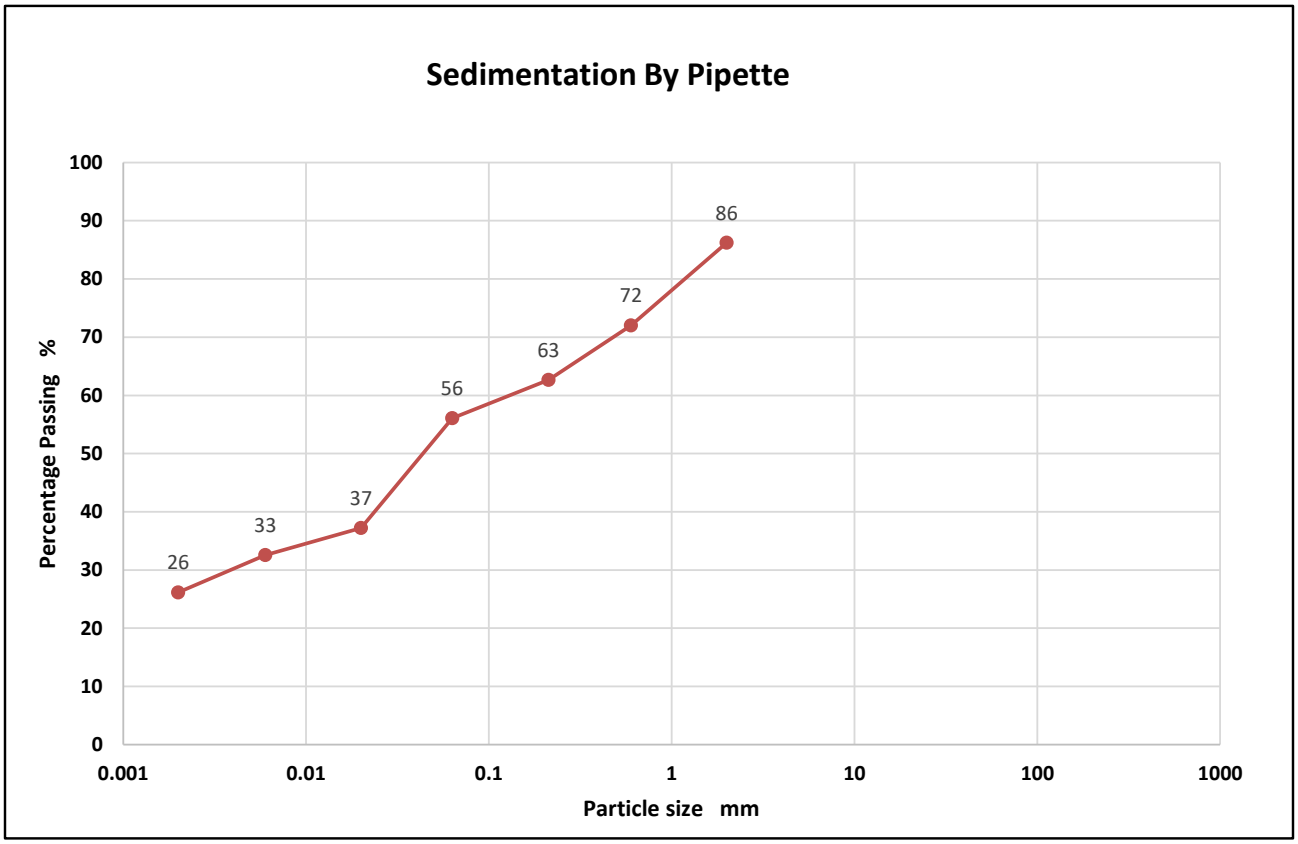
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	39466
		Borehole/Pit No.	BH12
Site Name	Riverside	Sample No.	
Soil Description	Grey gravelly clayey silty SAND.	Depth Top	26.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	86
0.60	72
0.212	63
0.063	56

Sedimentation Analysis

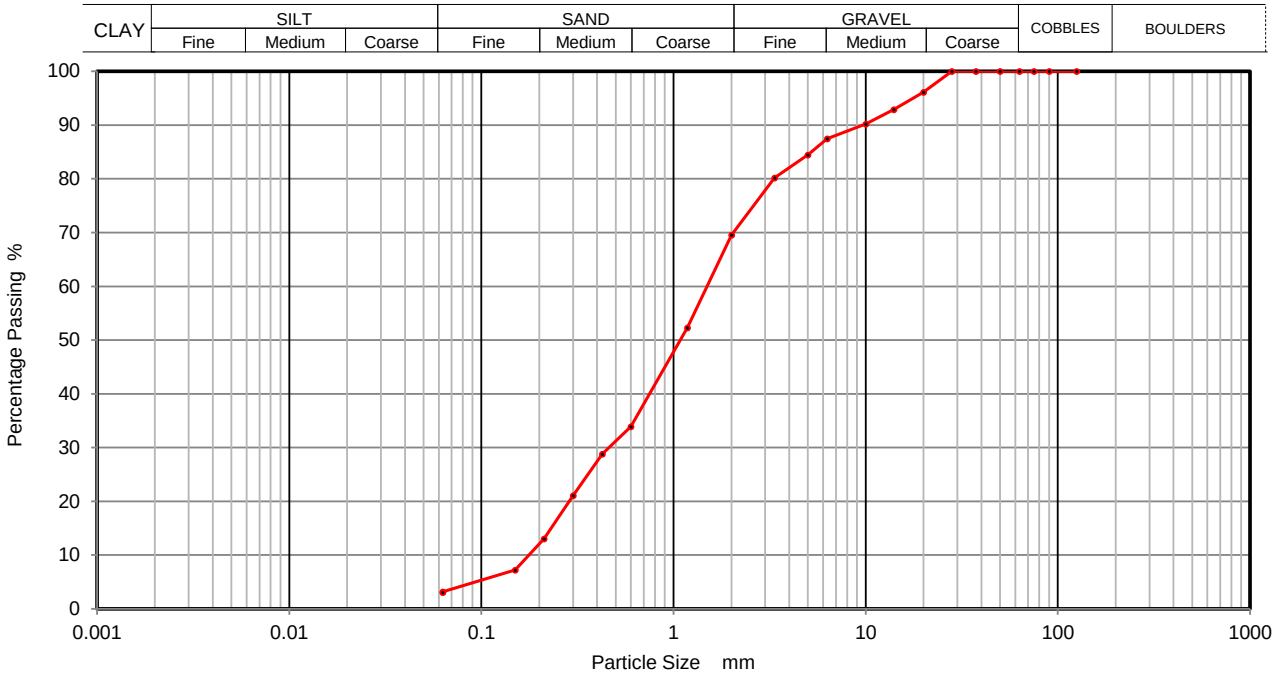
Particle Diameter	Percentage Passing
0.02	37
0.006	33
0.002	26

Soil Fraction	Total Percentage
Gravel	14
Sand	30
Silt	30
Clay	26

Operators	Checked	08-07-18	Emma Sharp	[redacted]
RO	Approved	09-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH12
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse gravelly fine to coarse SAND.	Depth Top	29.00
		Depth Base	
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	93		
10	90		
6.3	87		
5	84		
3.35	80		
2	70		
1.18	52		
0.6	34		
0.425	29		
0.3	21		
0.212	13		
0.15	7		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	30
Sand	67
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

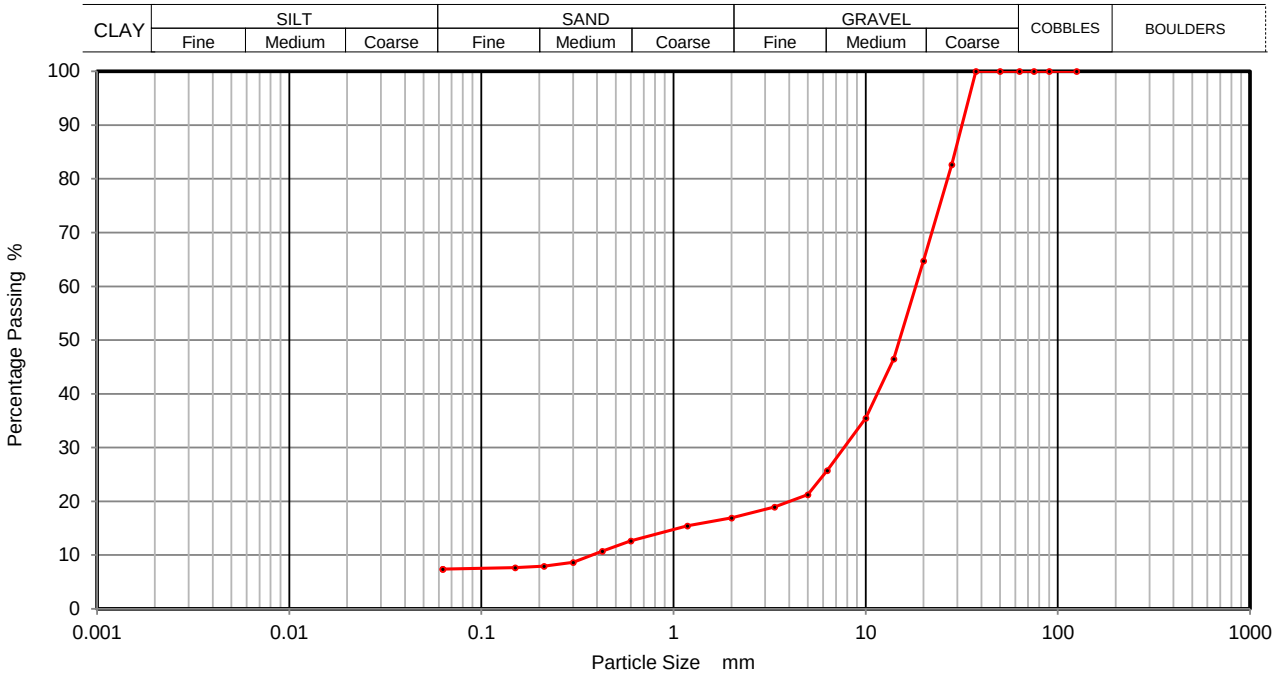
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	9.80
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	83		
20	65		
14	47		
10	35		
6.3	26		
5	21		
3.35	19		
2	17		
1.18	15		
0.6	13		
0.425	11		
0.3	9		
0.212	8		
0.15	8		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	83
Sand	10
Silt and Clay	7

Grading Analysis	
Uniformity Coefficient	

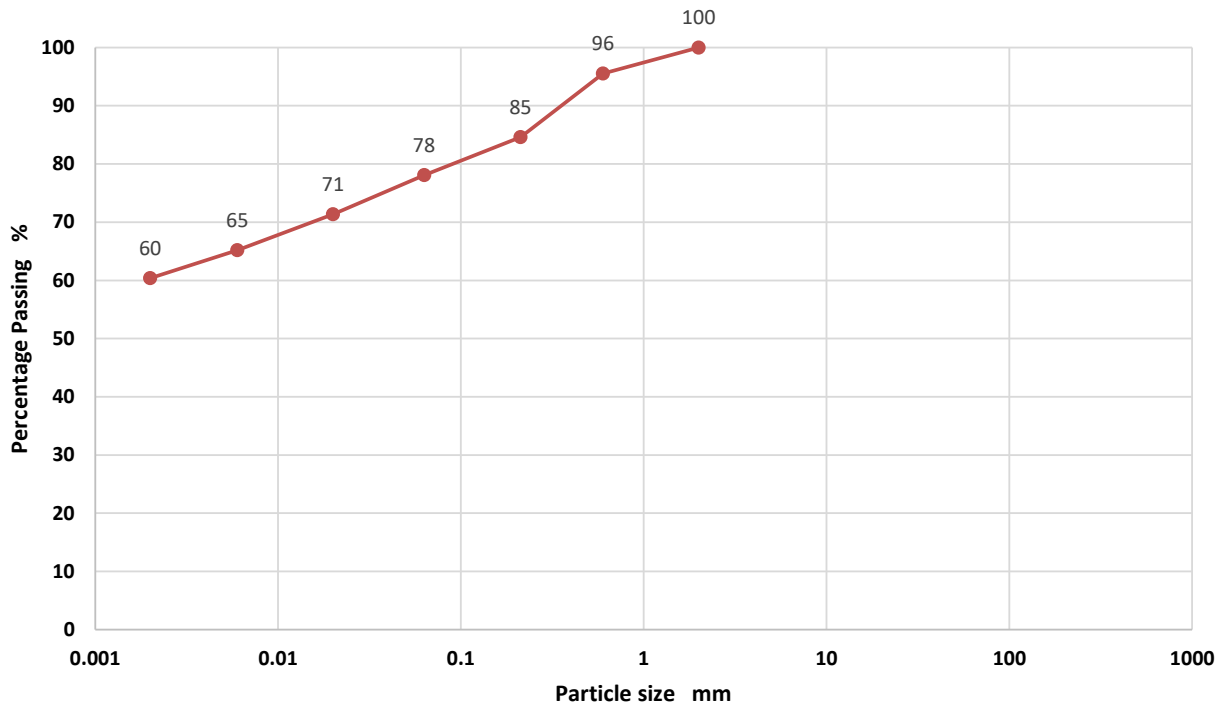
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	04-07-18	Emma Sharp	[redacted]
RO/MH	Approved	05-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Sedimentation By Pipette Analysis BS 1377 Part 2:1990 Clause 9.4	Contract Number	39466
		Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Brown silty sandy CLAY.	Depth Top	16.00
		Depth Base	
		Sample Type	B



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	96
0.212	85
0.063	78

Sedimentation Analysis

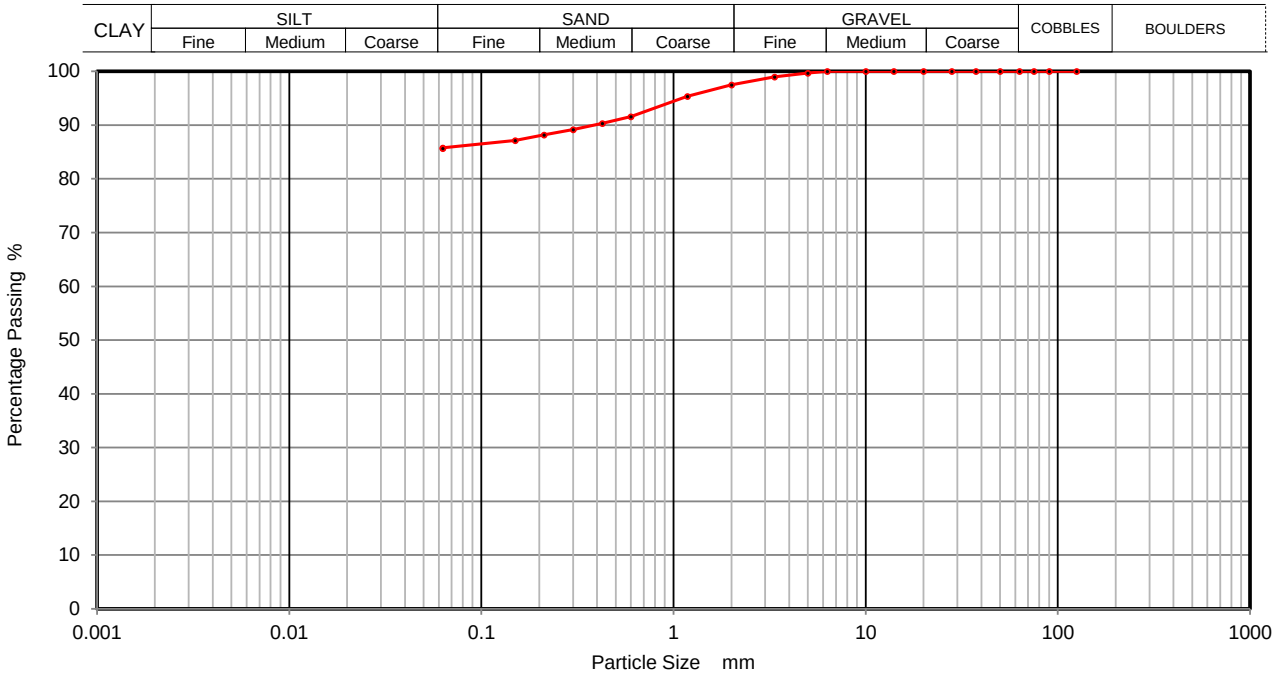
Particle Diameter	Percentage Passing
0.02	71
0.006	65
0.002	60

Soil Fraction	Total Percentage
Gravel	0
Sand	22
Silt	18
Clay	60

Operators	Checked	08-07-18	Emma Sharp	[redacted]
RO	Approved	09-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	39466
		Borehole/Pit No.	TP02
Site Name	**Riverside**	Sample No.	
Soil Description	Brown fine slightly gravelly fine to coarse sandy silty CLAY.	Depth Top	1.30
		Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	
90	100	0.0060	
75	100	0.0019	
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	97		
1.18	95		
0.6	92		
0.425	90		
0.3	89		
0.212	88		
0.15	87		
0.063	86		

Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	11
Silt and Clay	86

Grading Analysis	
Uniformity Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	01-07-18	Emma Sharp	[redacted]
RO/MH	Approved	02-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Certificate of Chemical Analysis (BRE BR 279)	Contract Number	39466
		Client Reference	3765
Client	TerraConsult	**Date Received**	
Site Name	Riverside EFW	**Date Started**	20-06-18
		Date Completed	27-06-18
		No. of Samples	8

Hole Number	Sample Number	Sample Type	Depth (m)			Acid Soluble Sulphate	Aqueous Extract Sulphate	Chloride Content	Ph Value	Total Sulphur	Magnesium	Nitrate
BH02		B	0.50	-		0.27	0.03		6.88	0.11		
BH02		W	4.62	-			0.05		6.73			
BH02		W	5.35	-			0.04		6.93			
BH04		B	1.00	-		0.27	0.03		7.11	0.11		
BH08		W	10.00	-			0.05		6.36			
BH11		W	5.73	-			0.03		6.68			
BH12		B	0.60	-		0.31	0.04		7.06	0.13		
BH12		W	2.00	-			0.04		6.88			
				-								
				-								
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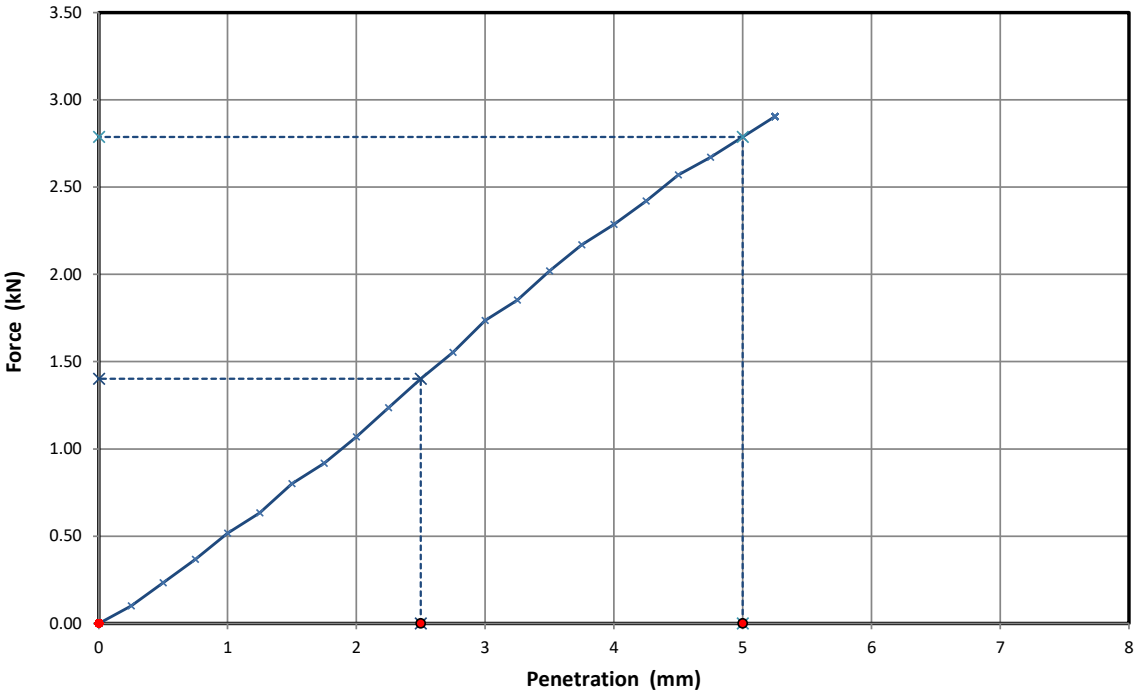
Key	**Reported As**
Acid Soluble Sulphate	% SO_4
Aqueous Extract Sulphate	g/l SO_4
Chloride Content (Semi)	mg Cl/l
PH Value	@ 25°
Total Sulphur	% S
Magnesium	g/l SO_4
Nitrate	NO_3 mg/l

Remarks

NCP = No Chloride Present

Test Operator	Checked and Authorised by		Ben Sharp	[redacted]
Darren Bourne	Date	27-06-18		

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	39466
		Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown fine to medium gravelly silty CLAY	Depth Top	1.00
Compaction Method	2.5 Kg Rammer	Depth Base	
Retained 20mm	11.5%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	3.6
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	2.12
Dry Density (Mg/m3)	2.05

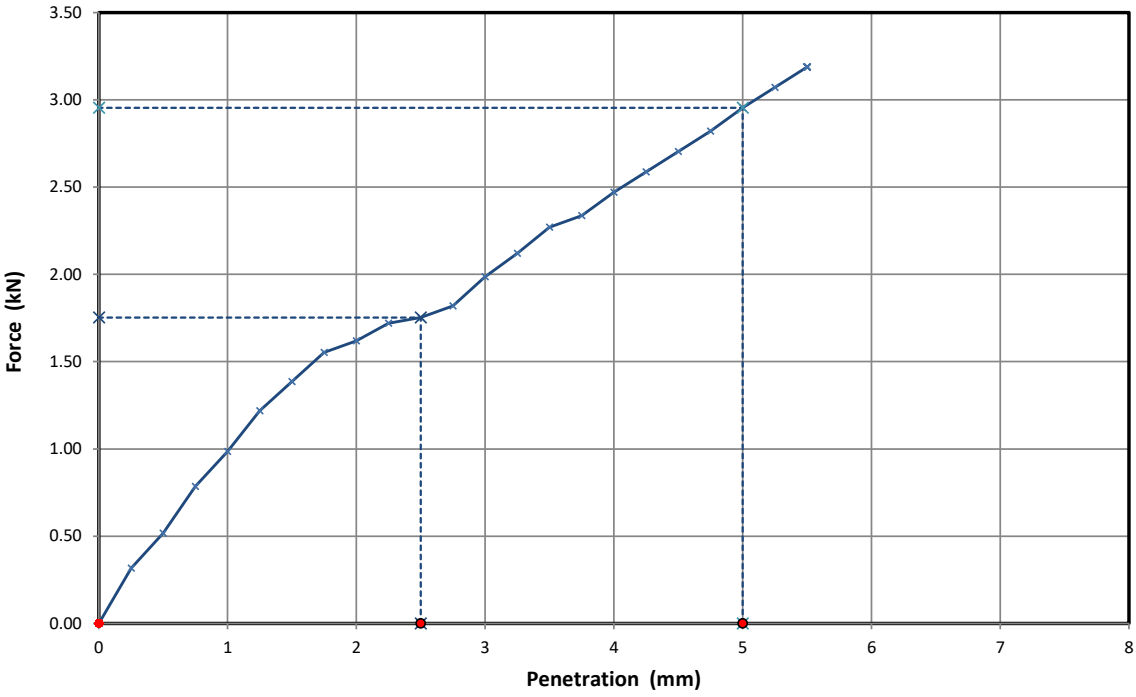
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	10.6	2.5mm Bottom	
5mm Top	13.9	5mm Bottom	
CBR Value %	**13.9**	**CBR Value %**	

Operators	Checked	05-07-18	Sean Penn
RO/MH	Approved	06-07-18	Ben Sharp

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	39466
		Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown fine to medium gravelly sandy silty CLAY	Depth Top	12.00
Compaction Method	2.5 Kg Rammer	Depth Base	12.45
Retained 20mm	9%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	14
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	2.08
Dry Density (Mg/m3)	1.83

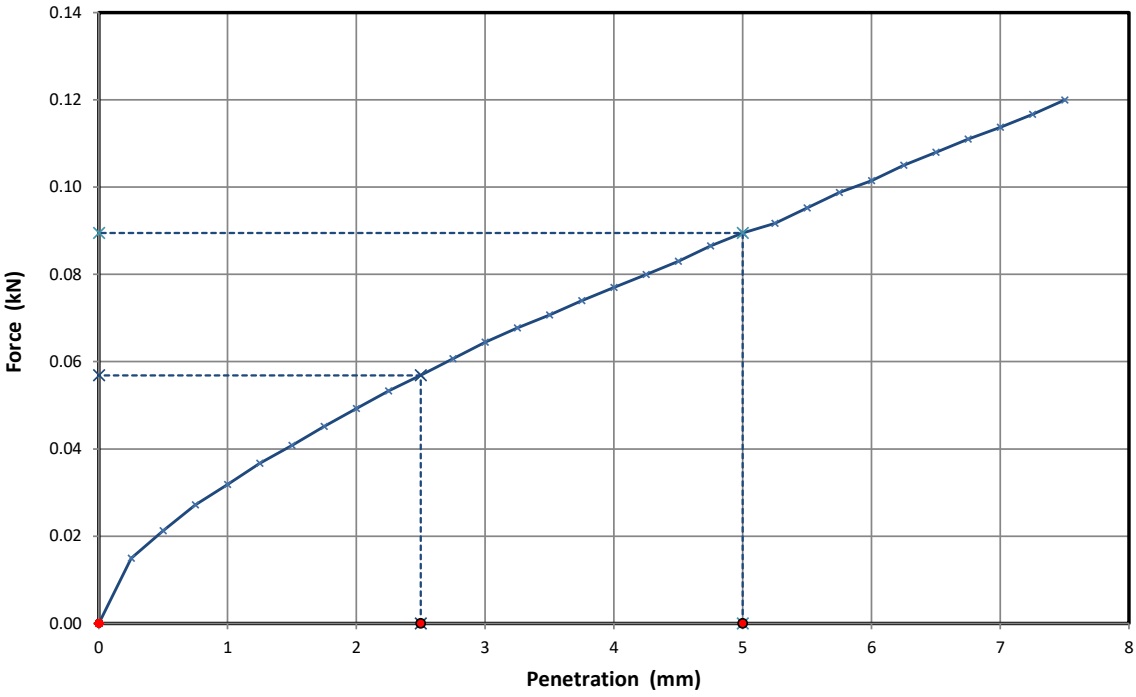
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	13.3	2.5mm Bottom	
5mm Top	14.8	5mm Bottom	
CBR Value %	**14.8**	**CBR Value %**	

Operators	Checked	05-07-18	Sean Penn
RO/MH	Approved	06-07-18	Ben Sharp

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	39466
		Borehole/Pit No.	BH03
Site Name	Riverside	Sample No.	
Soil Description	Black silty CLAY with organic materials.	Depth Top	5.50
Compaction Method	2.5 Kg Rammer	Depth Base	
Retained 20mm	0%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	64
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	1.66
Dry Density (Mg/m3)	1.01

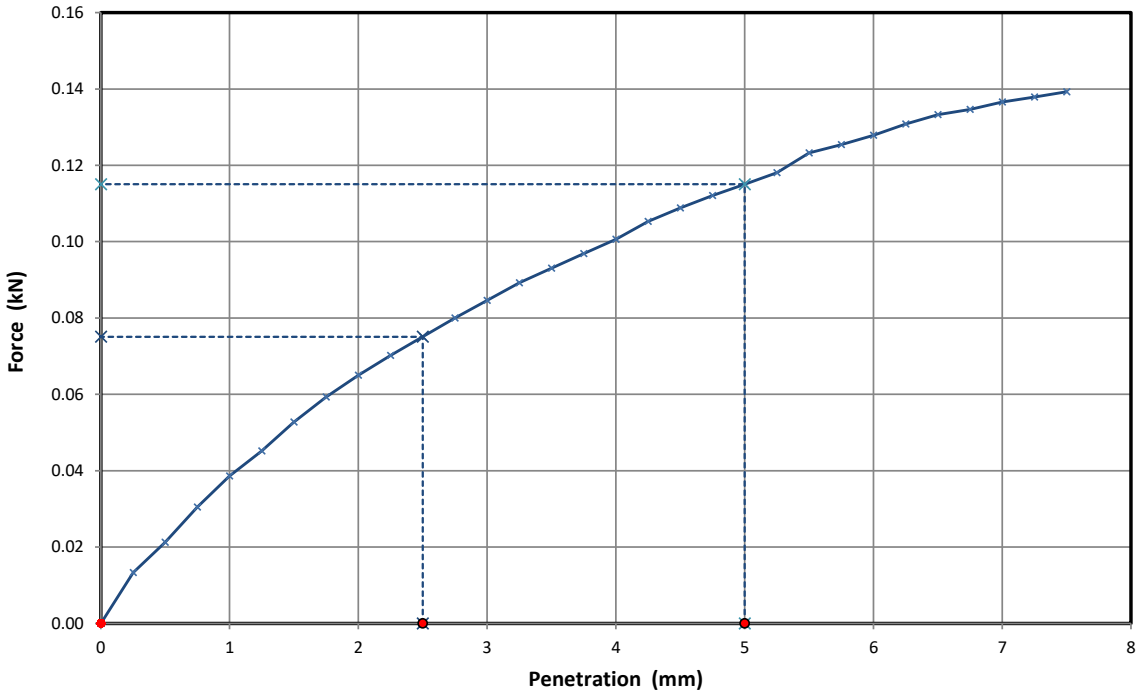
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	0.4	2.5mm Bottom	
5mm Top	0.4	5mm Bottom	
CBR Value %	**0.4**	**CBR Value %**	

Operators	Checked	05-07-18	Sean Penn
RO/MH	Approved	06-07-18	Ben Sharp

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	39466
		Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Black silty CLAY with organic materials.	Depth Top	6.00
Compaction Method	2.5 Kg Rammer	Depth Base	
Retained 20mm	0%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	43
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	1.26
Dry Density (Mg/m3)	0.88

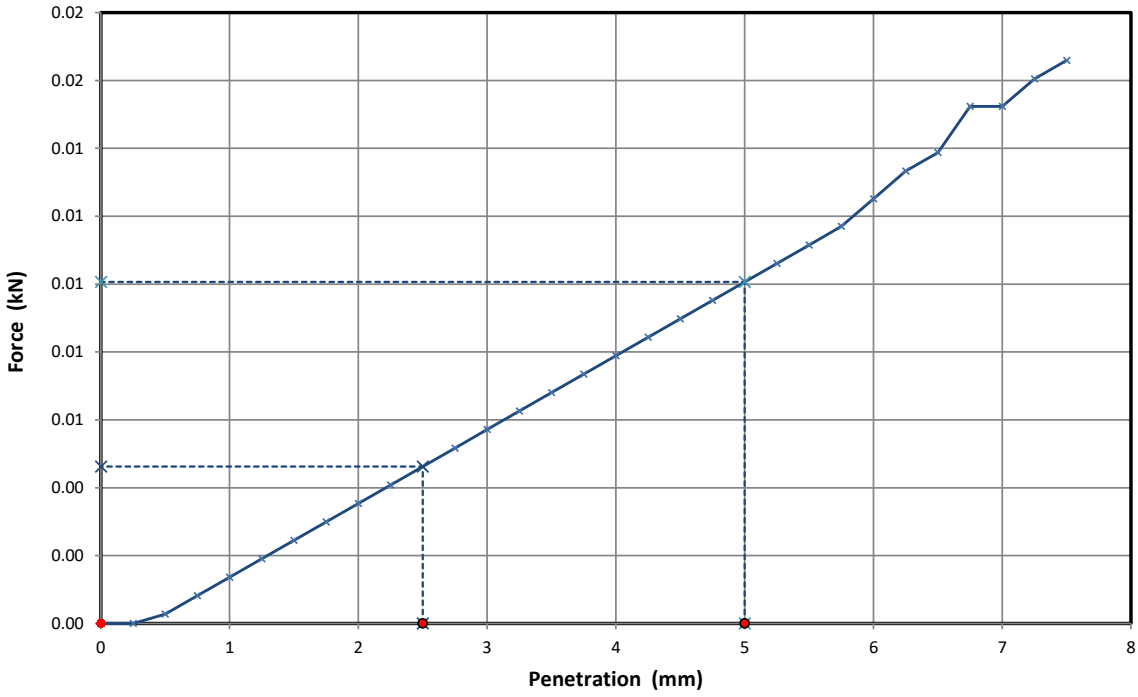
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	0.6	2.5mm Bottom	
5mm Top	0.6	5mm Bottom	
CBR Value %	**0.6**	**CBR Value %**	

Operators	Checked	05-07-18	Sean Penn	[redacted]
RO/MH	Approved	06-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	39466
		Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Light brown fine to medium gravelly silty CLAY.	Depth Top	10.50
Compaction Method	2.5 Kg Rammer	Depth Base	
Retained 20mm	17.5%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	8.0
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	1.97
Dry Density (Mg/m3)	1.83

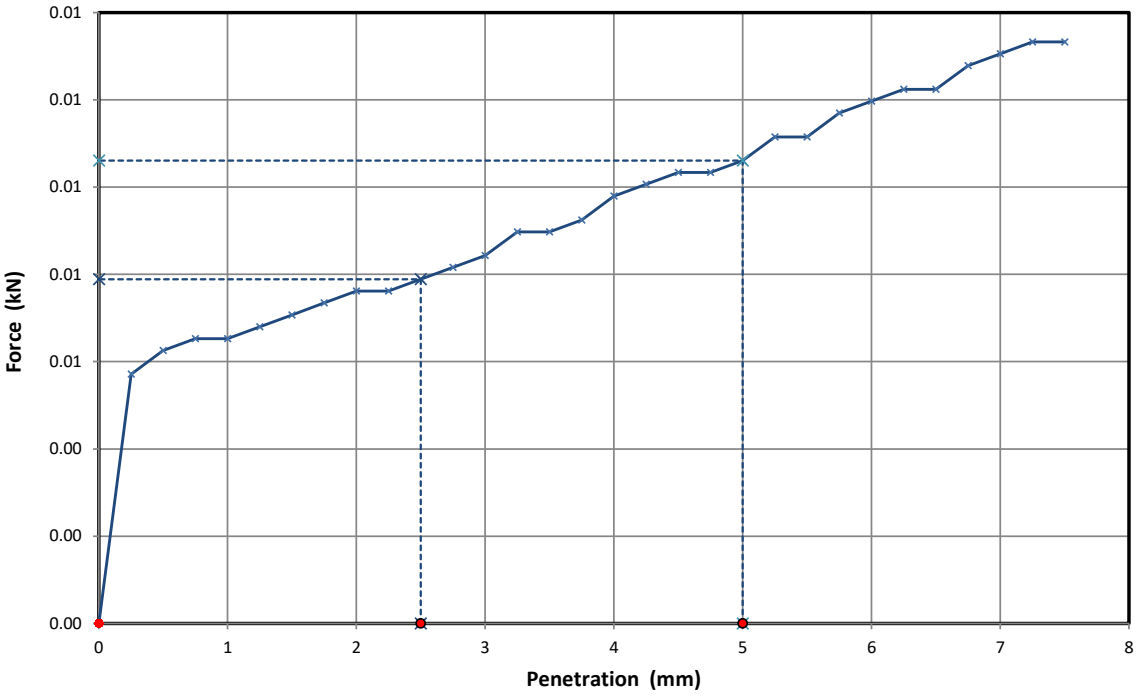
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	0.0	2.5mm Bottom	
5mm Top	0.1	5mm Bottom	
CBR Value %	**0.1**	**CBR Value %**	

Operators	Checked	05-07-18	Sean Penn	[redacted]
RO/MH	Approved	06-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	39466
		Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown fine to medium gravelly silty CLAY.	Depth Top	10.00
Compaction Method	2.5 Kg Rammer	Depth Base	
Retained 20mm	17.5%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	20
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	1.97
Dry Density (Mg/m3)	1.64

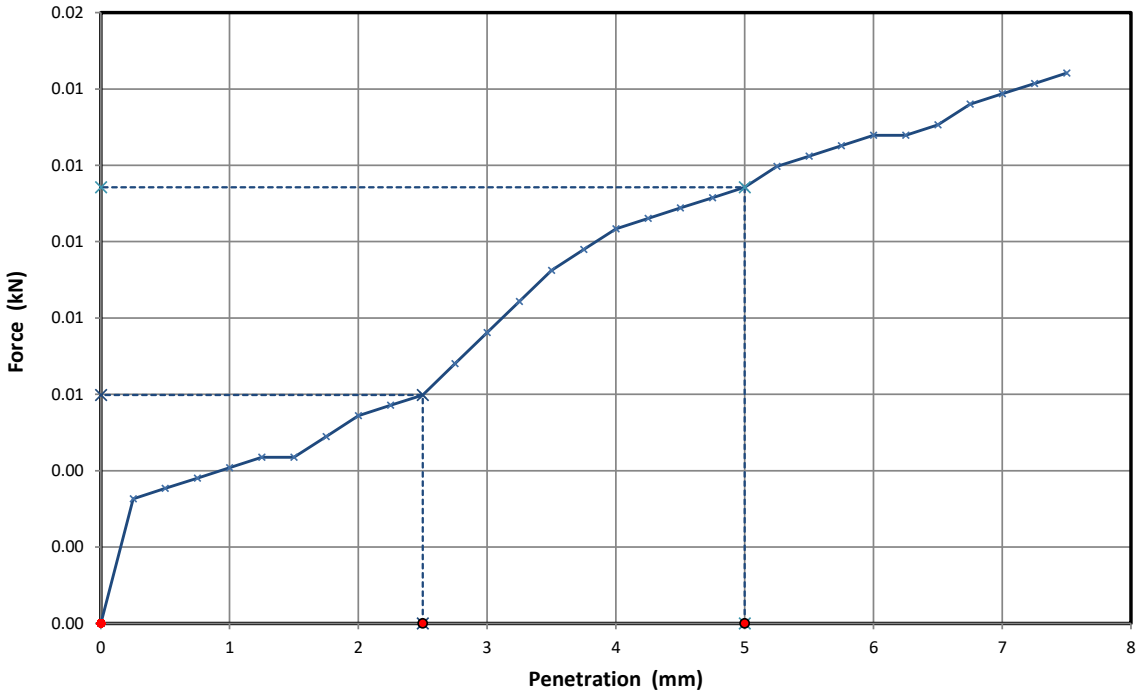
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	0.1	2.5mm Bottom	
5mm Top	0.1	5mm Bottom	
CBR Value %	**0.1**	**CBR Value %**	

Operators	Checked	05-07-18	Sean Penn	[redacted]
RO/MH	Approved	06-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	39466
		Borehole/Pit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown fine to medium gravelly silty CLAY.	Depth Top	10.50
Compaction Method	2.5 Kg Rammer	Depth Base	11.00
Retained 20mm	4.6%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	21
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	2.10
Dry Density (Mg/m3)	1.73

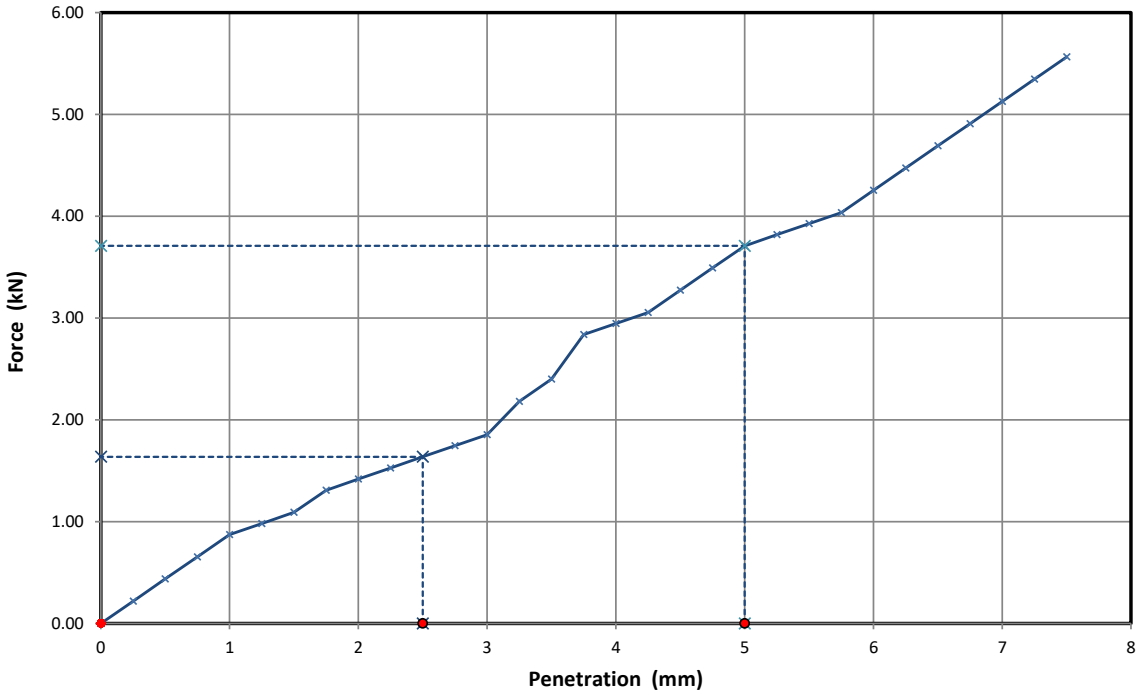
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	0.0	2.5mm Bottom	
5mm Top	0.1	5mm Bottom	
CBR Value %	**0.1**	**CBR Value %**	

Operators	Checked	05-07-18	Sean Penn	[redacted]
RO/MH	Approved	06-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	California Bearing Ratio BS 1377: Part 4: 1990 Clause 7	Contract Number	39466
		Borehole/Pit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Black silty clayey fine to coarse GRAVEL.	Depth Top	21.00
Compaction Method	2.5 Kg Rammer	Depth Base	
Retained 20mm	16.2%	Sample Type	B



Initial Sample Conditions	
Moisture Content (%)	1.4
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	1.88
Dry Density (Mg/m3)	1.86

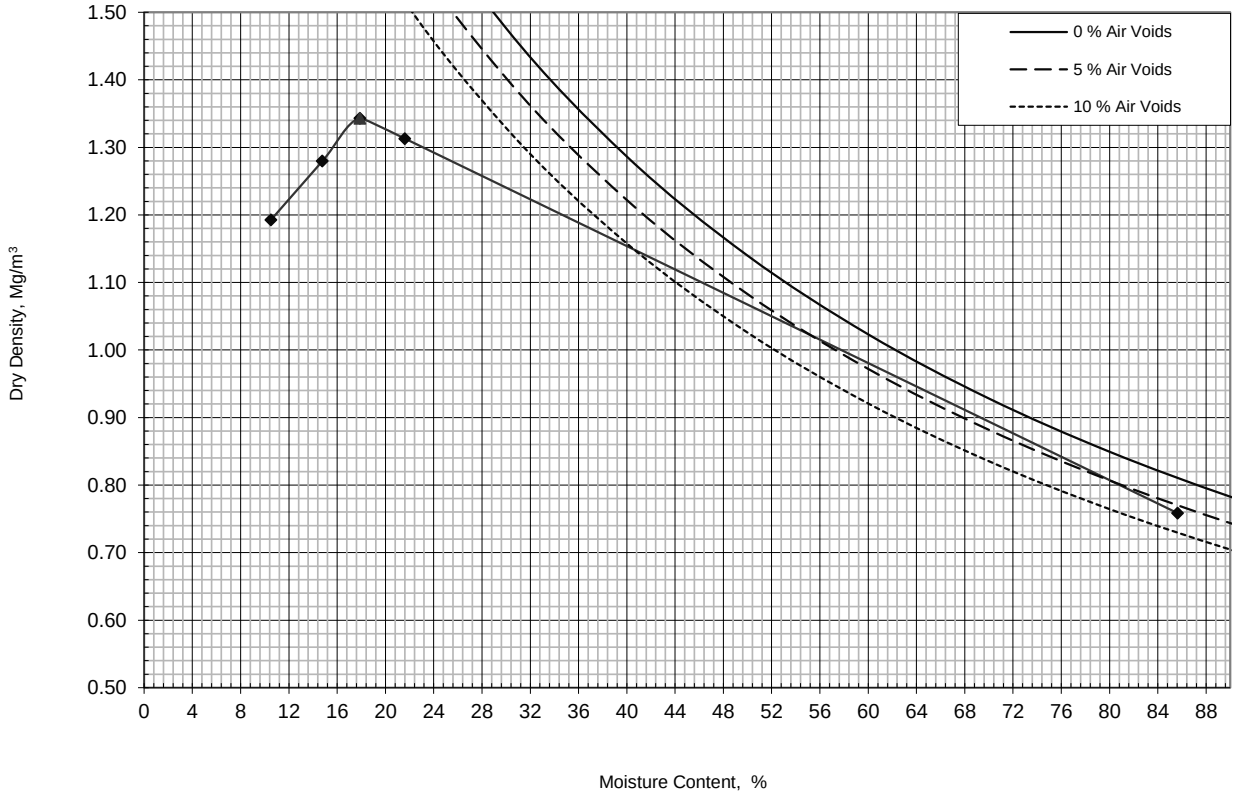
Specified Testing Parameters	
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

CBR Test Values			
2.5mm Top	12.4	2.5mm Bottom	
5mm Top	18.5	5mm Bottom	
CBR Value %	**18.5**	**CBR Value %**	

Operators	Checked	05-07-18	Sean Penn	[redacted]
RO/MH	Approved	06-07-18	Ben Sharp	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	39466
		Borehole / Pit No	BH03
Site Name	Littlefield	Sample No	
Soil Description	Black silty CLAY with organic material.	Depth Top	8.50
Compaction Method	4.5 Kg Rammer	Depth Base	8.95
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B



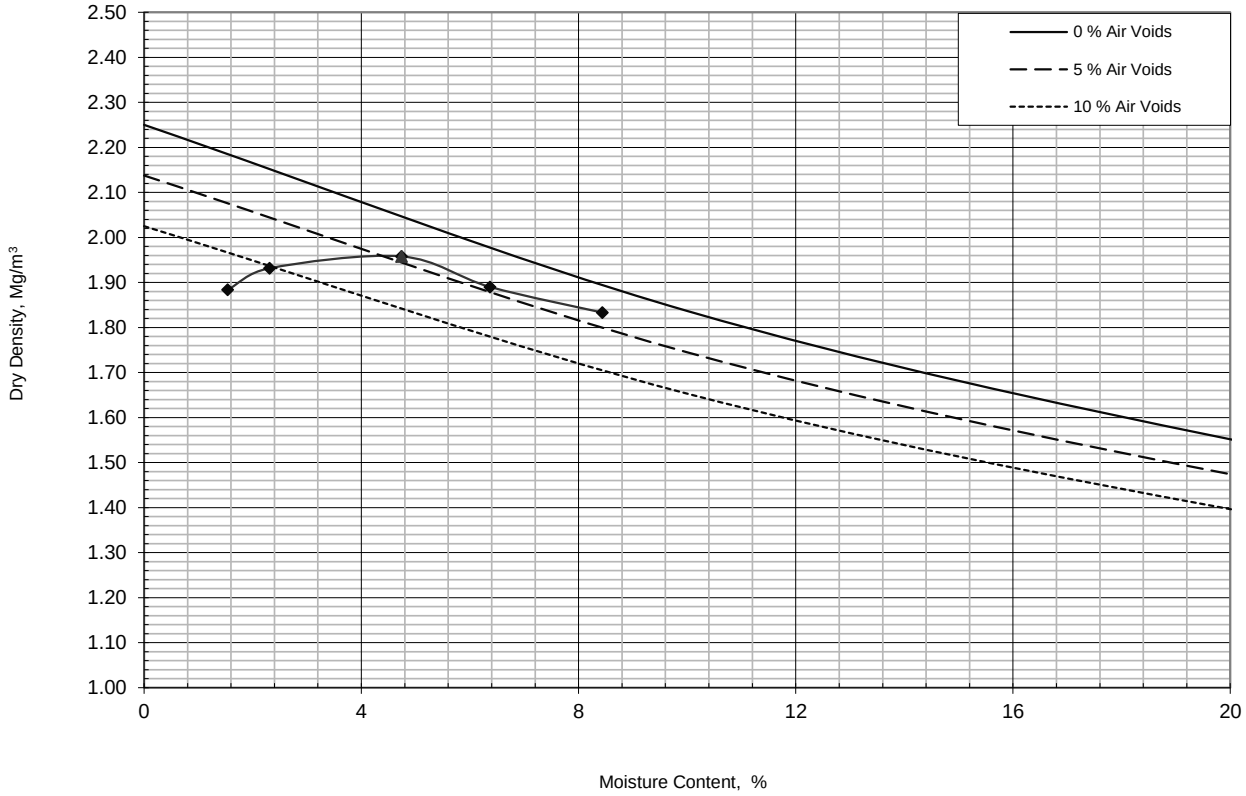
Compaction Point	1	2	3	4	5							
Moisture Content	11	15	18	22	86							
Bulk Density	1.32	1.47	1.58	1.60	1.41							
Dry Density	1.19	1.28	1.34	1.31	0.76							

Initial Moisture Content	86	%
Maximum Dry Density	1.34	Mg/m3
Optimum Moisture Content	18	%
Paricle Density	2.65 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	0	%

Operators	Checked	08-07-18	Emma Sharp	[redacted]
CA	Approved	09-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	39466
		Borehole / Pit No	BH11
Site Name	Littlefield	Sample No	
Soil Description	Brown fine to medium gravelly SAND.	Depth Top	15.00
Compaction Method	4.5 Kg Rammer	Depth Base	15.45
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B



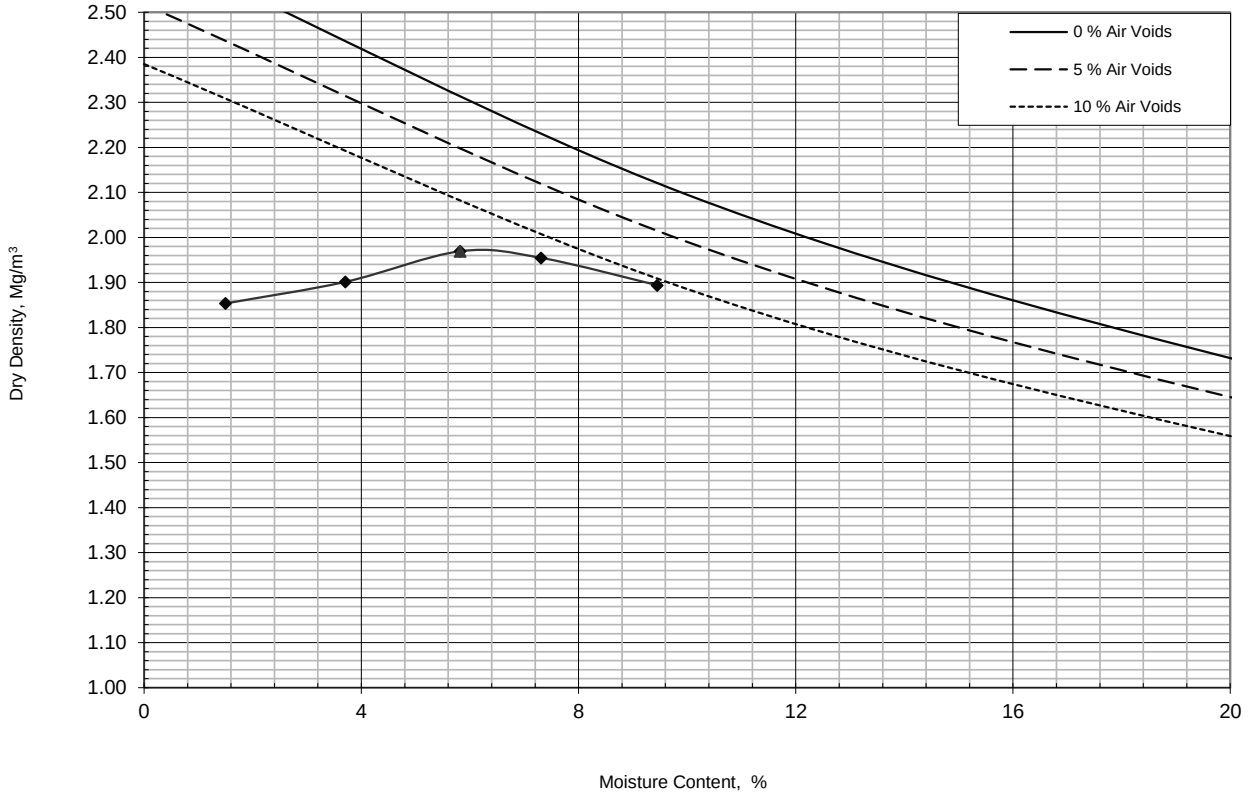
Compaction Point	1	2	3	4	5							
Moisture Content	1.5	2.3	4.7	6.4	8.4							
Bulk Density	1.91	1.98	2.05	2.01	1.99							
Dry Density	1.88	1.93	1.96	1.89	1.83							

Initial Moisture Content	4.7	%
Maximum Dry Density	1.96	Mg/m3
Optimum Moisture Content	5	%
Paricle Density	2.25 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	11.6	%

Operators	Checked	08-07-18	Emma Sharp	[redacted]
CA	Approved	09-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	39466
		Borehole / Pit No	BH12
Site Name	**Littlefield**	Sample No	
Soil Description	**Light brown fiine to medium gravelly SAND.**	Depth Top	**13.00**
Compaction Method	**4.5 Kg Rammer**	Depth Base	
Compaction Clause	**BS1377:Part 4:1990, Clause 3.5**	Sample Type	**B**



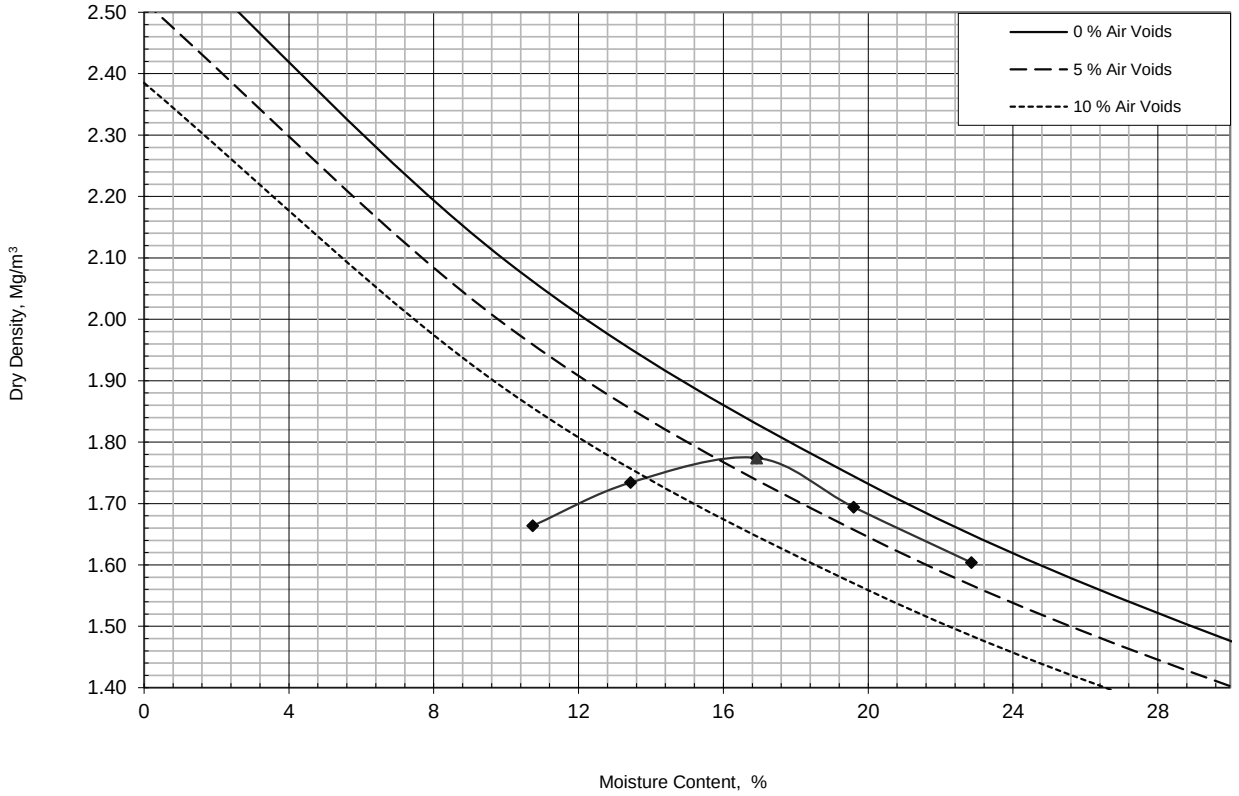
Compaction Point	1	2	3	4	5							
Moisture Content	1.5	3.7	5.8	7.3	9.5							
Bulk Density	1.88	1.97	2.08	2.10	2.07							
Dry Density	1.85	1.90	1.97	1.95	1.89							

Initial Moisture Content	5.8	%
Maximum Dry Density	1.97	Mg/m3
Optimum Moisture Content	6	%
Paricle Density	2.65 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	17.2	%

Operators	Checked	08-07-18	Emma Sharp	[redacted]
CA	Approved	09-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	39466
		Borehole / Pit No	BH13
Site Name	**Littlefield**	Sample No	
Soil Description	**Greyish brown fine to medium gravelly silty CLAY.**	Depth Top	**21.00**
Compaction Method	**4.5 Kg Rammer**	Depth Base	
Compaction Clause	**BS1377:Part 4:1990, Clause 3.5**	Sample Type	**B**



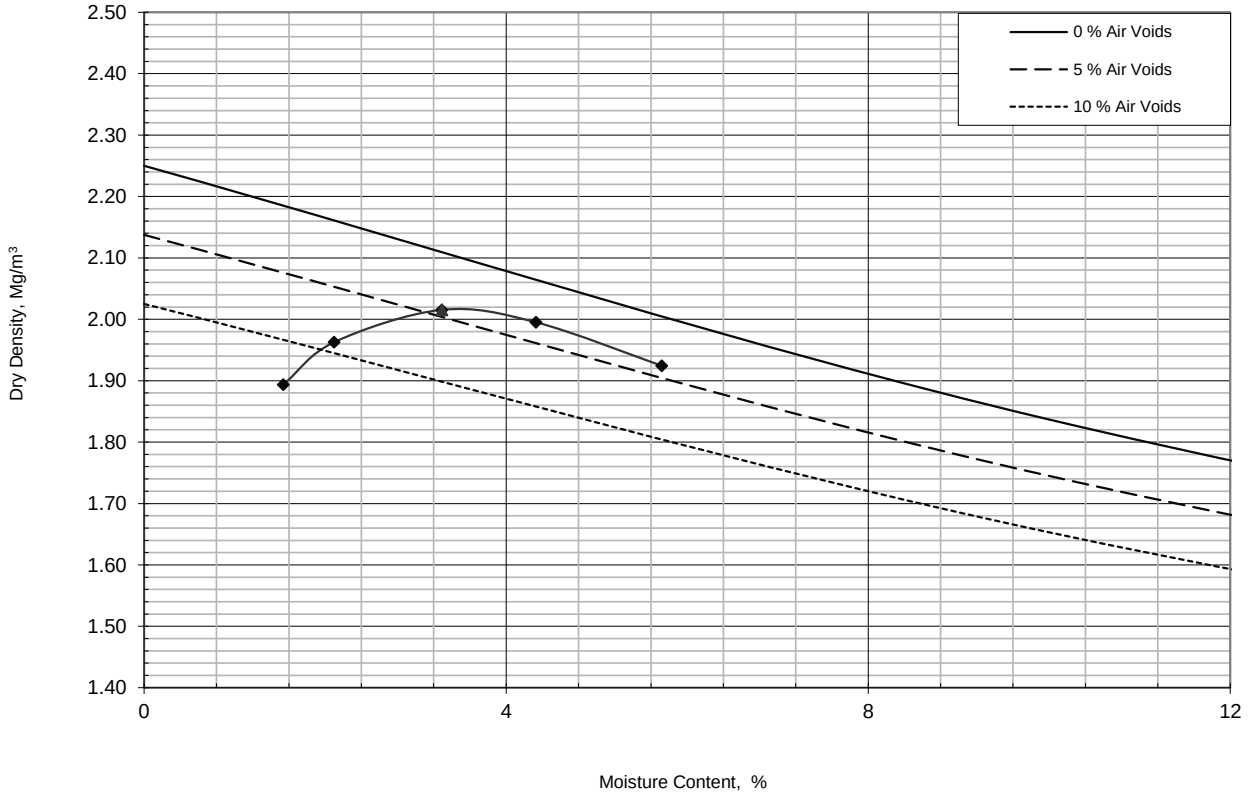
Compaction Point	1	2	3	4	5							
Moisture Content	11	13	17	20	23							
Bulk Density	1.84	1.97	2.07	2.03	1.97							
Dry Density	1.66	1.73	1.77	1.69	1.60							

Initial Moisture Content	20	%
Maximum Dry Density	1.77	Mg/m3
Optimum Moisture Content	17	%
Paricle Density	2.65 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	0	%

Operators	Checked	08-07-18	Emma Sharp	[redacted]
CA	Approved	09-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	39466
		Borehole / Pit No	BH13
Site Name	Littlefield	Sample No	
Soil Description	Black fine to medium sandy GRAVEL.	Depth Top	29.00
Compaction Method	4.5 Kg Rammer	Depth Base	
Compaction Clause	BS1377:Part 4:1990, Clause 3.5	Sample Type	B



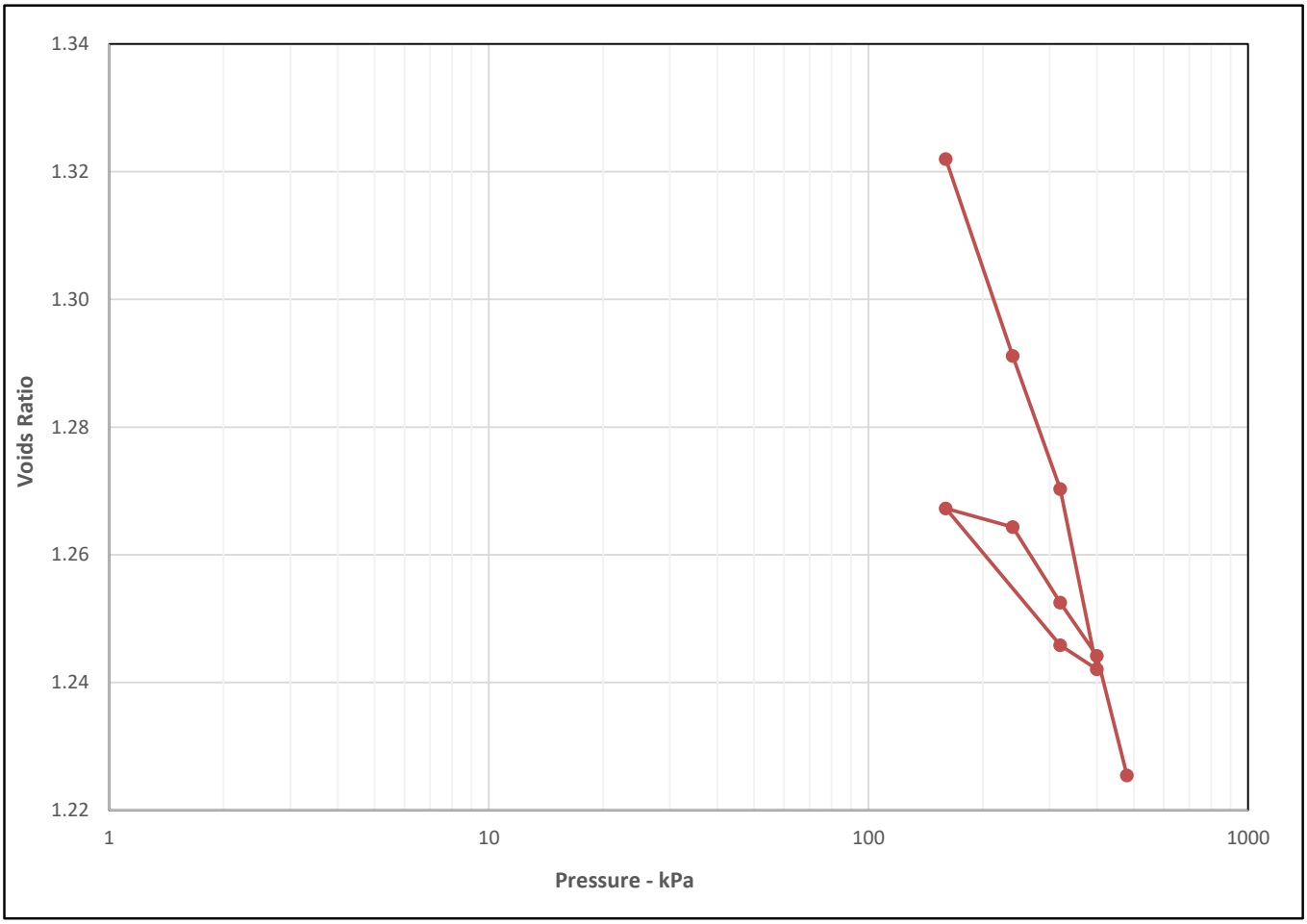
Compaction Point	1	2	3	4	5							
Moisture Content	1.5	2.1	3.3	4.3	5.7							
Bulk Density	1.92	2.00	2.08	2.08	2.03							
Dry Density	1.89	1.96	2.02	2.00	1.92							

Initial Moisture Content	2.1	%
Maximum Dry Density	2.02	Mg/m3
Optimum Moisture Content	3	%
Paricle Density	2.25 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	18.3	%

Operators	Checked	08-07-18	Emma Sharp	[redacted]
CA	Approved	09-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	17.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

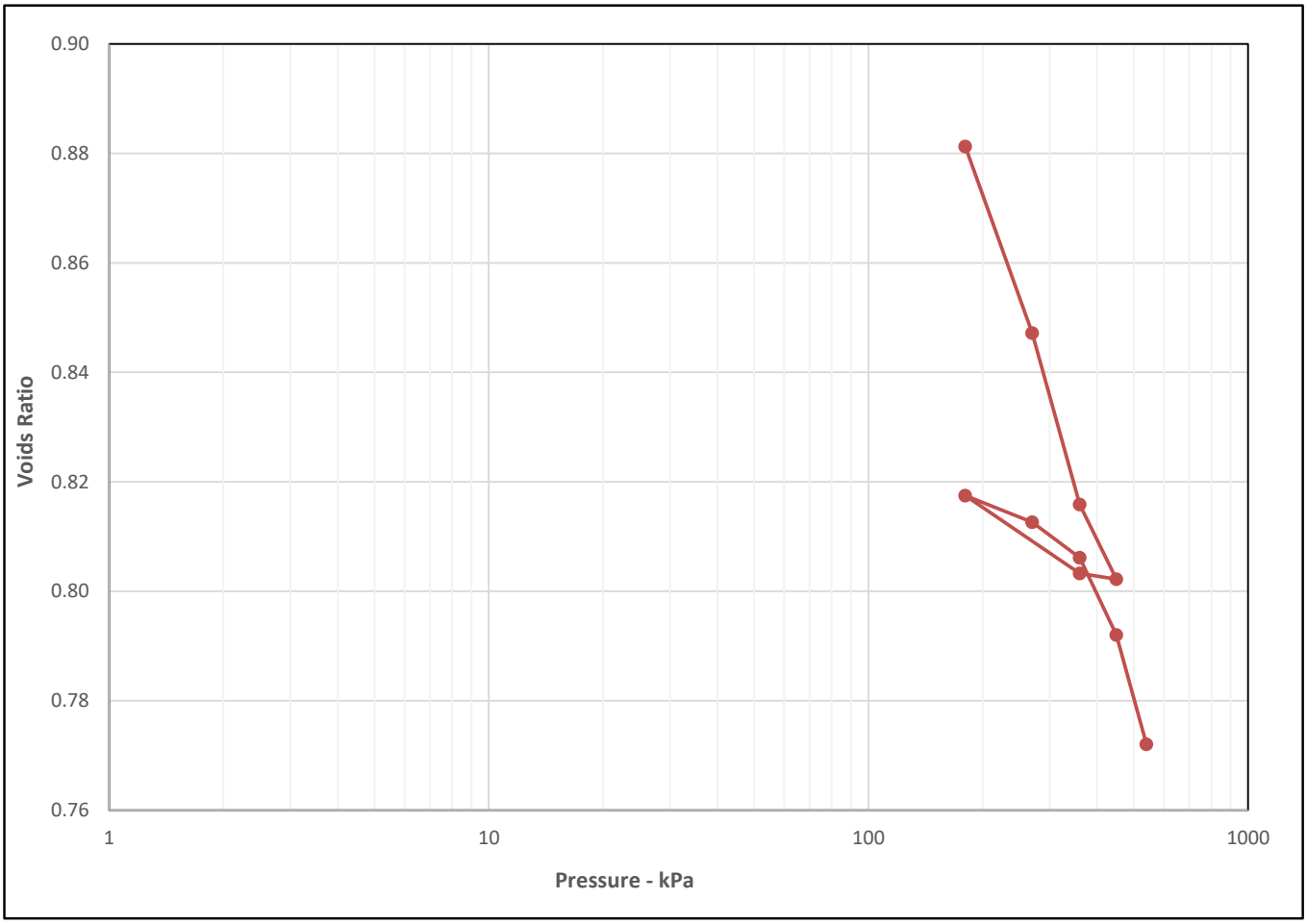


Swelling Stage Reached At 160kPA

Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	24	0	-	160	0.011	6.9	320	-	400	0.065	6.5
Bulk Density (Mg/m3)	1.41	160	-	240	0.17	4.5	400	-	480	0.046	1.1
Dry Density (Mg/m3)	1.14	240	-	320	0.11	2.6		-			
Voids Ratio	1.3262	320	-	400	0.2	4.3		-			
Degree of saturation	47.6	400	-	320	0.021	2.7		-			
Height (mm)	19.86	320	-	160	0.06	1.6		-			
Diameter (mm)	74.98	160	-	240	0.016	3.4		-			
Particle Density (Mg/m3)	2.65	240	-	320	0.065	2.5		-			

Operators	Checked	08-07-18	Ben Sharp	[redacted]	UKAS TESTING 2788
LG	Approved	09-07-18	Paul Evans		

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	13.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



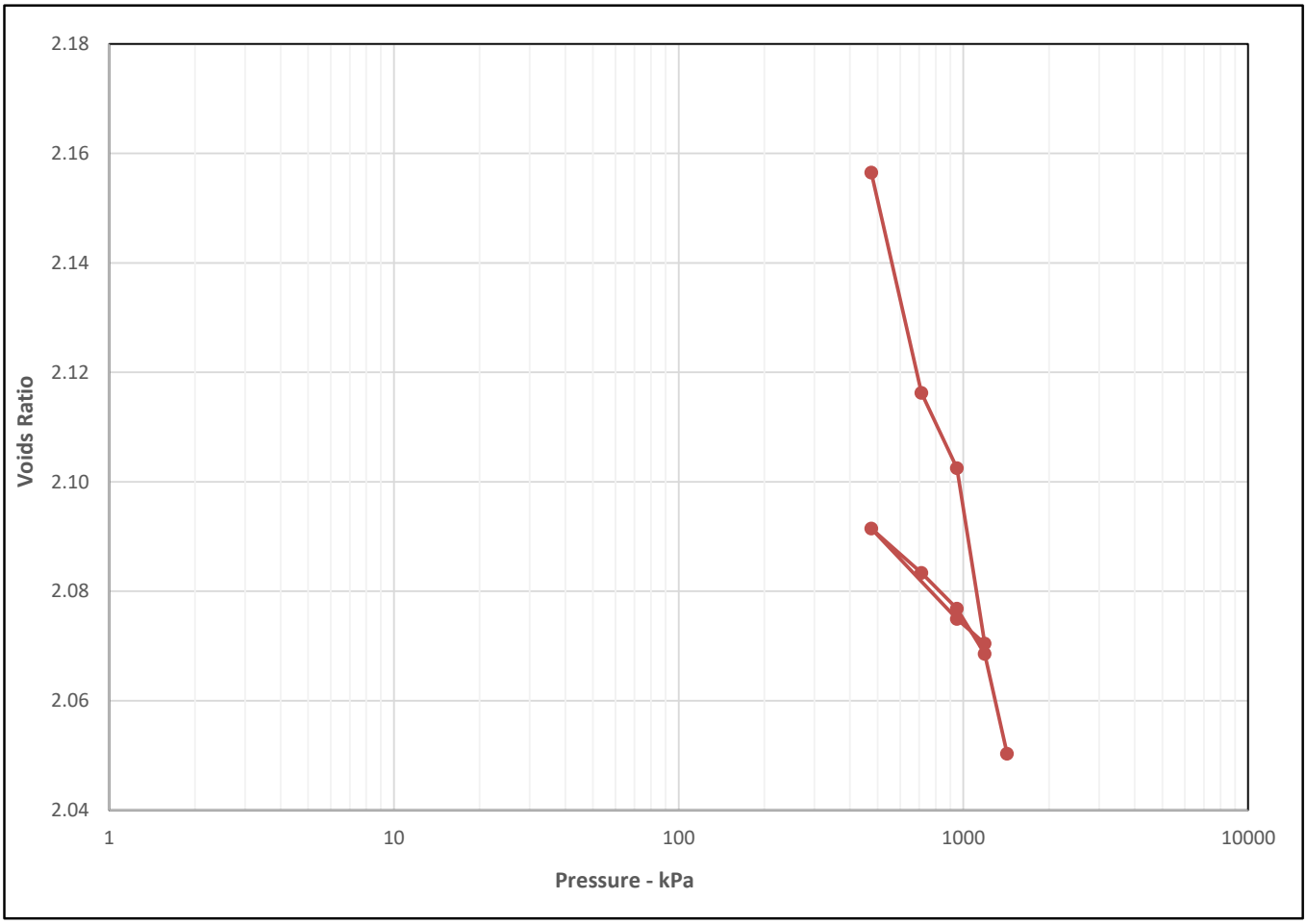
Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	34	0	-	180	0.14	12	360	-	450	0.04	0.17
Bulk Density (Mg/m3)	1.83	180	-	270	0.2	9.1	450	-	540	0.087	0.039
Dry Density (Mg/m3)	1.37	270	-	360	0.19	7.2		-			
Voids Ratio	0.9315	360	-	450	0.1	5.2		-			
Degree of saturation	95.5	450	-	360	0.0065	2.1		-			
Height (mm)	18.2	360	-	180	0.044	0.19		-			
Diameter (mm)	74.96	180	-	270	0.03	7		-			
Particle Density (Mg/m3)	2.65	270	-	360	0.04	0.5		-			

Operators	Checked	26-06-18	Ben Sharp
LG	Approved	27-06-18	Paul Evans

[redacted]

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY with organic material.	Depth Top (m)	28.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



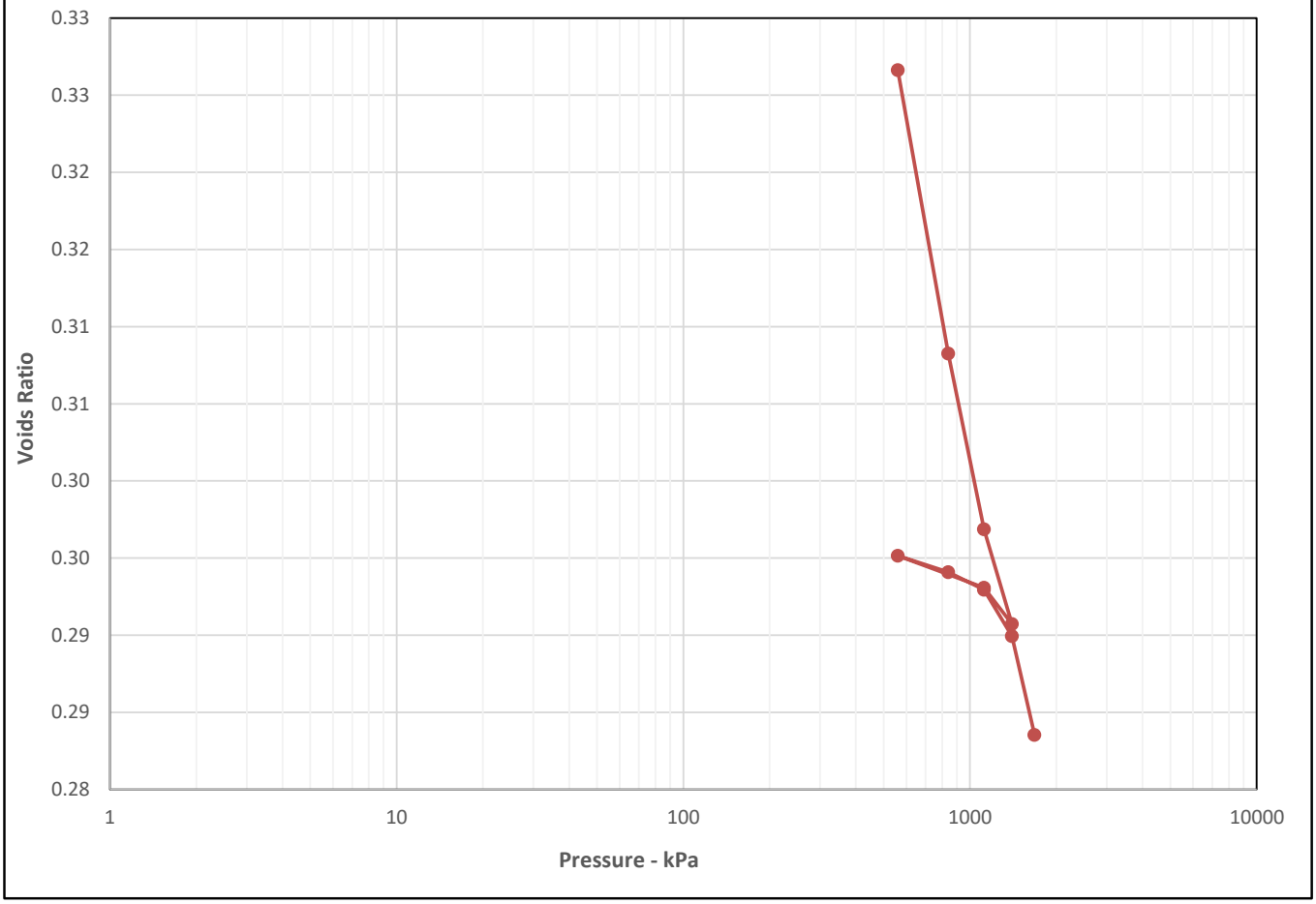
Swelling Stage Reached At 14kPA

Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	43	0	-	475	0.14	17	950	-	1187.5	0.0089	13
Bulk Density (Mg/m3)	1.12	475	-	712.5	0.054	12	1187.5	-	1425	0.011	8.8
Dry Density (Mg/m3)	0.78	712.5	-	950	0.019	9.1		-			
Voids Ratio	2.3822	950	-	1187.5	0.0	7.8		-			
Degree of saturation	47.4	1187.5	-	950	0.0061	9.5		-			
Height (mm)	19.65	950	-	475	0.011	7.9		-			
Diameter (mm)	74.99	475	-	712.5	0.011	12		-			
Particle Density (Mg/m3)	2.65	712.5	-	950	0.0089	15		-			

Operators	Checked	08-07-18	Ben Sharp
LG	Approved	09-07-18	Paul Evans

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH02A
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	32.85
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

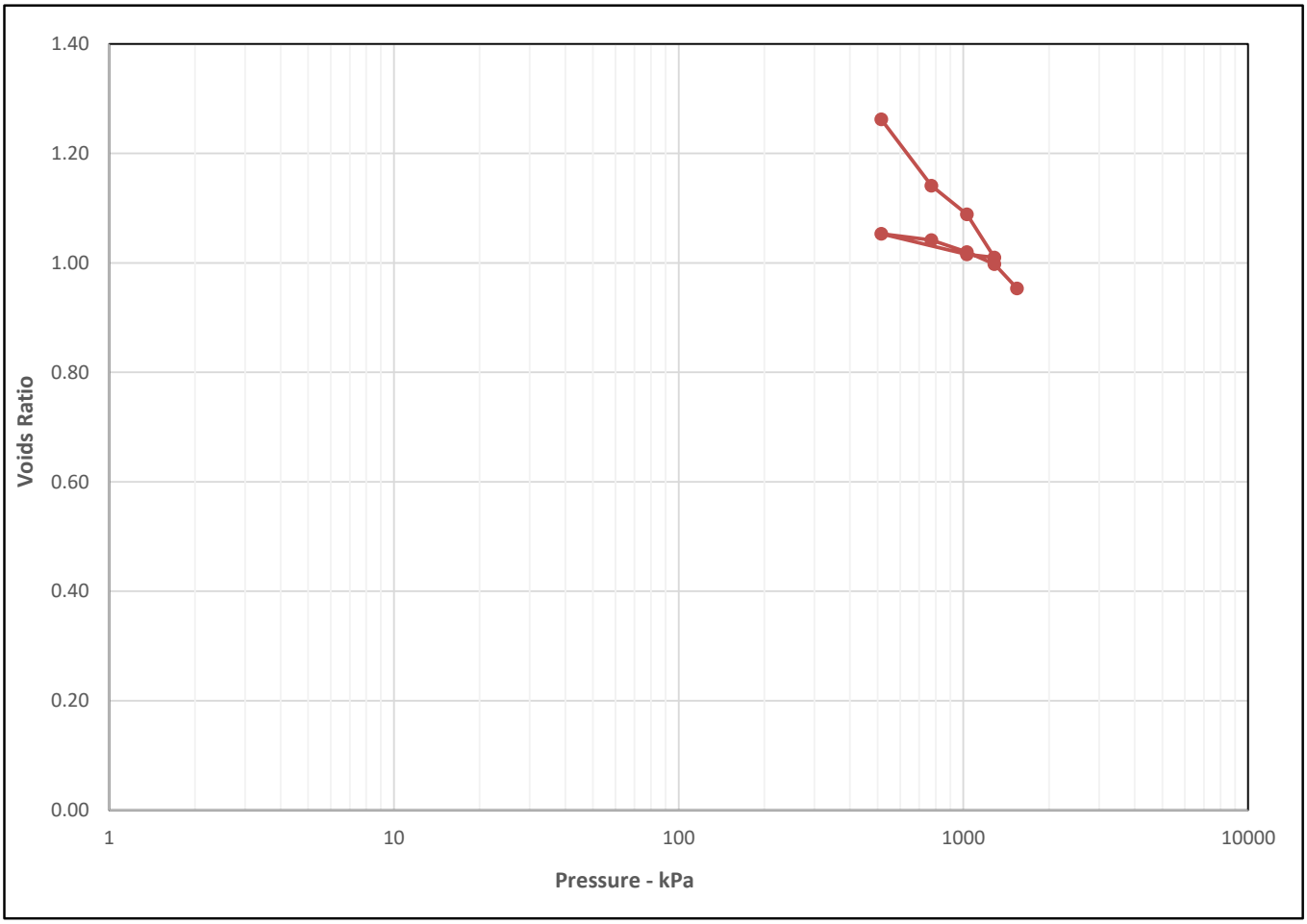


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	8.6	0	-	560	0.12	7.2	1120	-	1400	0.0031	7.6
Bulk Density (Mg/m3)	2.02	560	-	840	0.049	12	1400	-	1680	0.0083	2.8
Dry Density (Mg/m3)	1.86	840	-	1120	0.031	5		-			
Voids Ratio	0.4225	1120	-	1400	0.0	4.1		-			
Degree of saturation	54.2	1400	-	1120	0.0065	20		-			
Height (mm)	19.97	1120	-	560	0.0029	4.1		-			
Diameter (mm)	49.95	560	-	840	0.0029	7.7		-			
Particle Density (Mg/m3)	2.65	840	-	1120	0.0031	6.4		-			

Operators	Checked	26-06-18	Ben Sharp
LG	Approved	27-06-18	Paul Evans

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH03
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY with organic material.	Depth Top (m)	29.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

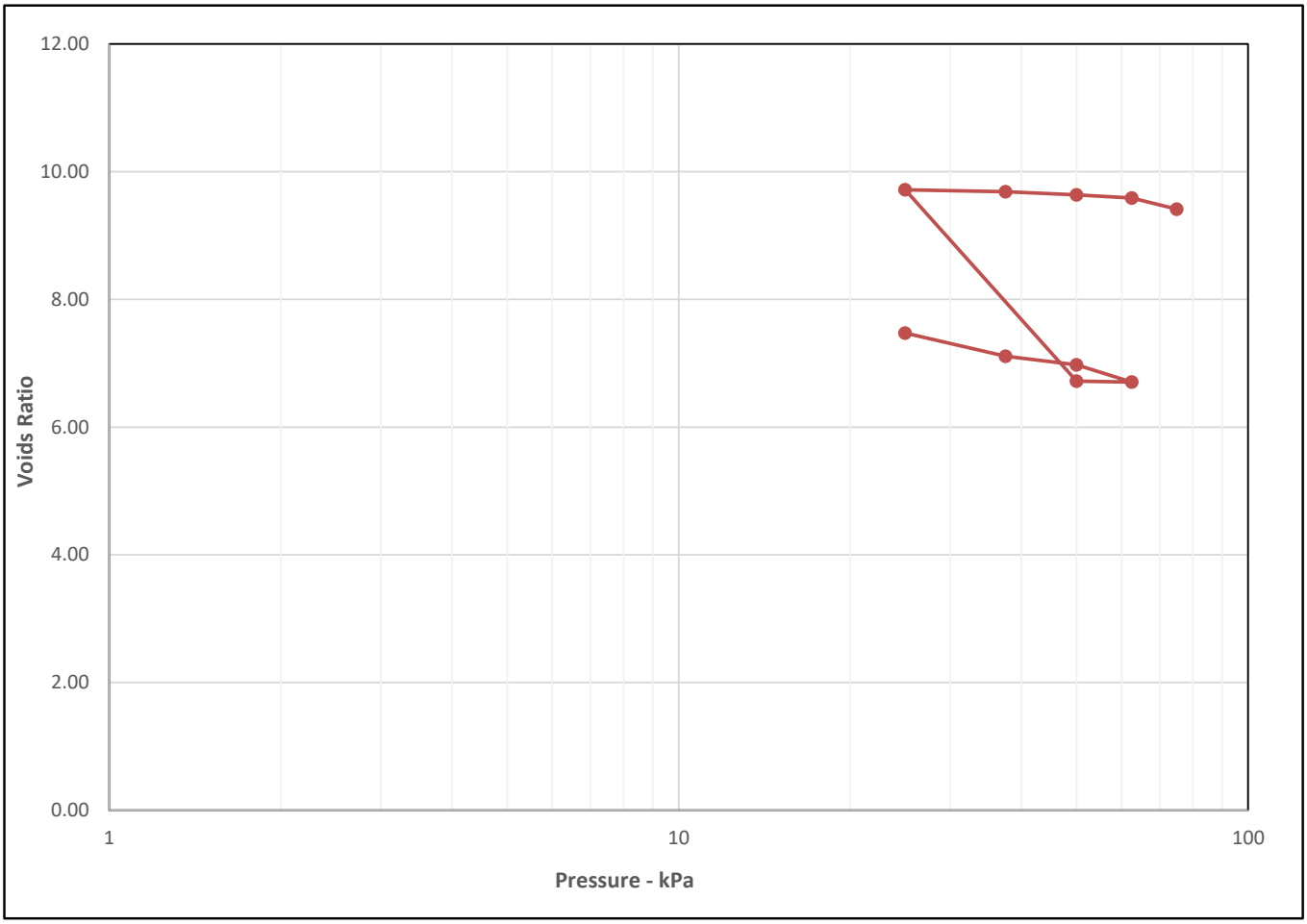


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	84	0	-	515	0.41	3.4	1030	-	1287.5	0.042	0.44
Bulk Density (Mg/m3)	1.70	515	-	772.5	0.21	6	1287.5	-	1545	0.042	0.066
Dry Density (Mg/m3)	0.92	772.5	-	1030	0.095	0.11		-			
Voids Ratio	1.8719	1030	-	1287.5	0.2	0.1		-			
Degree of saturation	119.5	1287.5	-	1030	0.011	0.89		-			
Height (mm)	19.91	1030	-	515	0.037	0.33		-			
Diameter (mm)	49.95	515	-	772.5	0.022	0.54		-			
Particle Density (Mg/m3)	2.65	772.5	-	1030	0.042	0.33		-			

Operators	Checked	26-06-18	Ben Sharp	[redacted]
LG	Approved	27-06-18	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Black silty CLAY with organic material.	Depth Top (m)	9.00
		Depth Base (m)	9.45
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

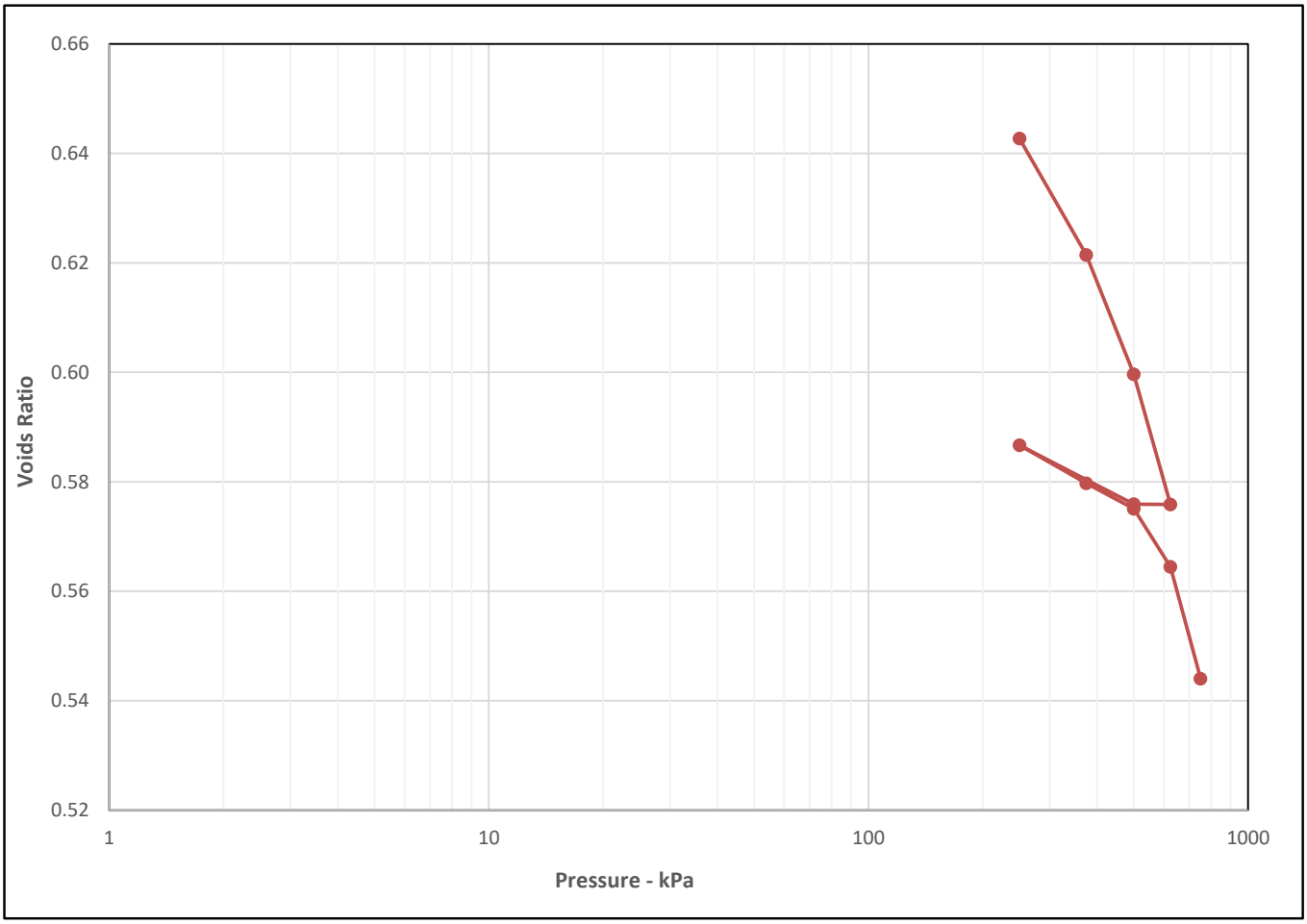


No Swell Recorded

Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	219	0	-	25	4.3	8.5	50	-	62.5	0.38	8.7
Bulk Density (Mg/m3)	0.89	25	-	37.5	3.5	3.4	62.5	-	75	0.36	8.4
Dry Density (Mg/m3)	0.28	37.5	-	50	1.3	3.5		-			
Voids Ratio	8.4979	50	-	62.5	2.7	0.99		-			
Degree of saturation	68.3	62.5	-	50	0.15	7.5		-			
Height (mm)	19.68	50	-	25	16	6.4		-			
Diameter (mm)	74.6	25	-	37.5	0.22	15		-			
Particle Density (Mg/m3)	2.65	37.5	-	50	0.38	14		-			

Operators	Checked	08-07-18	Ben Sharp	[redacted]	UKAS TESTING 2788
LG	Approved	09-07-18	Paul Evans		

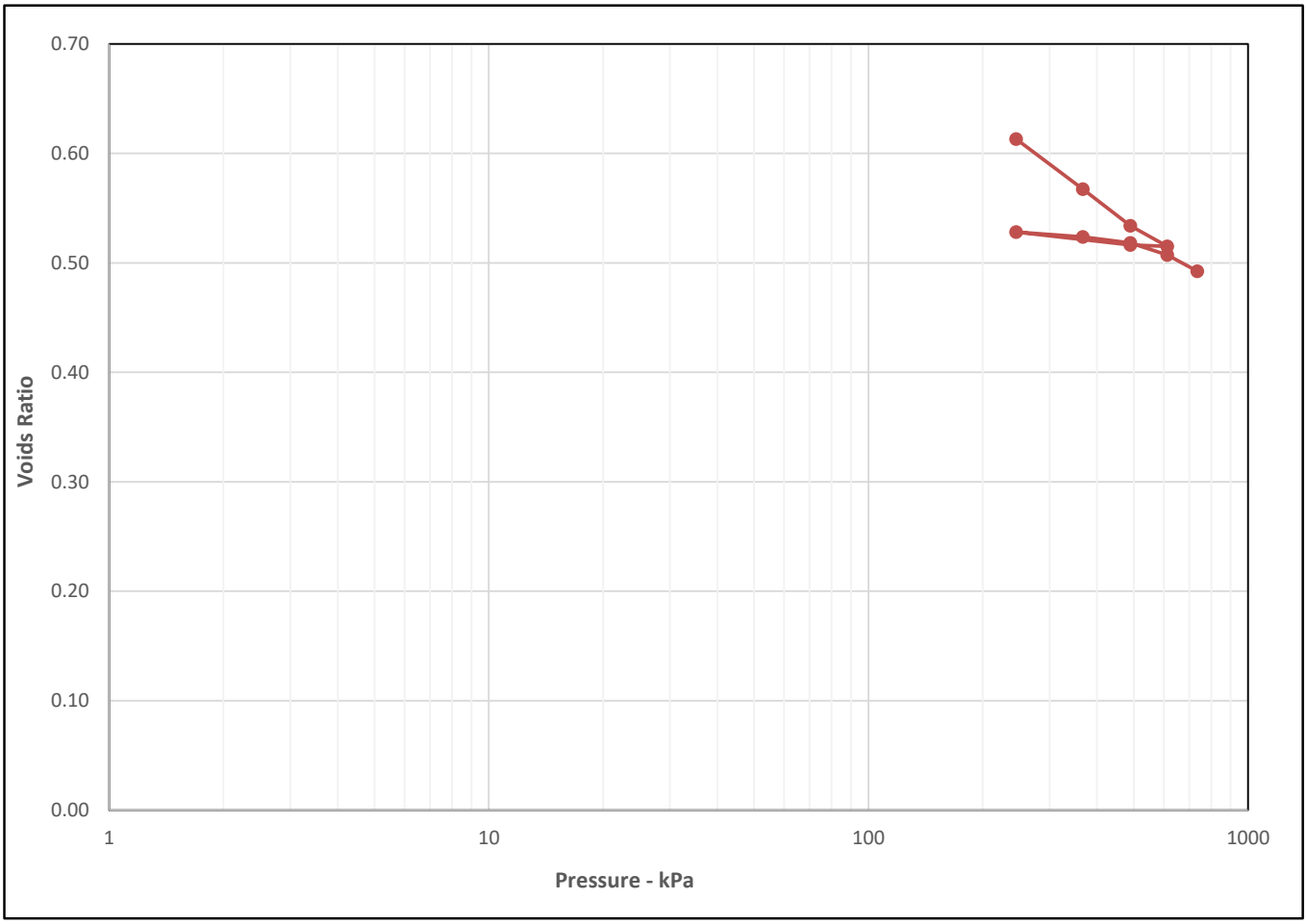
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	16.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	23	0	-	250	0.17	14	500	-	625	0.024	12
Bulk Density (Mg/m3)	1.90	250	-	375	0.1	15	625	-	750	0.054	8.9
Dry Density (Mg/m3)	1.54	375	-	500	0.11	8		-			
Voids Ratio	0.7156	500	-	625	0.1	5.7		-			
Degree of saturation	85.3	625	-	500	0.00044	11		-			
Height (mm)	19.75	500	-	250	0.027	5		-			
Diameter (mm)	74.84	250	-	375	0.035	12		-			
Particle Density (Mg/m3)	2.65	375	-	500	0.024	8		-			

Operators	Checked	26-06-18	Ben Sharp	[redacted]	UKAS TESTING 2788
LG	Approved	27-06-18	Paul Evans		

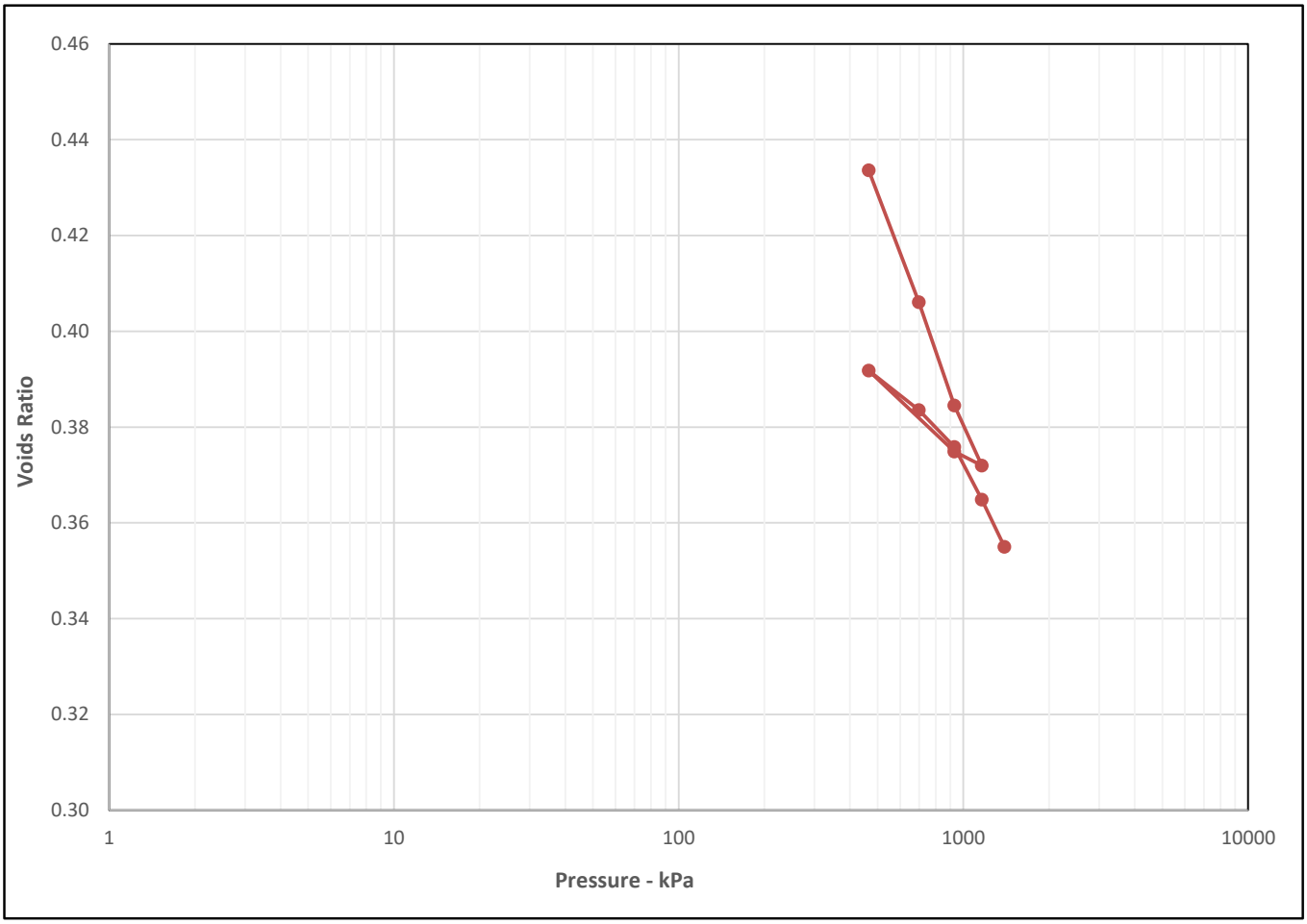
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	16.50
		Depth Base (m)	16.95
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	21	0	-	245	0.21	16	490	-	612.5	0.029	7.2
Bulk Density (Mg/m3)	1.88	245	-	367.5	0.23	9.7	612.5	-	735	0.059	0.7
Dry Density (Mg/m3)	1.56	367.5	-	490	0.17	6.4		-			
Voids Ratio	0.7004	490	-	612.5	0.1	2.7		-			
Degree of saturation	77.6	612.5	-	490	0.0069	14		-			
Height (mm)	19.82	490	-	245	0.032	2.2		-			
Diameter (mm)	75.01	245	-	367.5	0.023	11		-			
Particle Density (Mg/m3)	2.65	367.5	-	490	0.029	6.1		-			

Operators	Checked	26-06-18	Ben Sharp	[redacted]	UKAS TESTING 2788
LG	Approved	27-06-18	Paul Evans		

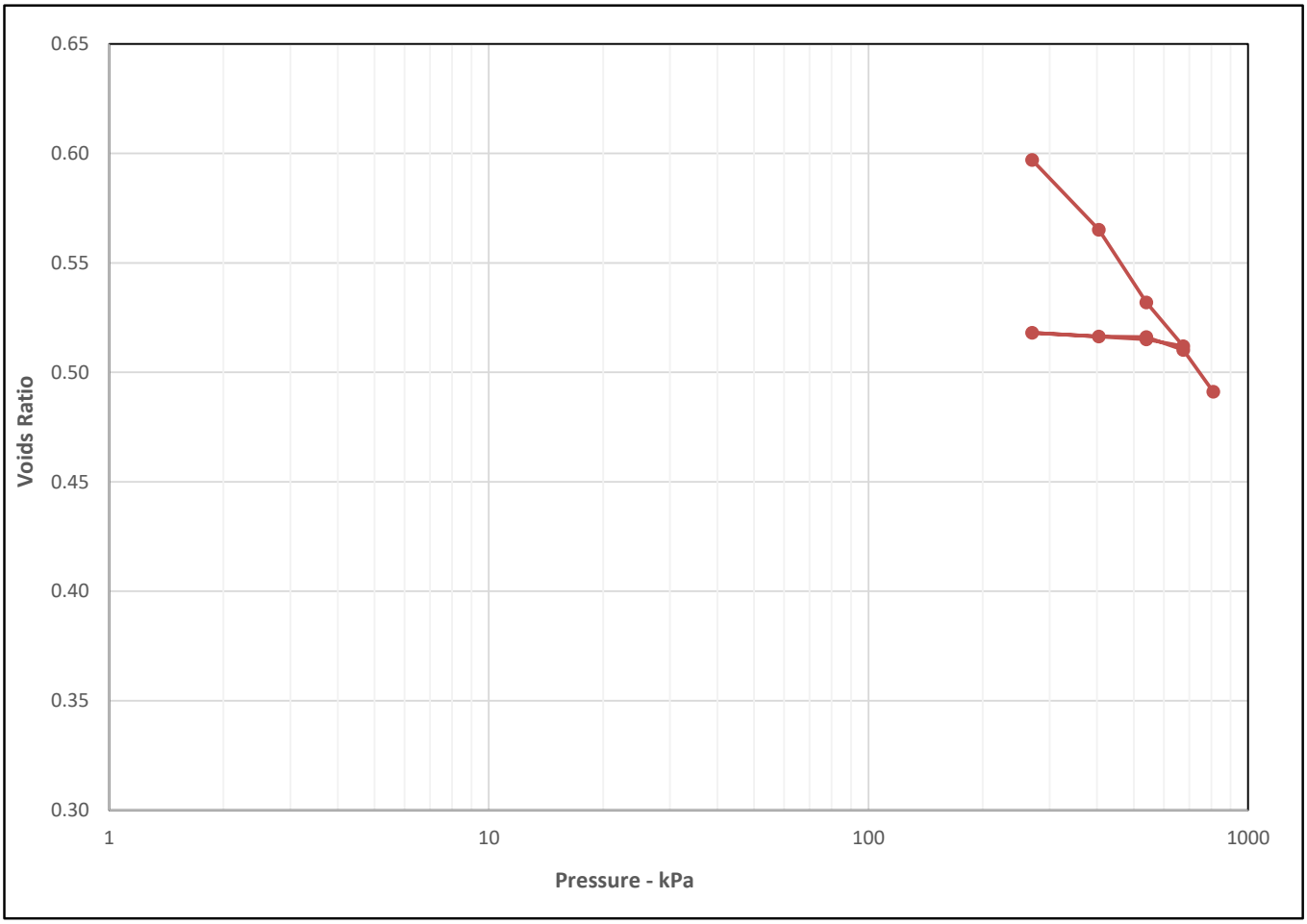
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	28.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	17	0	-	465	0.15	11	930	-	1162.5	0.024	1.2
Bulk Density (Mg/m3)	2.01	465	-	697.5	0.083	8.3	1162.5	-	1395	0.034	1.5
Dry Density (Mg/m3)	1.72	697.5	-	930	0.066	2.5		-			
Voids Ratio	0.5394	930	-	1162.5	0.0	2.7		-			
Degree of saturation	82.7	1162.5	-	930	0.0093	2.4		-			
Height (mm)	18.77	930	-	465	0.026	2		-			
Diameter (mm)	74.96	465	-	697.5	0.026	3.5		-			
Particle Density (Mg/m3)	2.65	697.5	-	930	0.024	3.5		-			

Operators	Checked	26-06-18	Ben Sharp	[redacted]	UKAS TESTING 2788
LG	Approved	27-06-18	Paul Evans		

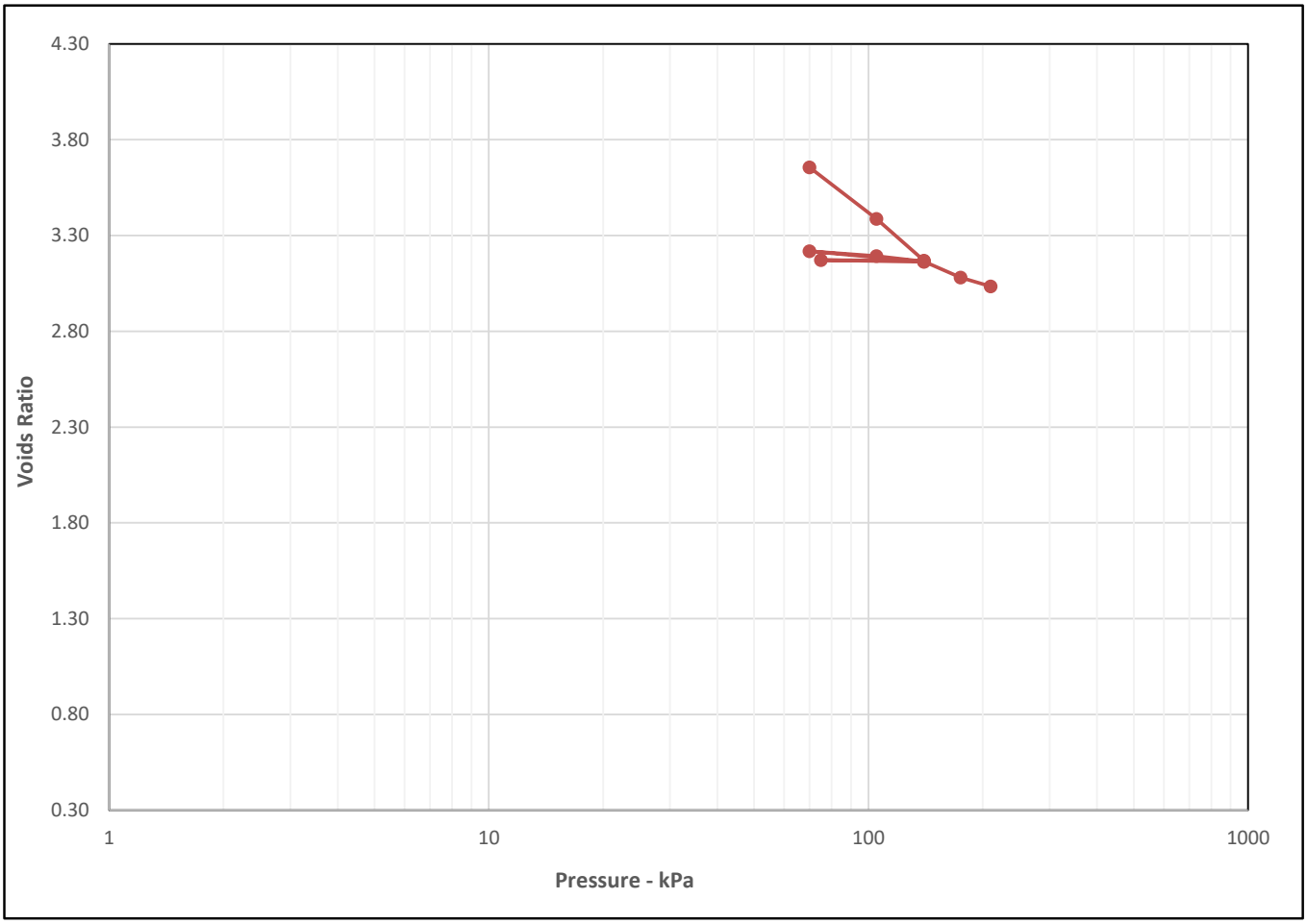
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	18.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	21	0	-	270	0.22	14	540	-	675	0.0017	3.9
Bulk Density (Mg/m3)	1.89	270	-	405	0.15	10	675	-	810	0.028	4
Dry Density (Mg/m3)	1.56	405	-	540	0.16	8		-			
Voids Ratio	0.6975	540	-	675	0.1	3.9		-			
Degree of saturation	80.2	675	-	540	0.016	19		-			
Height (mm)	19.85	540	-	270	0.0073	6.1		-			
Diameter (mm)	75.11	270	-	405	0.0079	24		-			
Particle Density (Mg/m3)	2.65	405	-	540	0.0017	8.7		-			

Operators	Checked	26-06-18	Ben Sharp	[redacted]	UKAS TESTING 2788
LG	Approved	27-06-18	Paul Evans		

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Black organic silty CLAY.	Depth Top (m)	5.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

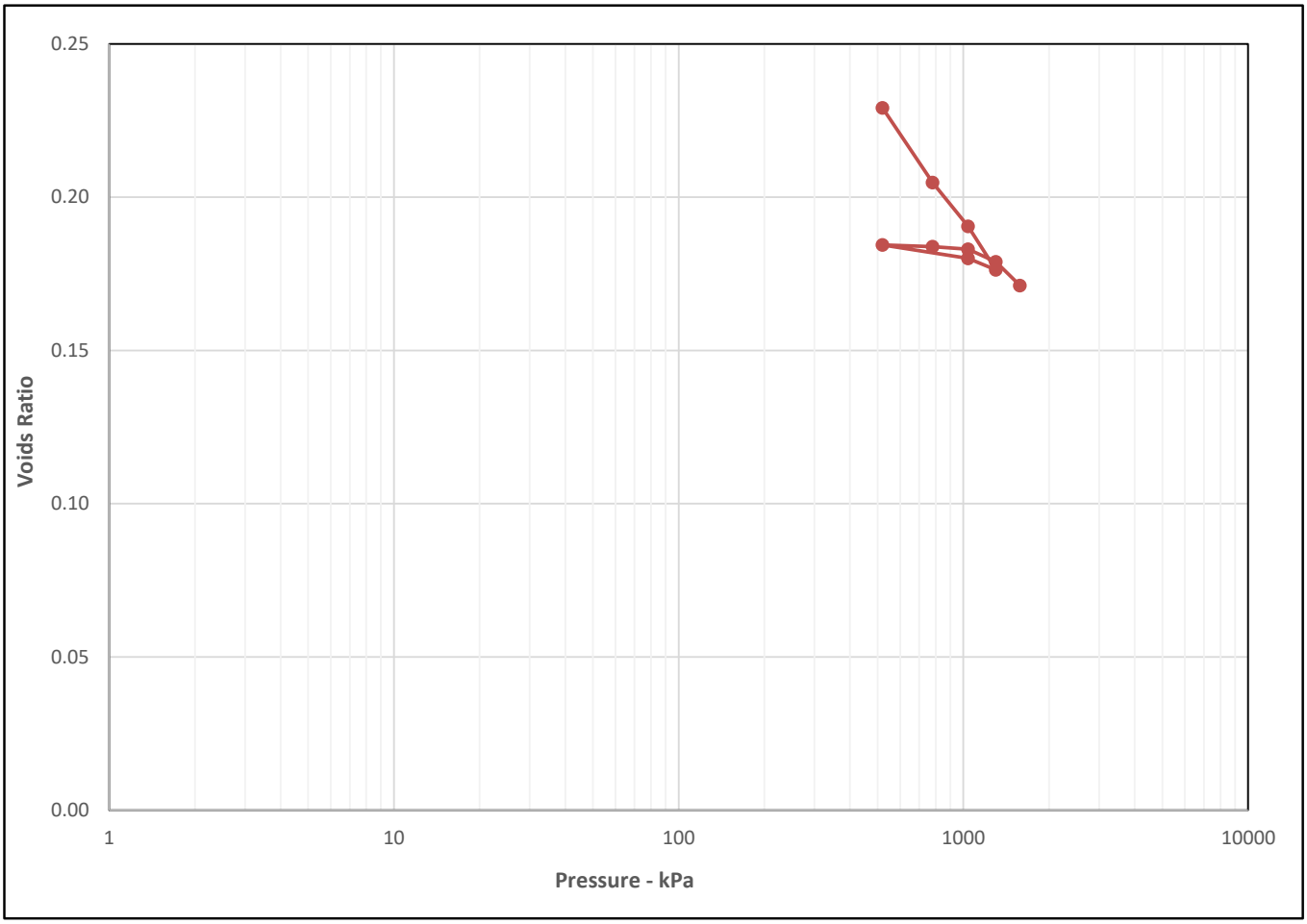


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	150	0	-	70	2.3	6.8	140	-	175	0.2	2.5
Bulk Density (Mg/m3)	1.20	70	-	105	1.6	3	175	-	210	0.58	1.9
Dry Density (Mg/m3)	0.48	105	-	140	1.4	3.1		-			
Voids Ratio	4.5342	140	-	75	0.0	2.8		-			
Degree of saturation	87.6	75	-	140	0.035	5.4		-			
Height (mm)	19.77	140	-	70	0.19	2.9		-			
Diameter (mm)	74.71	70	-	105	0.17	4		-			
Particle Density (Mg/m3)	2.65	105	-	140	0.2	4.6		-			

Operators	Checked	26-06-18	Ben Sharp
LG	Approved	27-06-18	Paul Evans

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	30.50
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

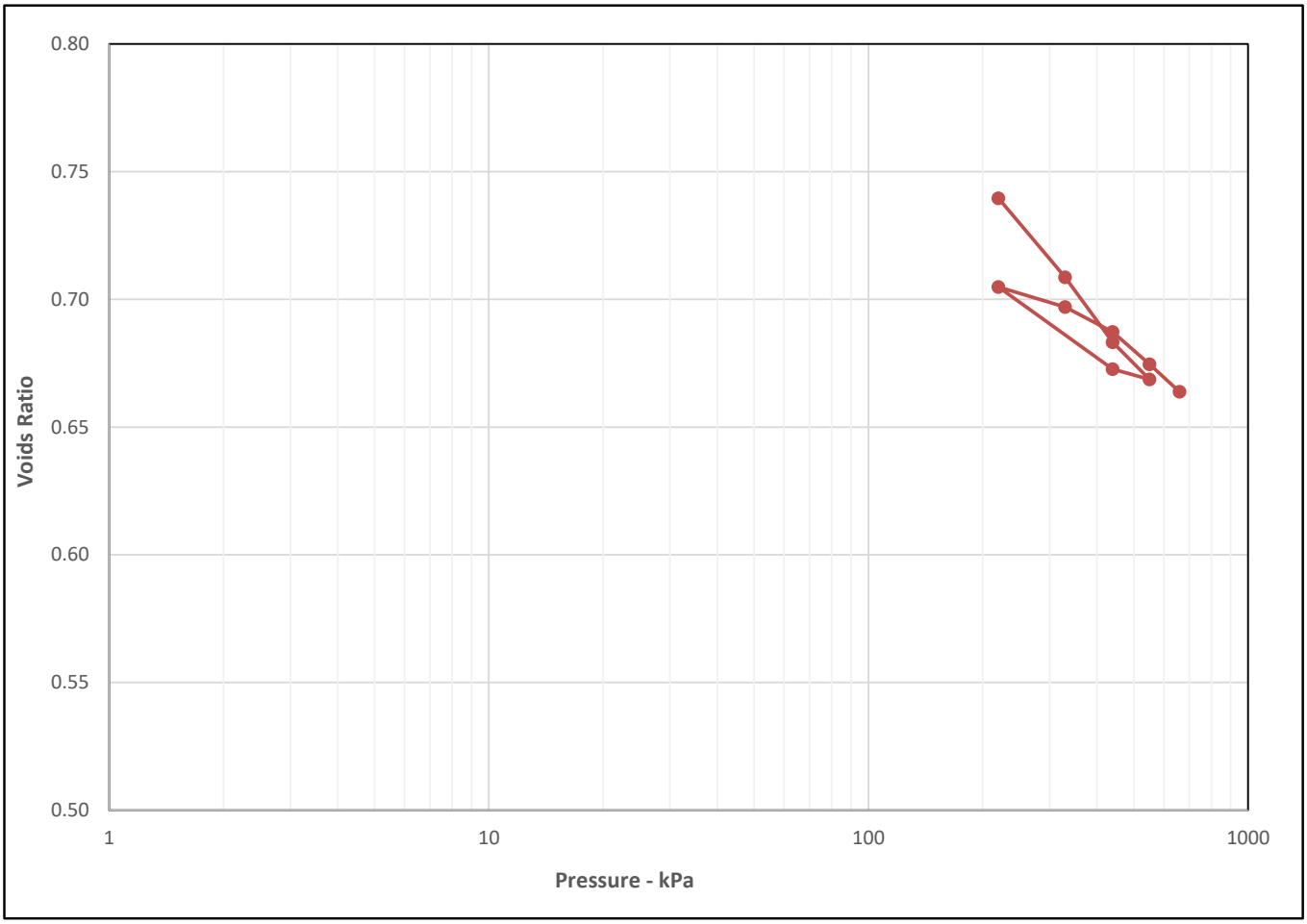


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	5.4	0	-	520	0.12	11	1040	-	1300	0.0028	12
Bulk Density (Mg/m3)	2.14	520	-	780	0.076	8.3	1300	-	1580	0.013	0.92
Dry Density (Mg/m3)	2.03	780	-	1040	0.046	8		-			
Voids Ratio	0.3075	1040	-	1300	0.0	8.9		-			
Degree of saturation	46.6	1300	-	1040	0.012	9.2		-			
Height (mm)	19.93	1040	-	520	0.0071	7.8		-			
Diameter (mm)	50.06	520	-	780	0.0017	9.5		-			
Particle Density (Mg/m3)	2.65	780	-	1040	0.0028	5.6		-			

Operators	Checked	26-06-18	Ben Sharp
LG	Approved	27-06-18	Paul Evans

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	15.00
		Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



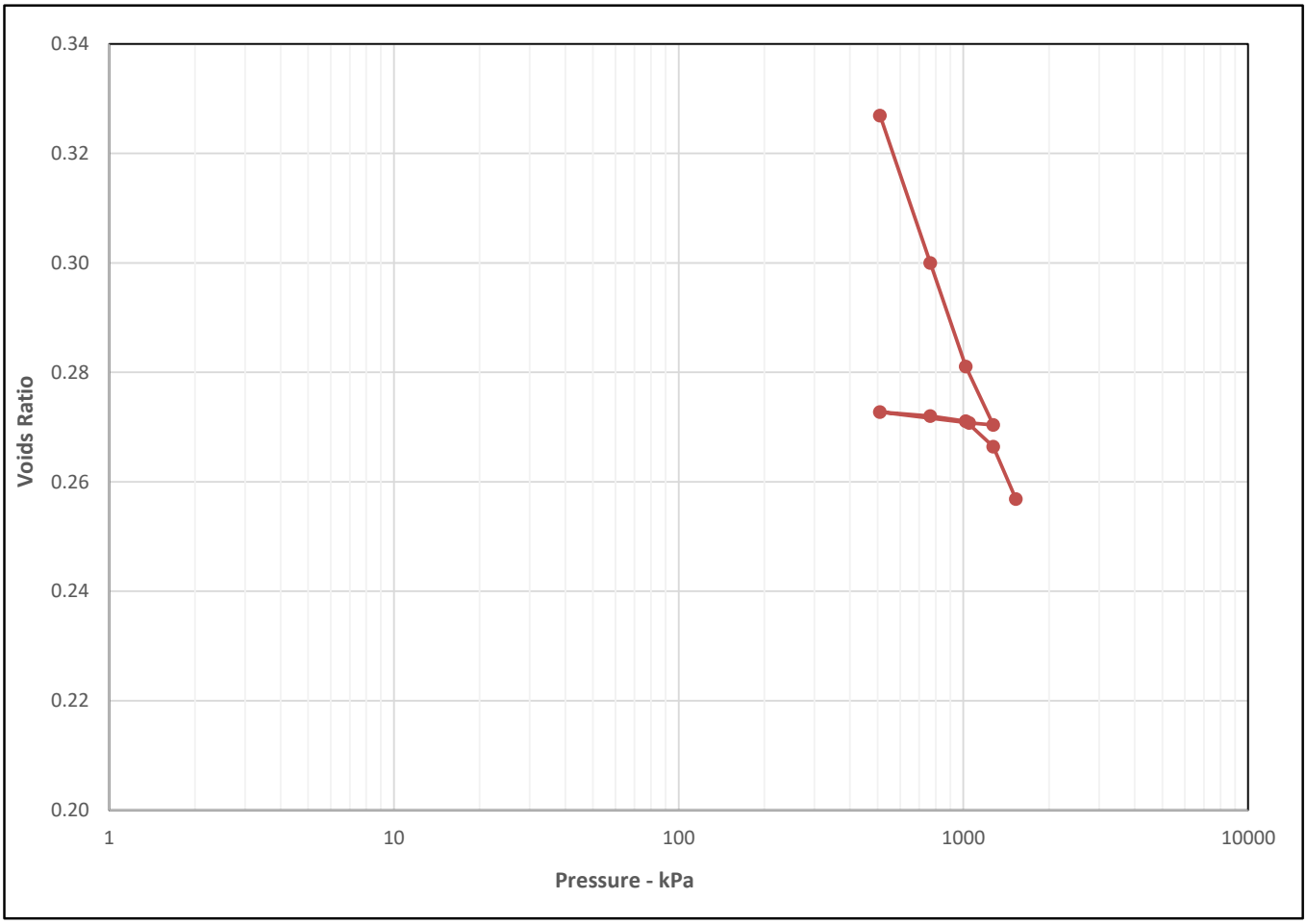
Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	24	0	-	220	0.21	9.1	440	-	550	0.052	4.4
Bulk Density (Mg/m3)	1.81	220	-	330	0.16	5.2	550	-	660	0.068	9.2
Dry Density (Mg/m3)	1.45	330	-	440	0.14	5.9		-			
Voids Ratio	0.8253	440	-	550	0.1	1.5		-			
Degree of saturation	78.4	550	-	440	0.022	4.9		-			
Height (mm)	19.77	440	-	220	0.087	1		-			
Diameter (mm)	74.91	220	-	330	0.042	1.5		-			
Particle Density (Mg/m3)	2.65	330	-	440	0.052	1.9		-			

Operators	Checked	26-06-18	Ben Sharp
LG	Approved	27-06-18	Paul Evans

[redacted]

UKAS TESTING 2788

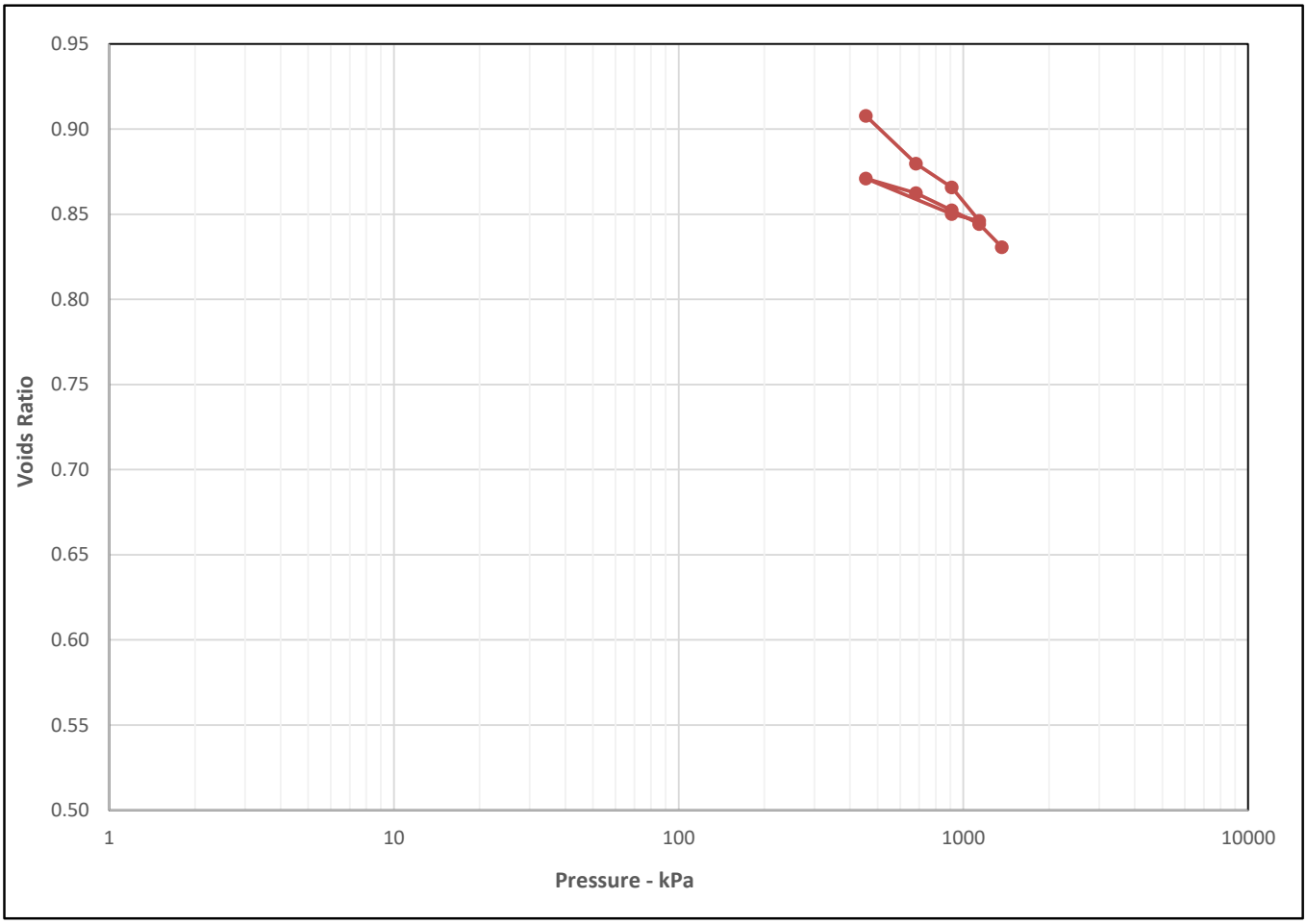
GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH10A
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	29.50
		Depth Base (m)	29.80
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	8.3	0	-	510	0.18	13	1020	-	1275	0.0029	9.3
Bulk Density (Mg/m3)	1.96	510	-	765	0.08	8.9	1275	-	1530	0.014	3.8
Dry Density (Mg/m3)	1.81	765	-	1020	0.057	7.2		-			
Voids Ratio	0.4616	1020	-	1275	0.0	4		-			
Degree of saturation	47.6	1275	-	1050	0.0013	4.9		-			
Height (mm)	19.96	1050	-	510	0.0029	19		-			
Diameter (mm)	50.05	510	-	765	0.0023	12		-			
Particle Density (Mg/m3)	2.65	765	-	1020	0.0029	12		-			

Operators	Checked	26-06-18	Ben Sharp	[redacted]	UKAS TESTING 2788
LG	Approved	27-06-18	Paul Evans		

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	27.00
		Depth Base (m)	27.45
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



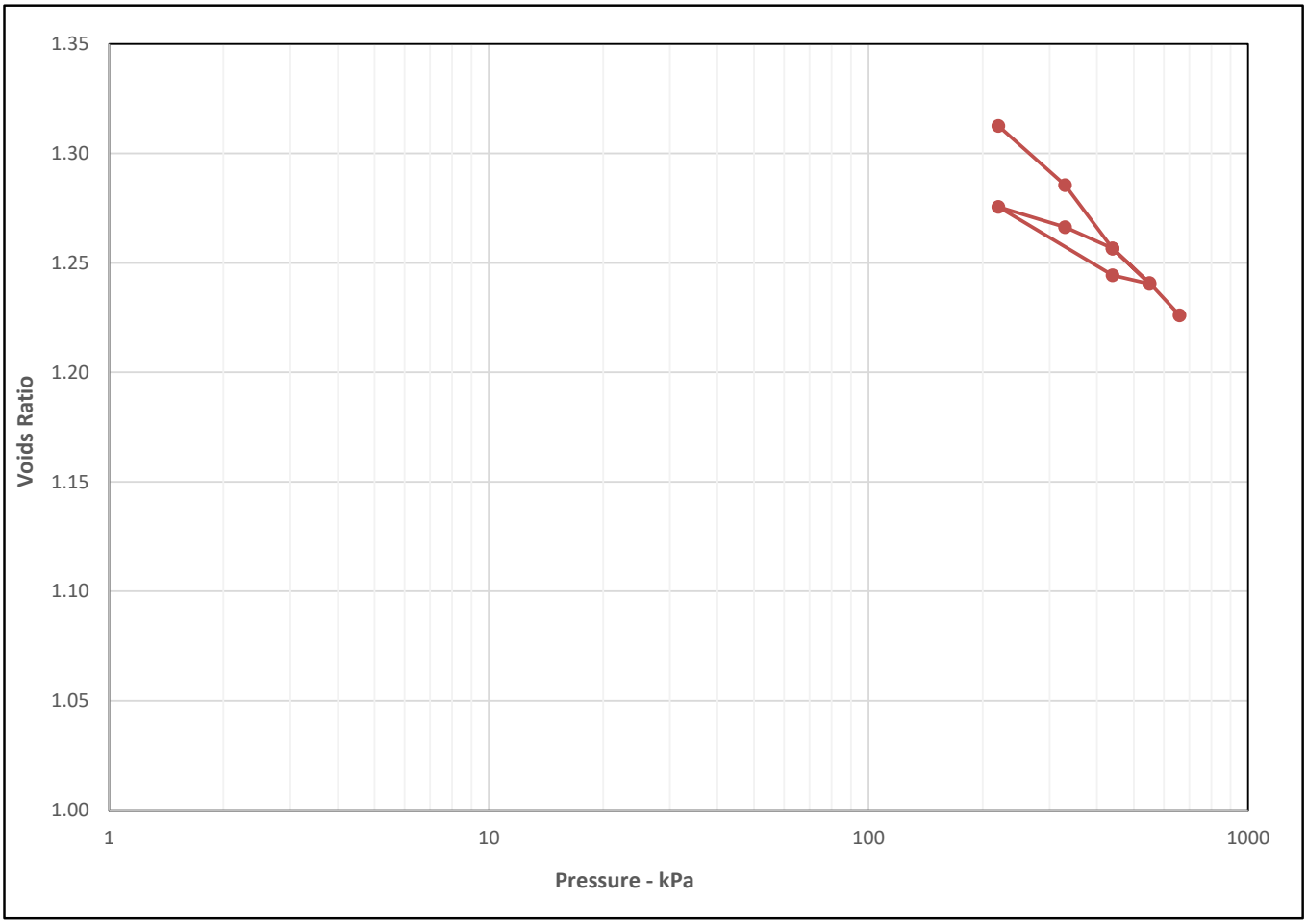
Swelling Stage Reached At 34kPA

Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	20	0	-	455	0.19	11	910	-	1137.5	0.024	5.3
Bulk Density (Mg/m3)	1.52	455	-	682.5	0.064	1.3	1137.5	-	1365	0.019	0.29
Dry Density (Mg/m3)	1.27	682.5	-	910	0.033	2.7		-			
Voids Ratio	1.0837	910	-	1137.5	0.0	1.2		-			
Degree of saturation	47.9	1137.5	-	910	0.0096	1.9		-			
Height (mm)	18.64	910	-	455	0.025	1.2		-			
Diameter (mm)	74.63	455	-	682.5	0.02	3.4		-			
Particle Density (Mg/m3)	2.65	682.5	-	910	0.024	1.1		-			

Operators	Checked	08-07-18	Ben Sharp	[redacted]
LG	Approved	09-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	ONE DIMENSIONAL CONSOLIDATION TEST BS1377:Part 5:1990, clause 3	Contract Number	39466
		Borehole/Trialpit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	15.00
		Depth Base (m)	15.45
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

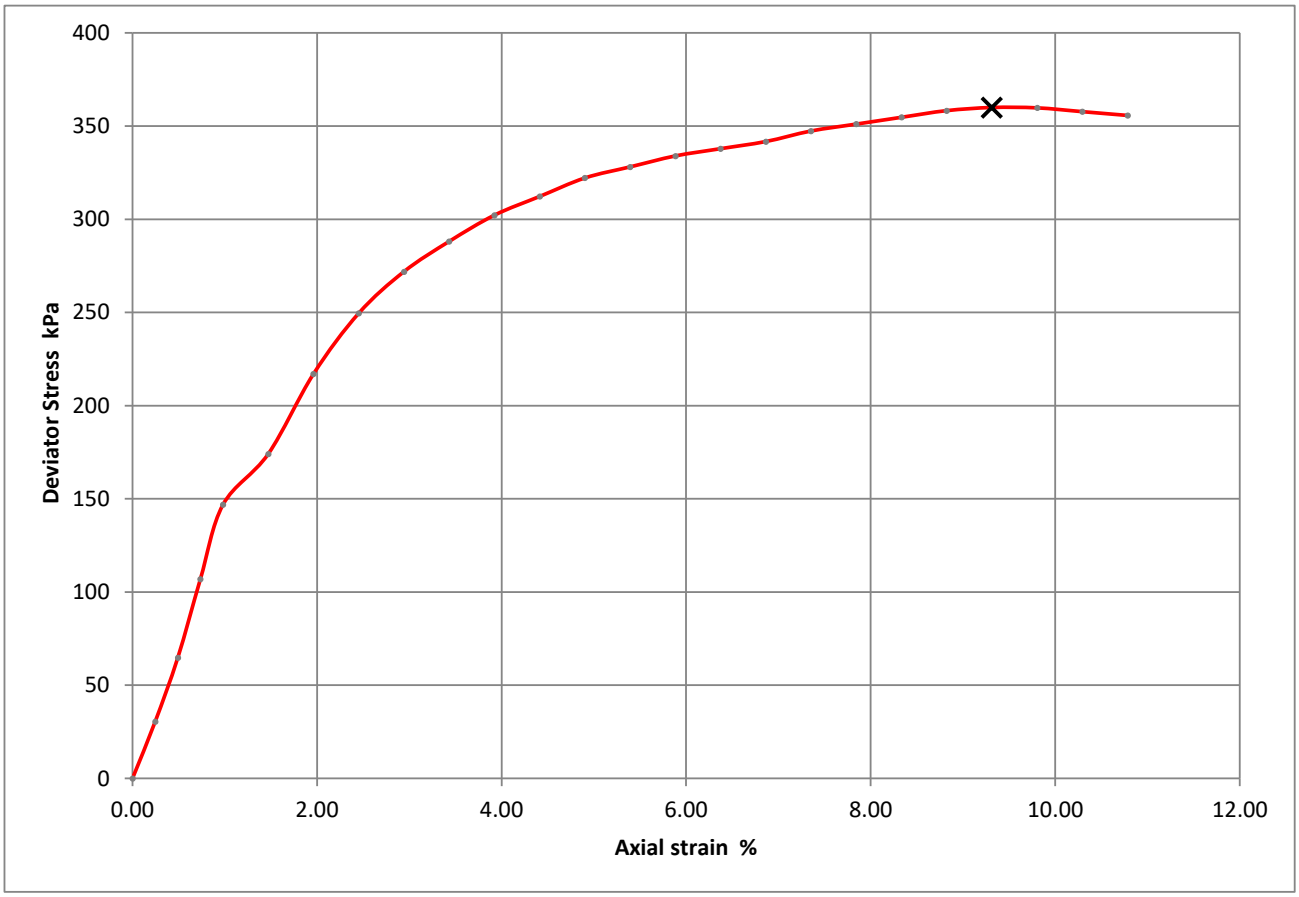


Initial Sample Conditions		Pressure Range			Mv m2/MN	Cv m2/yr	Pressure Range			Mv m2/MN	Cv m2/yr
Moisture Content (%)	27	0	-	220	0.11	18	440	-	550	0.038	3.2
Bulk Density (Mg/m3)	1.42	220	-	330	0.11	4.8	550	-	660	0.064	4.3
Dry Density (Mg/m3)	1.12	330	-	440	0.12	3.3		-			
Voids Ratio	1.3708	440	-	550	0.1	3.2		-			
Degree of saturation	52.7	550	-	440	0.016	3.2		-			
Height (mm)	19.82	440	-	220	0.063	2.4		-			
Diameter (mm)	75.01	220	-	330	0.037	3.3		-			
Particle Density (Mg/m3)	2.65	330	-	440	0.038	1.6		-			

Operators	Checked	26-06-18	Ben Sharp	[redacted]
LG	Approved	27-06-18	Paul Evans	

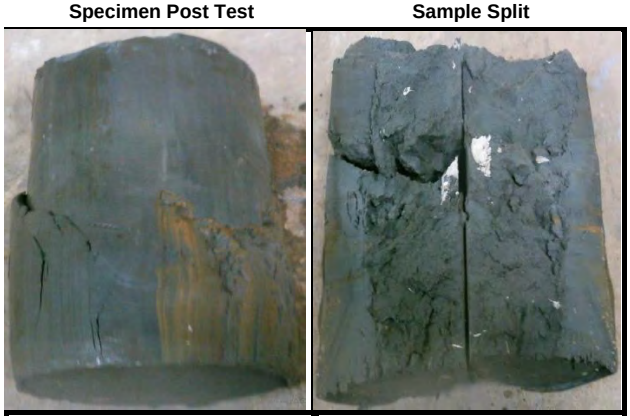
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown sandy silty CLAY	Depth Top (m)	20.50
		Depth Base (m)	20.95
		Sample Type	U



Moisture Content (%)	28
Bulk Density (Mg/m^3)	1.99
Dry Density (Mg/m^3)	1.55
Specimen Length (mm)	204
Specimen Diameter (mm)	102
Cell Pressure (kPa)	350
Deviator Stress (kPa)	360
Undrained Shear Strength (kPa)	180
Failure Strain (%)	9.31
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

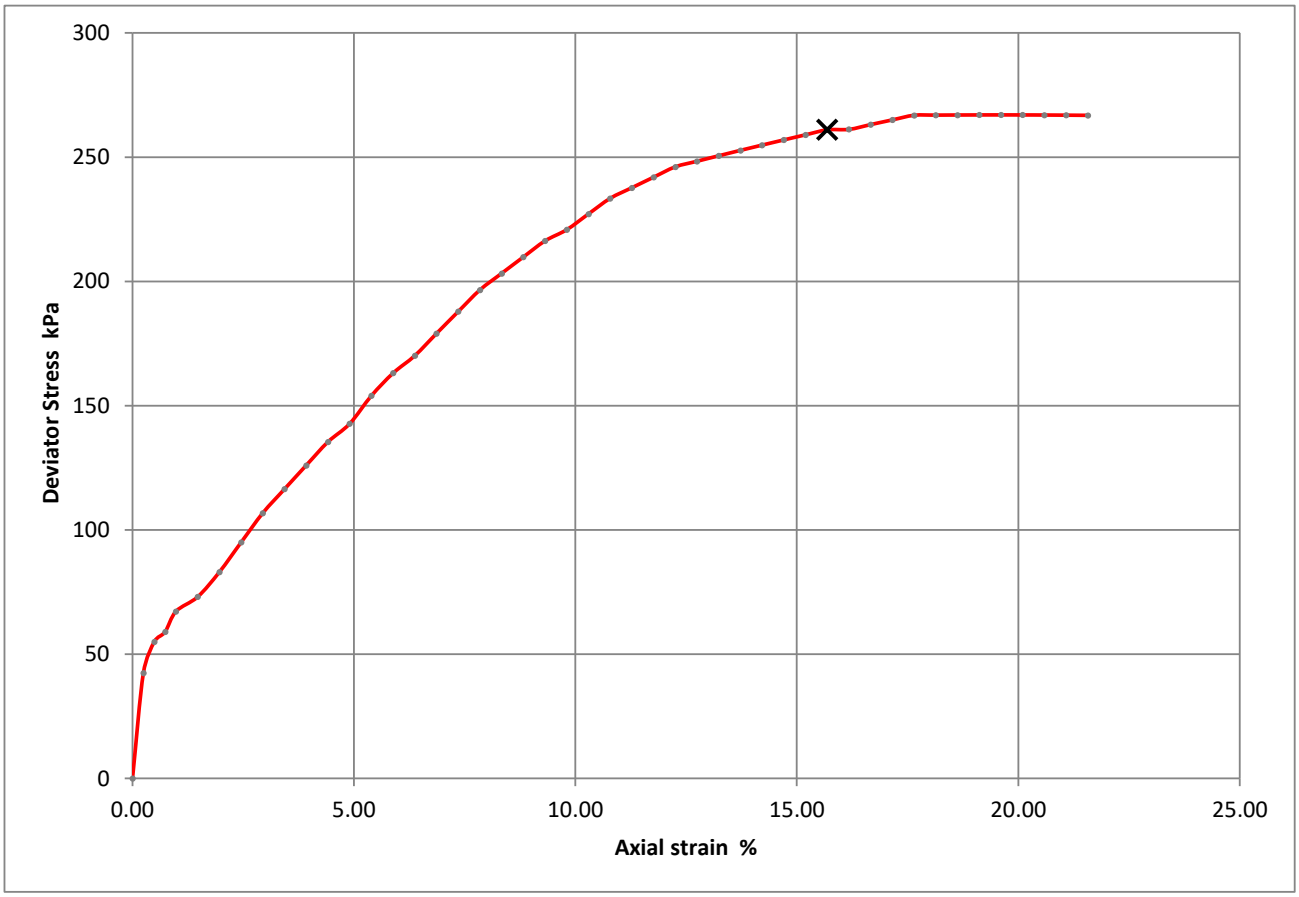
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

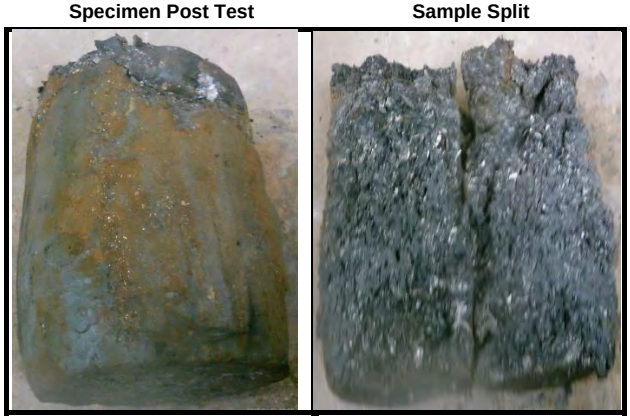
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with shell fragments.	Depth Top (m)	29.50
		Depth Base (m)	29.95
		Sample Type	U



Moisture Content (%)	19
Bulk Density (Mg/m^3)	2.24
Dry Density (Mg/m^3)	1.88
Specimen Length (mm)	204
Specimen Diameter (mm)	100
Cell Pressure (kPa)	30
Deviator Stress (kPa)	261
Undrained Shear Strength (kPa)	130
Failure Strain (%)	15.69
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

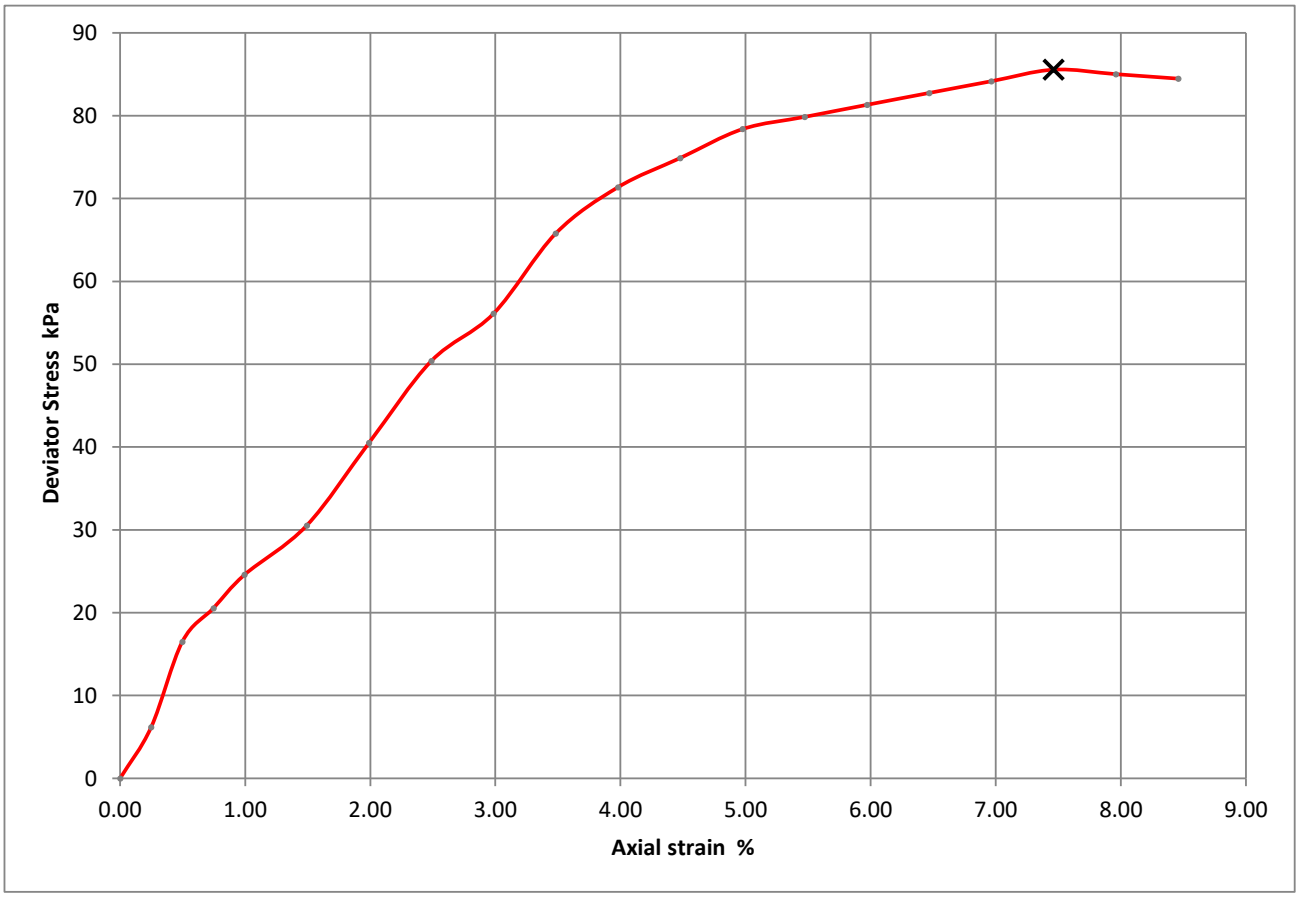
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

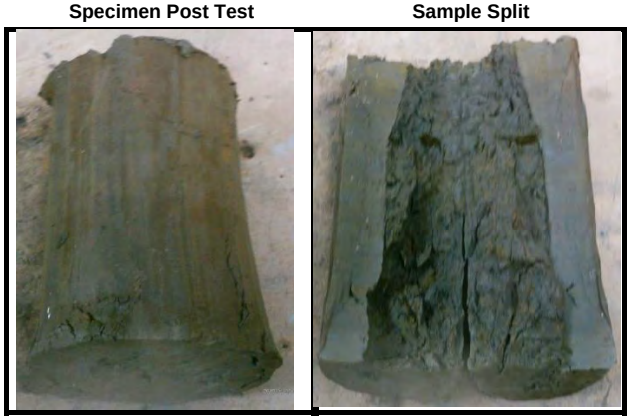
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown silty CLAY	Depth Top (m)	2.50
		Depth Base (m)	2.95
		Sample Type	U



Moisture Content (%)	62
Bulk Density (Mg/m^3)	1.79
Dry Density (Mg/m^3)	1.10
Specimen Length (mm)	201
Specimen Diameter (mm)	101
Cell Pressure (kPa)	30
Deviator Stress (kPa)	86
Undrained Shear Strength (kPa)	43
Failure Strain (%)	7.46
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

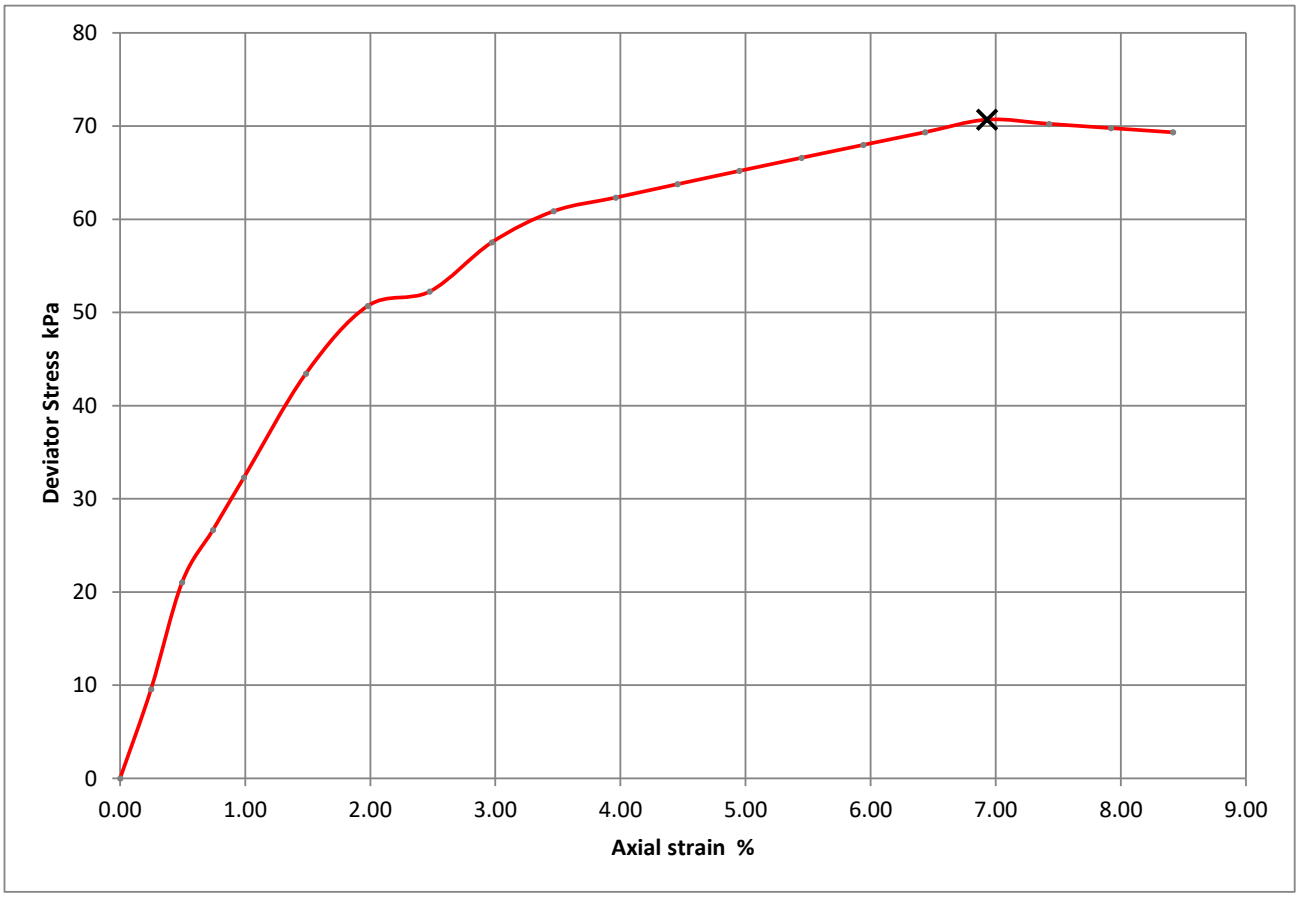
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	
Approved	06-07-18	Paul Evans	

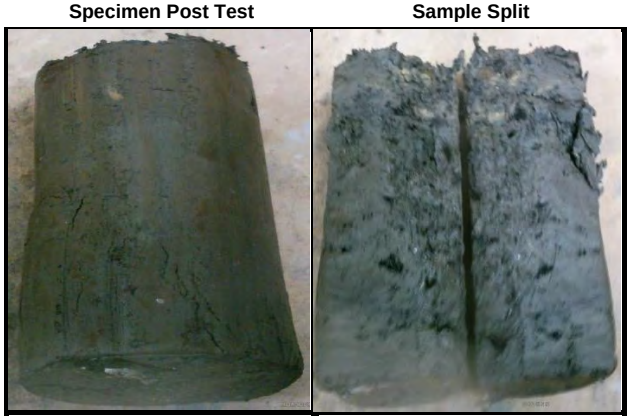
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY	Depth Top (m)	7.50
		Depth Base (m)	7.95
		Sample Type	U



Moisture Content (%)	71
Bulk Density (Mg/m^3)	1.45
Dry Density (Mg/m^3)	0.85
Specimen Length (mm)	202
Specimen Diameter (mm)	105
Cell Pressure (kPa)	90
Deviator Stress (kPa)	71
Undrained Shear Strength (kPa)	35
Failure Strain (%)	6.93
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

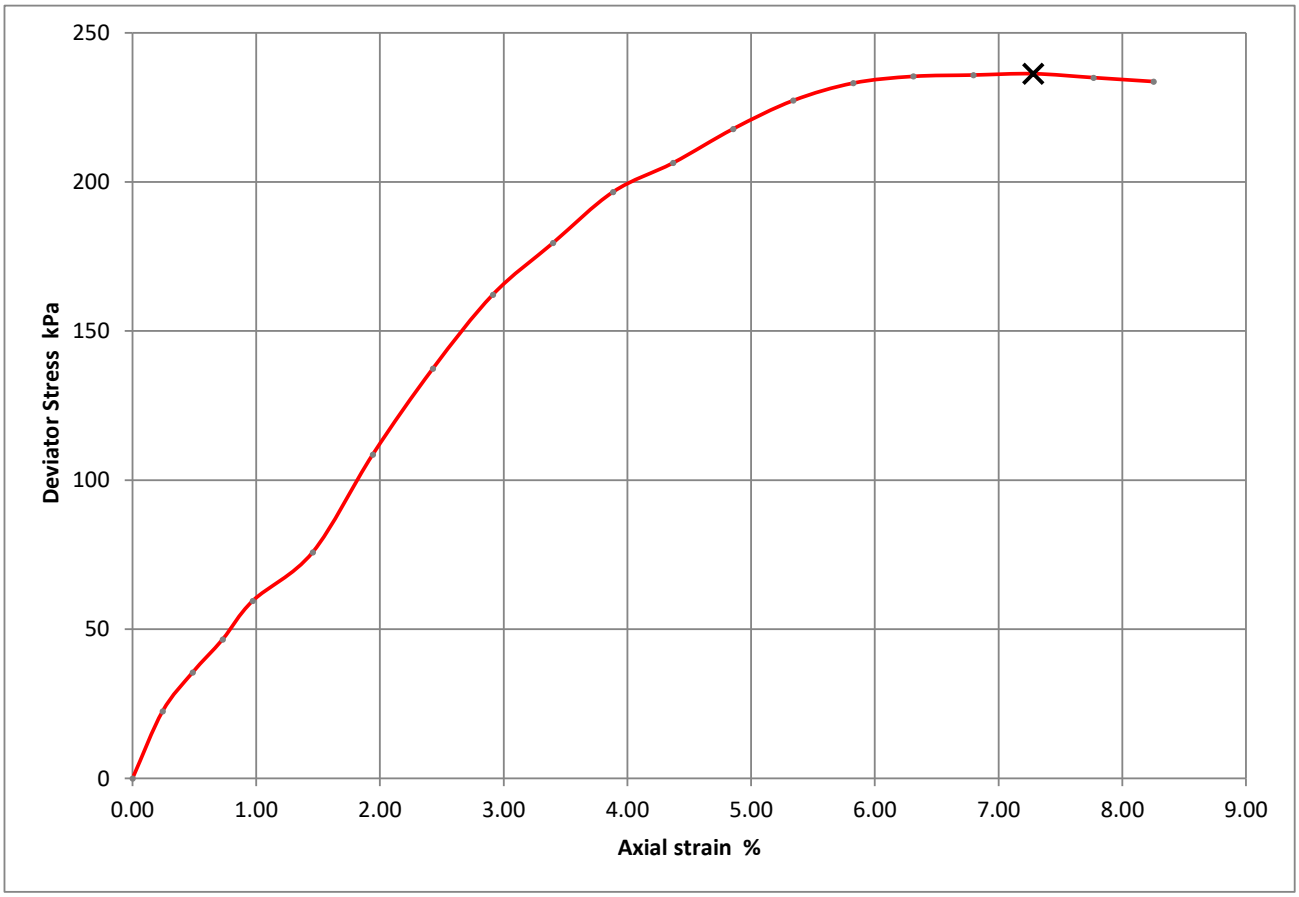
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

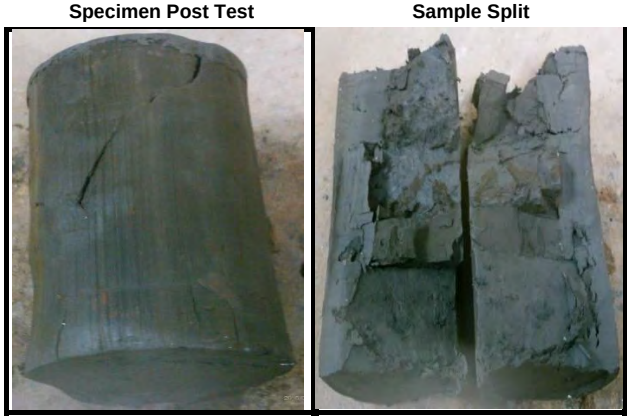
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY	Depth Top (m)	16.50
		Depth Base (m)	16.95
		Sample Type	U



Moisture Content (%)	22
Bulk Density (Mg/m^3)	1.88
Dry Density (Mg/m^3)	1.54
Specimen Length (mm)	206
Specimen Diameter (mm)	106
Cell Pressure (kPa)	240
Deviator Stress (kPa)	236
Undrained Shear Strength (kPa)	118
Failure Strain (%)	7.28
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

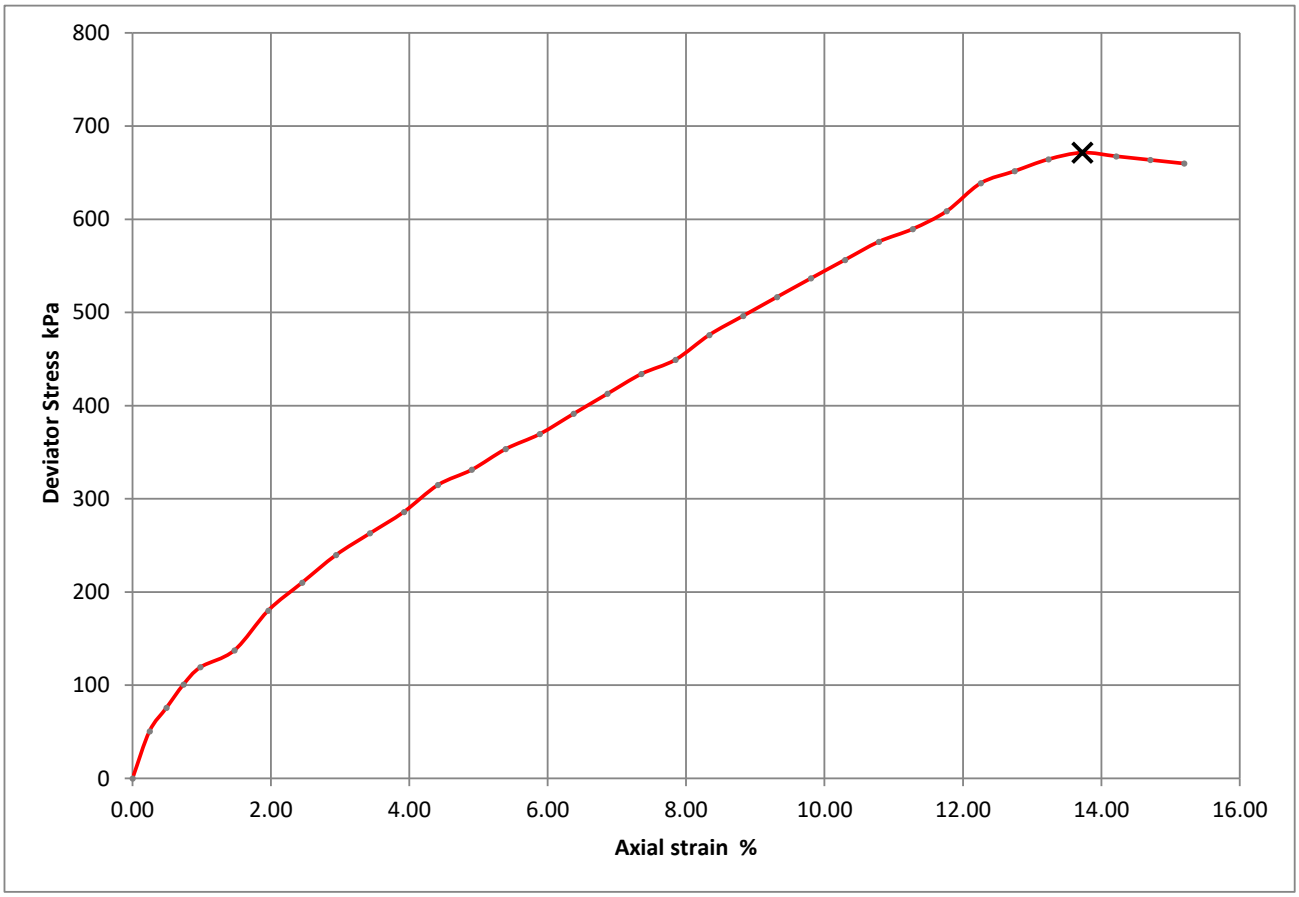
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

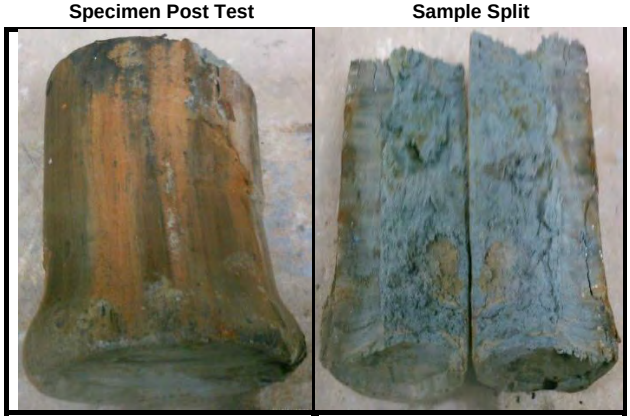
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown sandy silty CLAY.	Depth Top (m)	31.50
		Depth Base (m)	31.95
		Sample Type	U



Moisture Content (%)	13
Bulk Density (Mg/m^3)	2.20
Dry Density (Mg/m^3)	1.94
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	475
Deviator Stress (kPa)	671
Undrained Shear Strength (kPa)	336
Failure Strain (%)	13.73
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

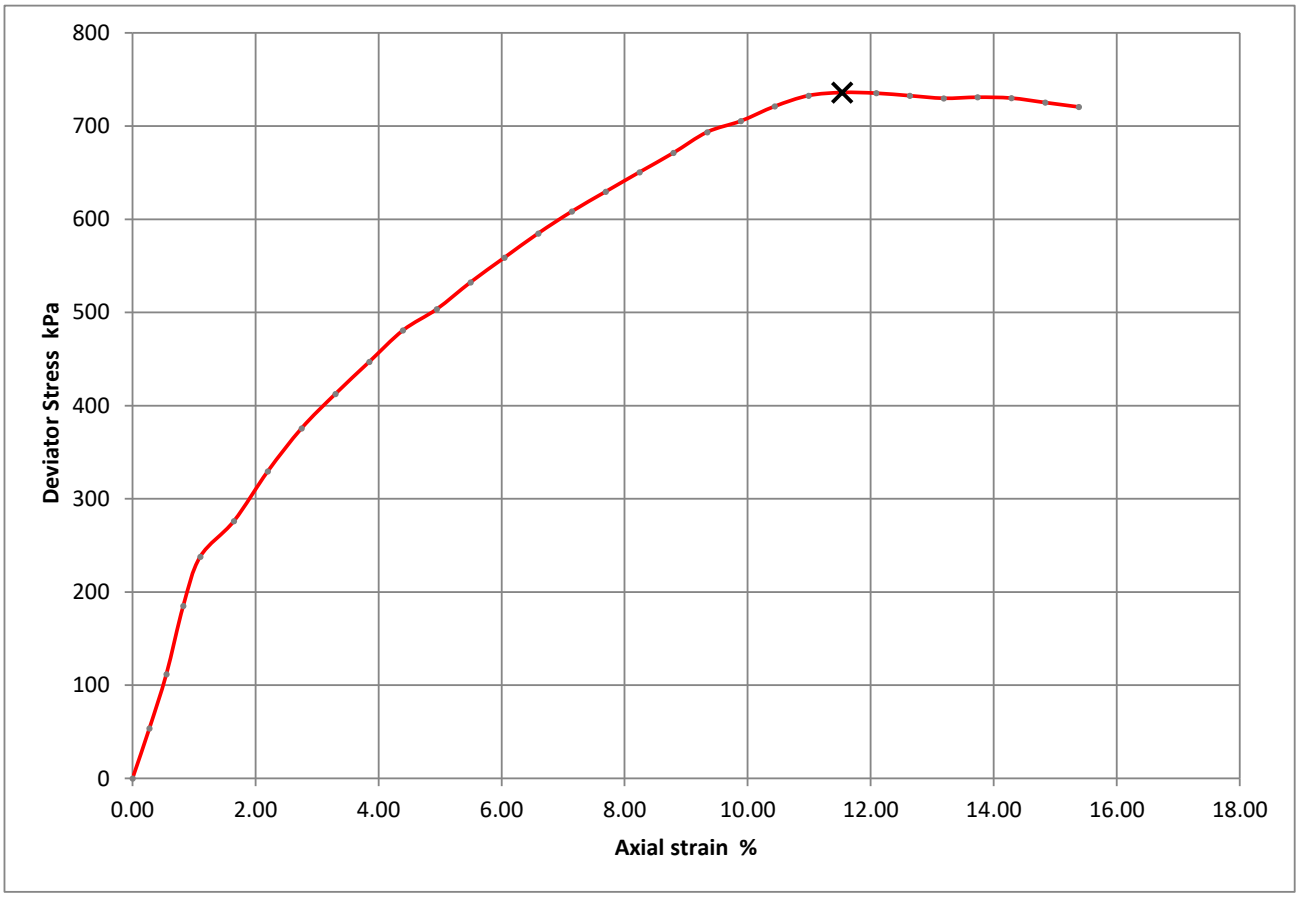
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	
Approved	06-07-18	Paul Evans	

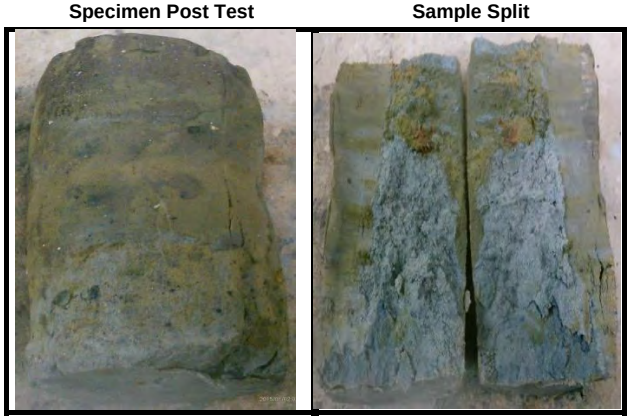
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH02A
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown sandy silty CLAY	Depth Top (m)	32.85
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	9.3
Bulk Density (Mg/m^3)	2.37
Dry Density (Mg/m^3)	2.17
Specimen Length (mm)	182
Specimen Diameter (mm)	97
Cell Pressure (kPa)	565
Deviator Stress (kPa)	736
Undrained Shear Strength (kPa)	368
Failure Strain (%)	11.54
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	
Approved	06-07-18	Paul Evans	

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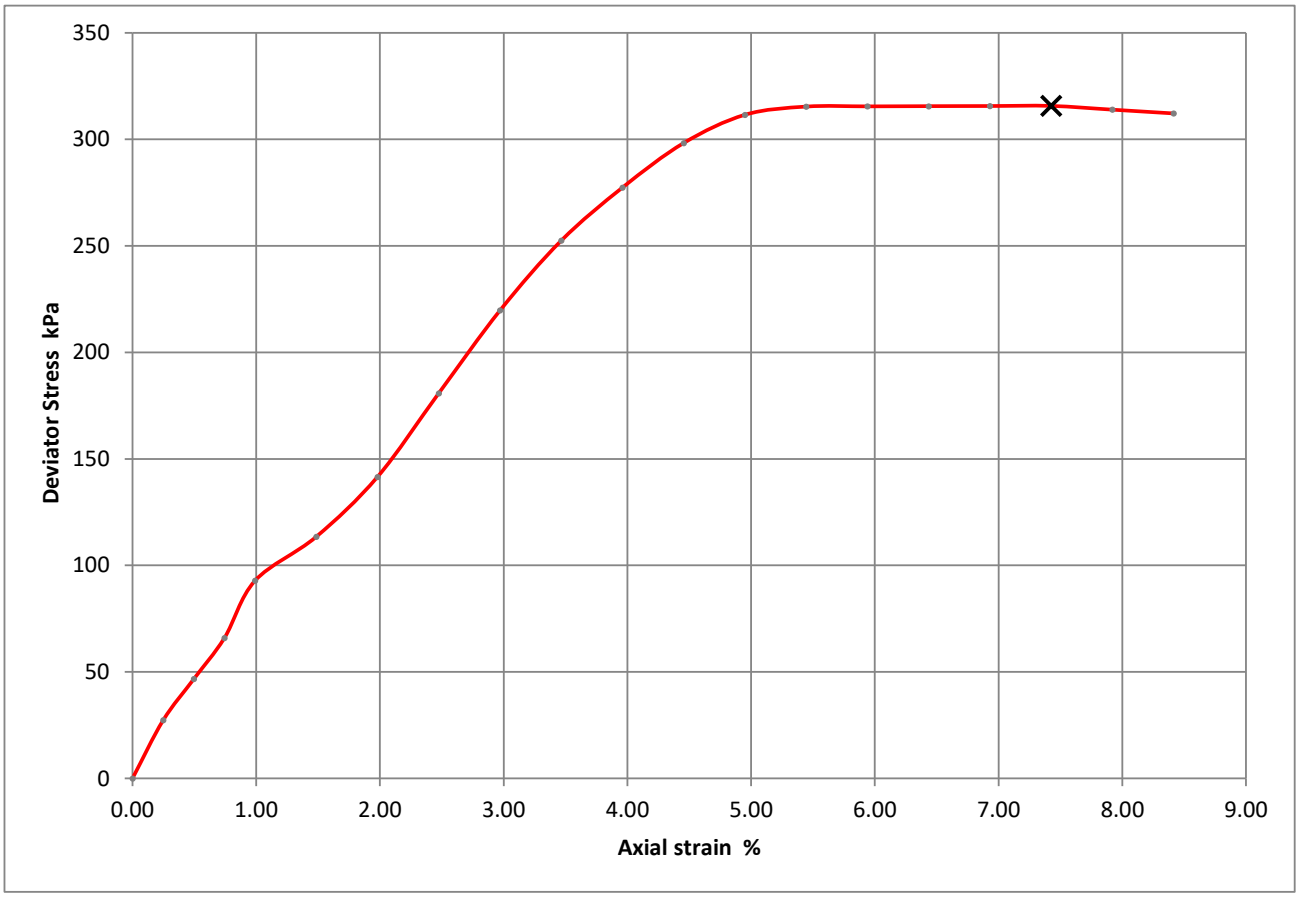
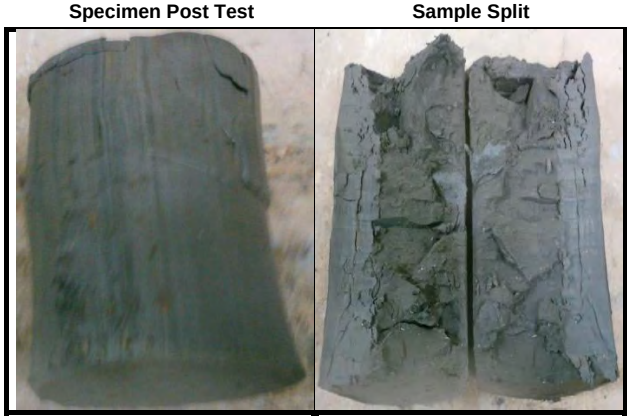
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH03
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY	Depth Top (m)	17.50
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	28
Bulk Density (Mg/m^3)	1.94
Dry Density (Mg/m^3)	1.52
Specimen Length (mm)	202
Specimen Diameter (mm)	104
Cell Pressure (kPa)	275
Deviator Stress (kPa)	316
Undrained Shear Strength (kPa)	158
Failure Strain (%)	7.43
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

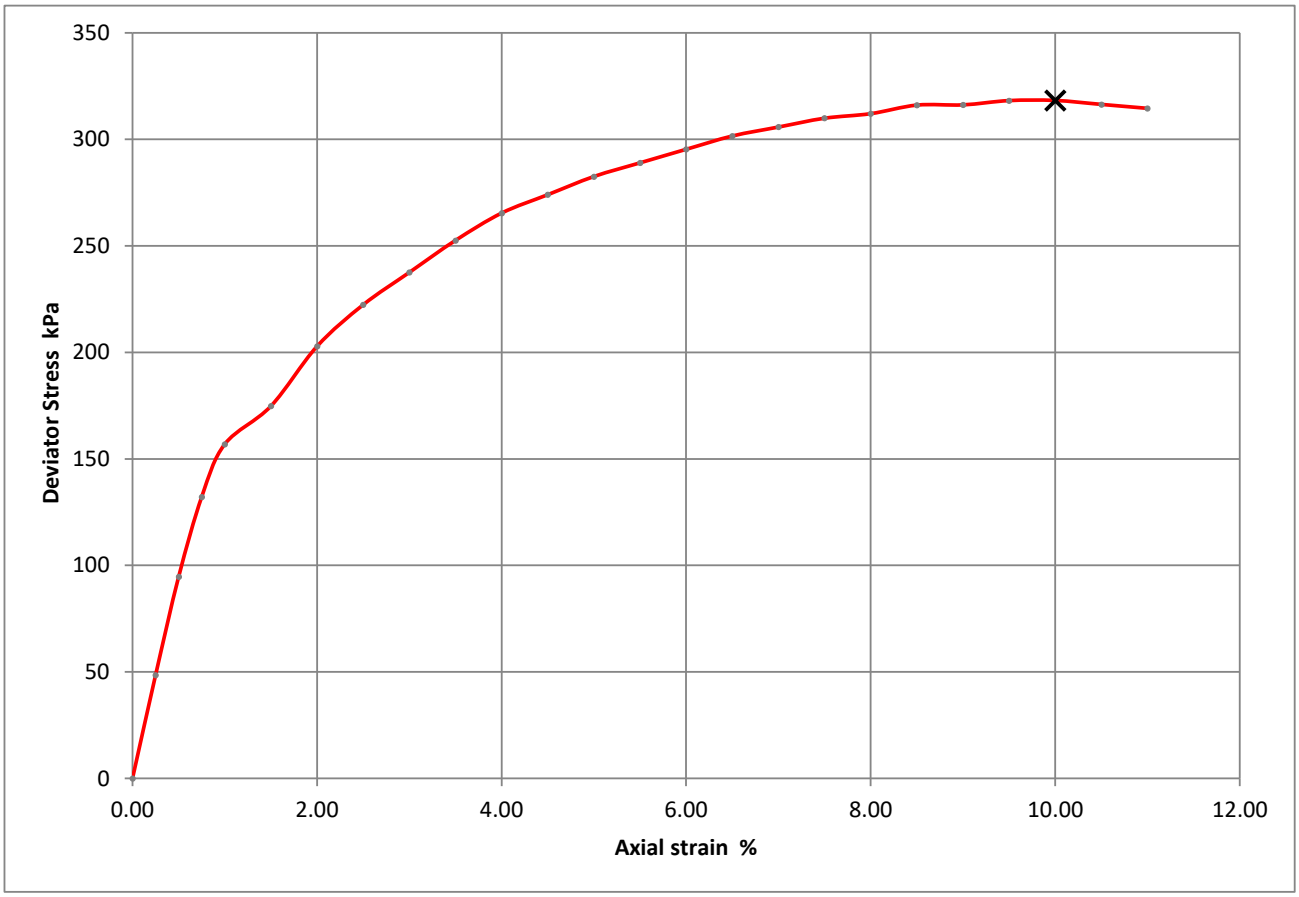
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH03
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY with shell fragments	Depth Top (m)	26.50
		Depth Base (m)	26.95
		Sample Type	U



Moisture Content (%)	30
Bulk Density (Mg/m^3)	2.16
Dry Density (Mg/m^3)	1.66
Specimen Length (mm)	200
Specimen Diameter (mm)	100
Cell Pressure (kPa)	450
Deviator Stress (kPa)	318
Undrained Shear Strength (kPa)	159
Failure Strain (%)	10.00
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

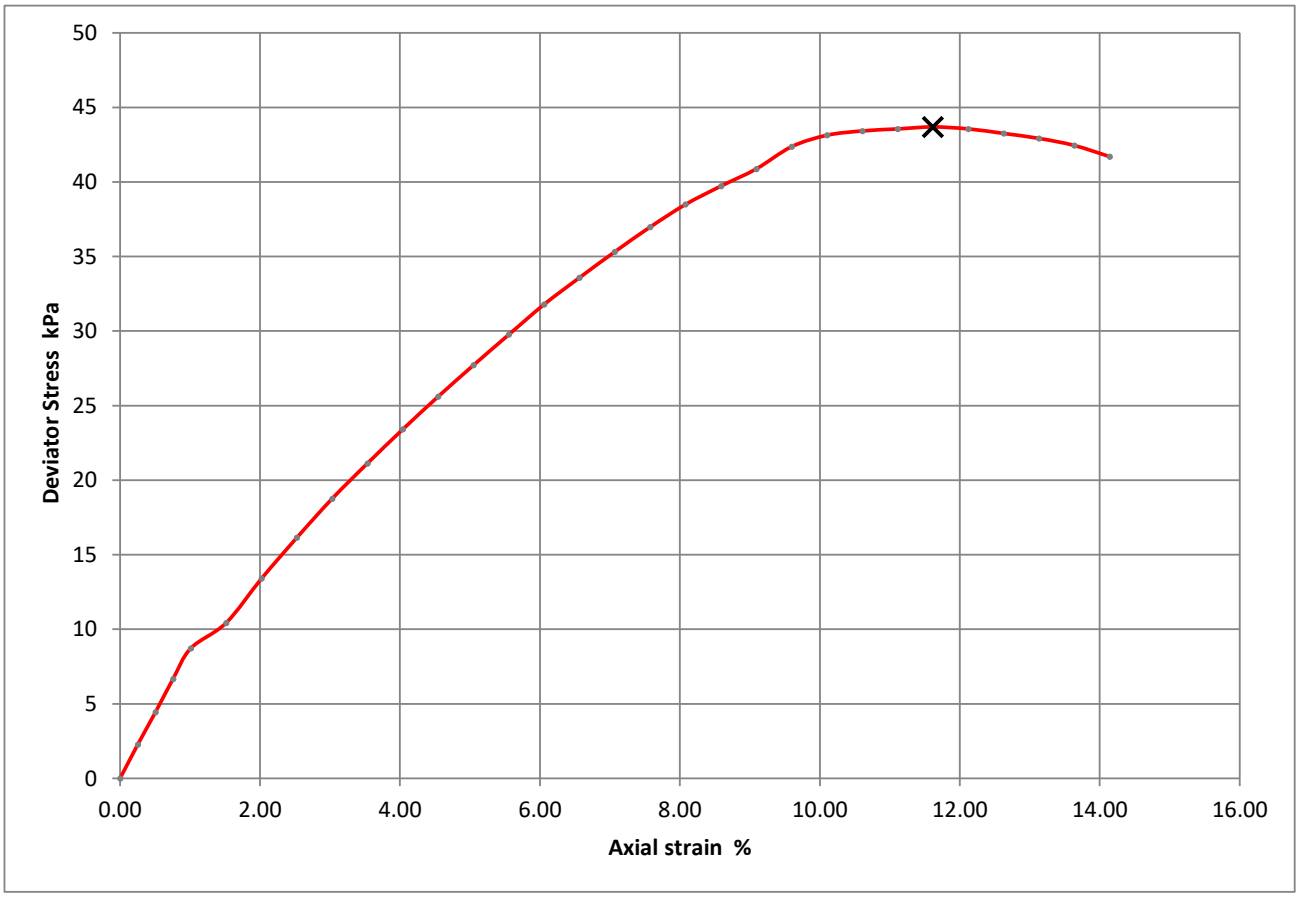
Specimen Post Test

Sample Split

Checked	05-07-18	Emma Sharp	
Approved	06-07-18	Paul Evans	

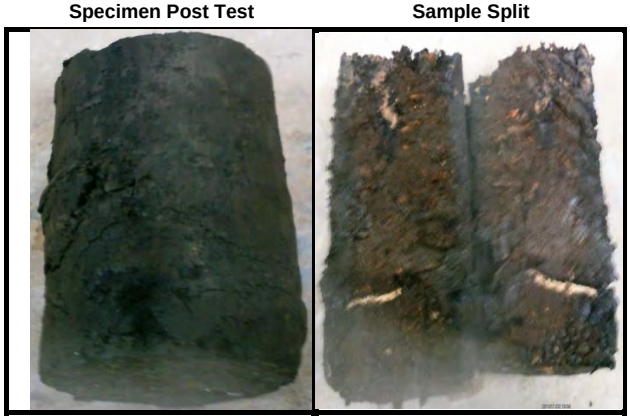
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Black PEAT	Depth Top (m)	3.50
		Depth Base (m)	3.95
		Sample Type	U



Moisture Content (%)	504
Bulk Density (Mg/m^3)	1.04
Dry Density (Mg/m^3)	0.17
Specimen Length (mm)	198
Specimen Diameter (mm)	103
Cell Pressure (kPa)	50
Deviator Stress (kPa)	44
Undrained Shear Strength (kPa)	22
Failure Strain (%)	11.62
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

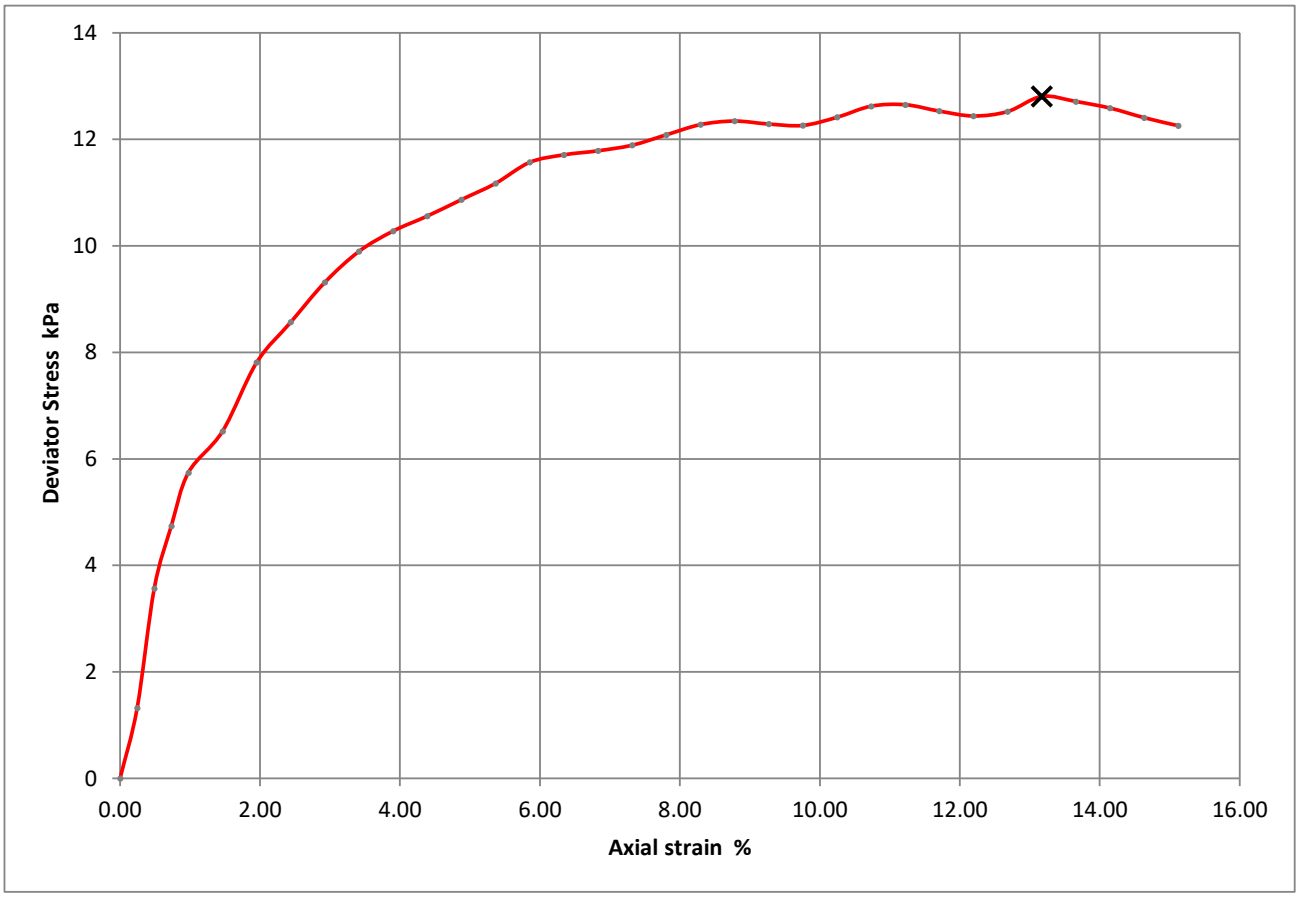
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with wood fragments.	Depth Top (m)	9.00
		Depth Base (m)	9.45
		Sample Type	U



Moisture Content (%)	219
Bulk Density (Mg/m^3)	1.49
Dry Density (Mg/m^3)	0.47
Specimen Length (mm)	205
Specimen Diameter (mm)	102
Cell Pressure (kPa)	80
Deviator Stress (kPa)	13
Undrained Shear Strength (kPa)	6
Failure Strain (%)	13.17
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

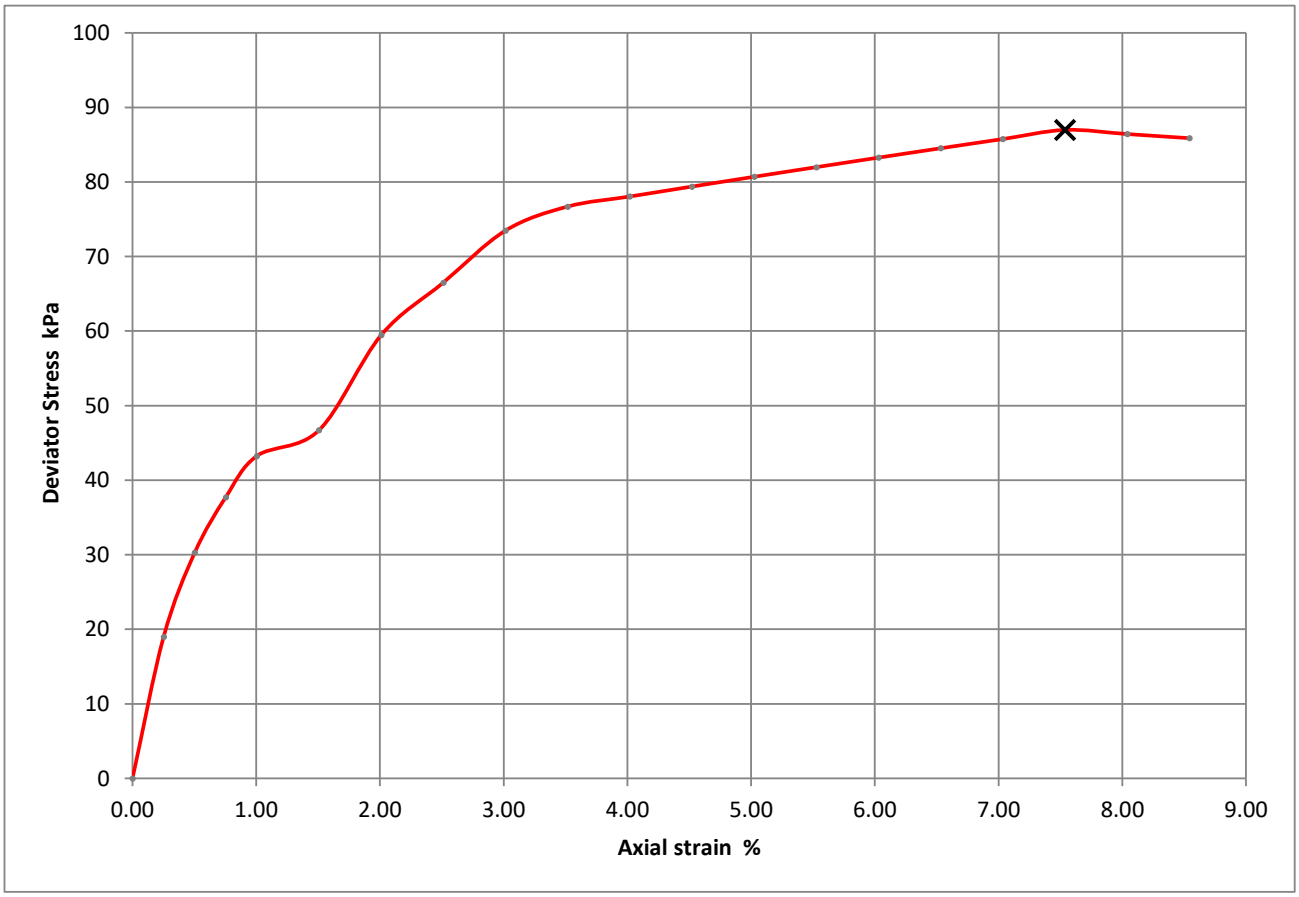
Specimen Post Test

Sample Split

Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with wood fragments.	Depth Top (m)	13.50
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	34
Bulk Density (Mg/m^3)	1.85
Dry Density (Mg/m^3)	1.38
Specimen Length (mm)	199
Specimen Diameter (mm)	105
Cell Pressure (kPa)	195
Deviator Stress (kPa)	87
Undrained Shear Strength (kPa)	43
Failure Strain (%)	7.54
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

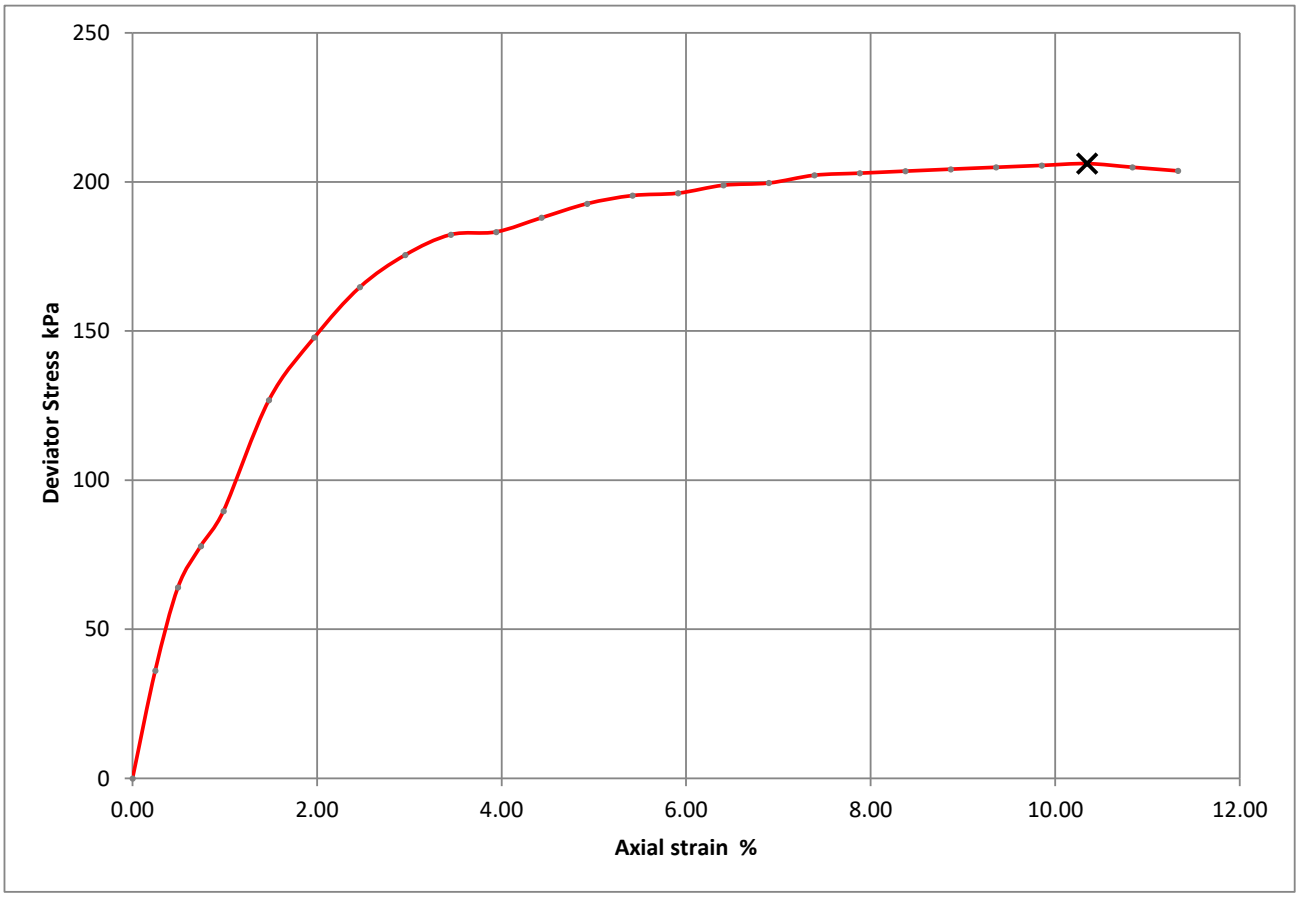
Specimen Post Test

Sample Split

Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY.	Depth Top (m)	27.31
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	35
Bulk Density (Mg/m^3)	1.77
Dry Density (Mg/m^3)	1.31
Specimen Length (mm)	203
Specimen Diameter (mm)	101
Cell Pressure (kPa)	465
Deviator Stress (kPa)	206
Undrained Shear Strength (kPa)	103
Failure Strain (%)	10.34
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

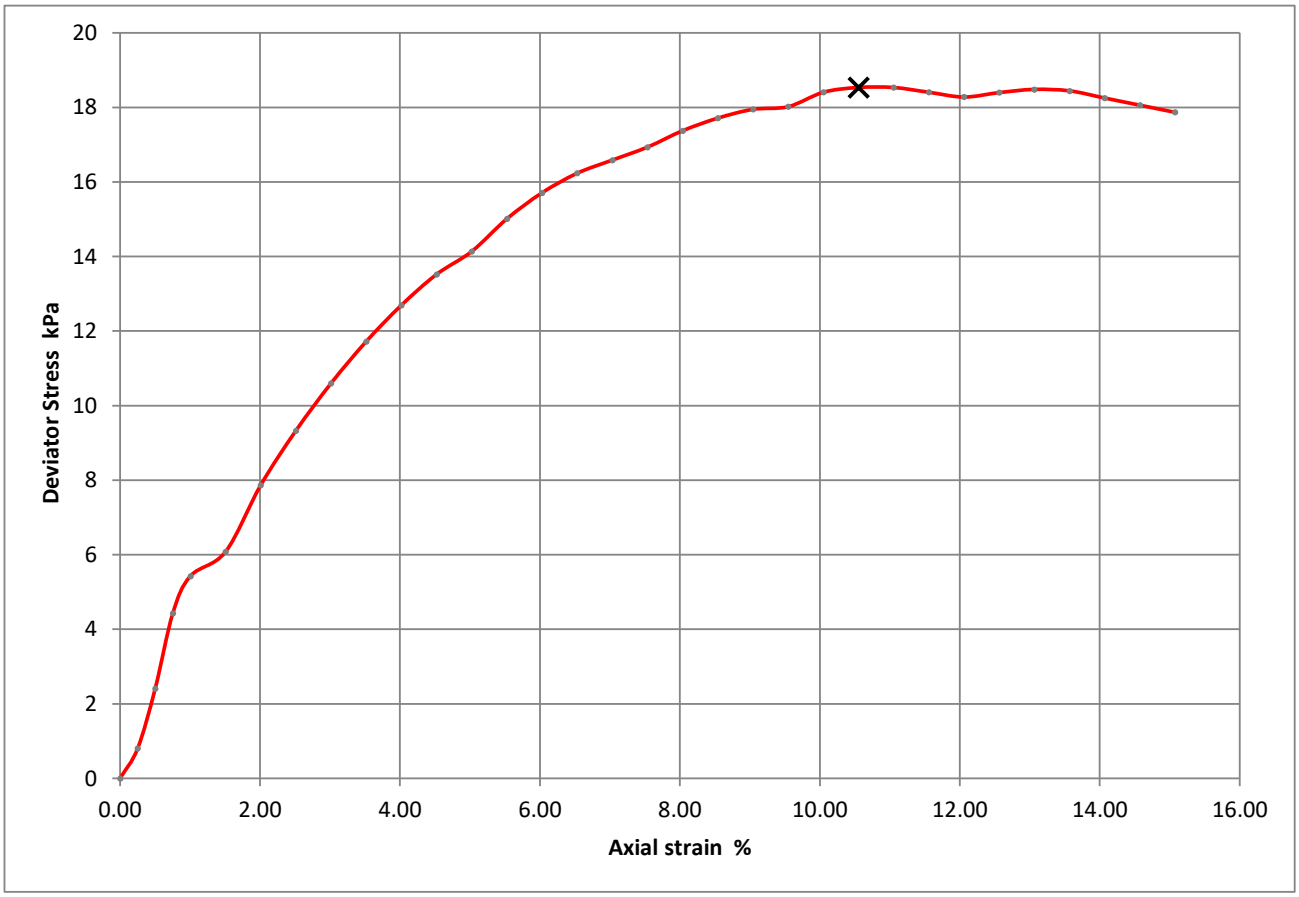
Specimen Post Test

Sample Split

Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

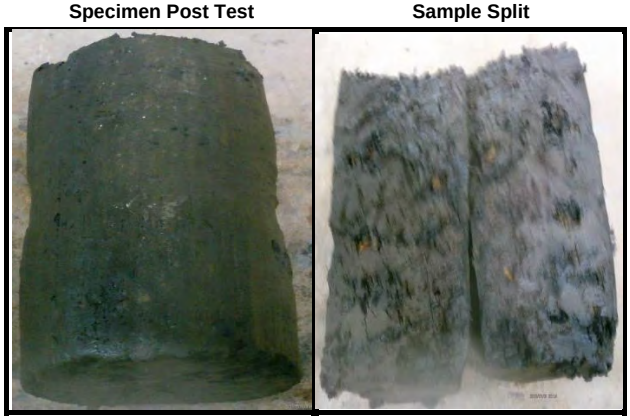
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing PEAT.	Depth Top (m)	3.00
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	72
Bulk Density (Mg/m^3)	1.37
Dry Density (Mg/m^3)	0.80
Specimen Length (mm)	199
Specimen Diameter (mm)	99
Cell Pressure (kPa)	40
Deviator Stress (kPa)	19
Undrained Shear Strength (kPa)	9
Failure Strain (%)	10.55
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

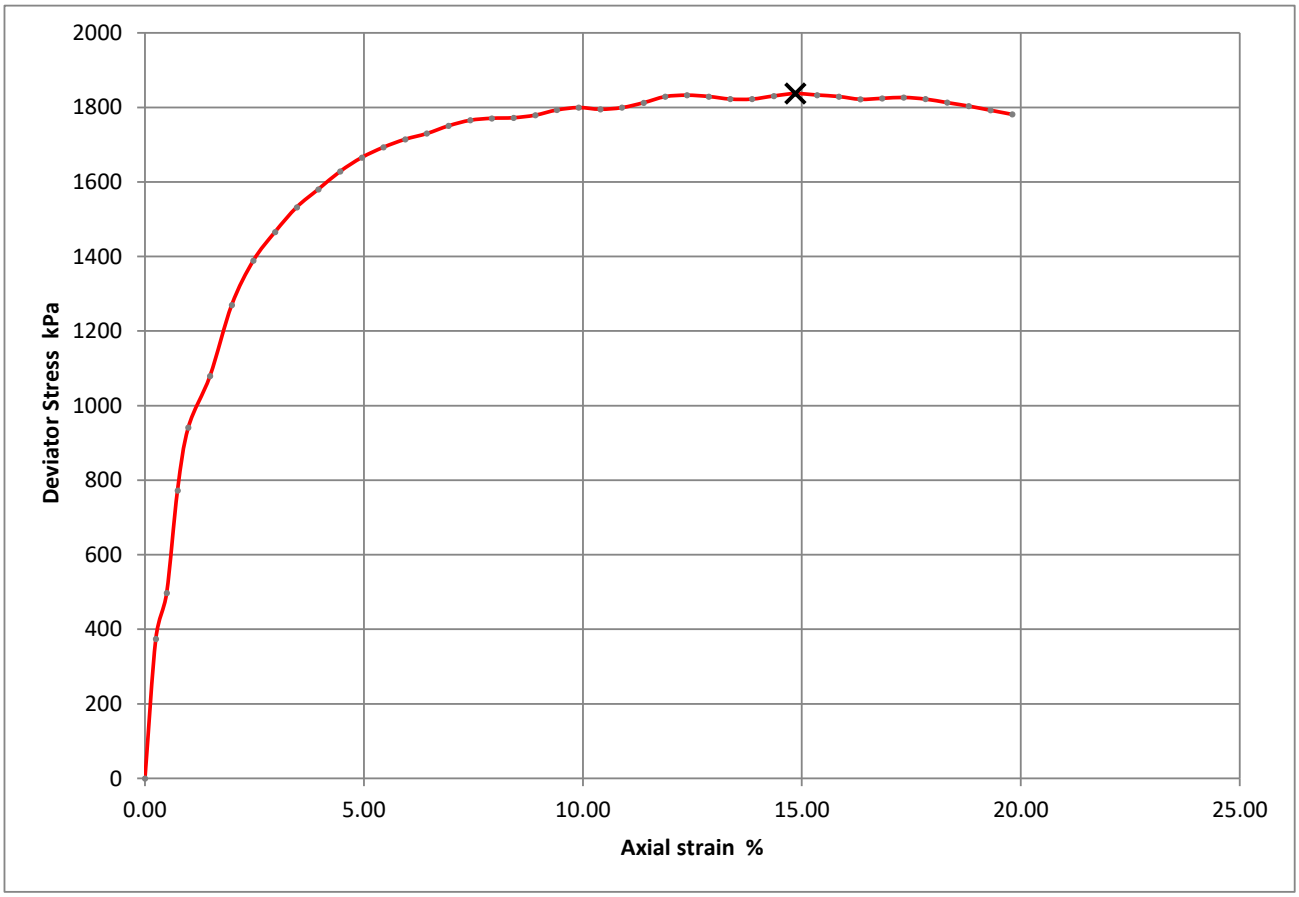
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

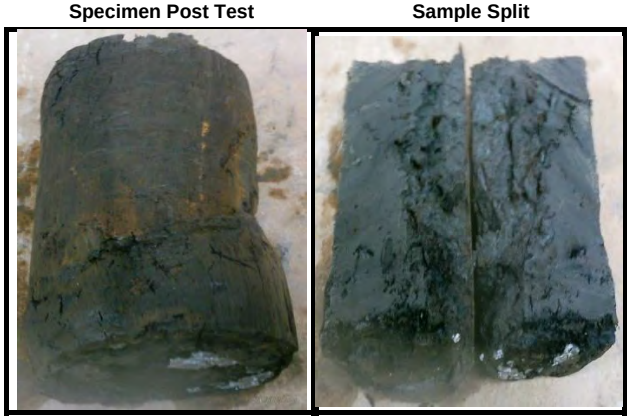
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing PEAT.	Depth Top (m)	9.00
		Depth Base (m)	9.45
		Sample Type	U



Moisture Content (%)	72
Bulk Density (Mg/m^3)	1.26
Dry Density (Mg/m^3)	0.73
Specimen Length (mm)	202
Specimen Diameter (mm)	101
Cell Pressure (kPa)	115
Deviator Stress (kPa)	1837
Undrained Shear Strength (kPa)	919
Failure Strain (%)	14.85
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

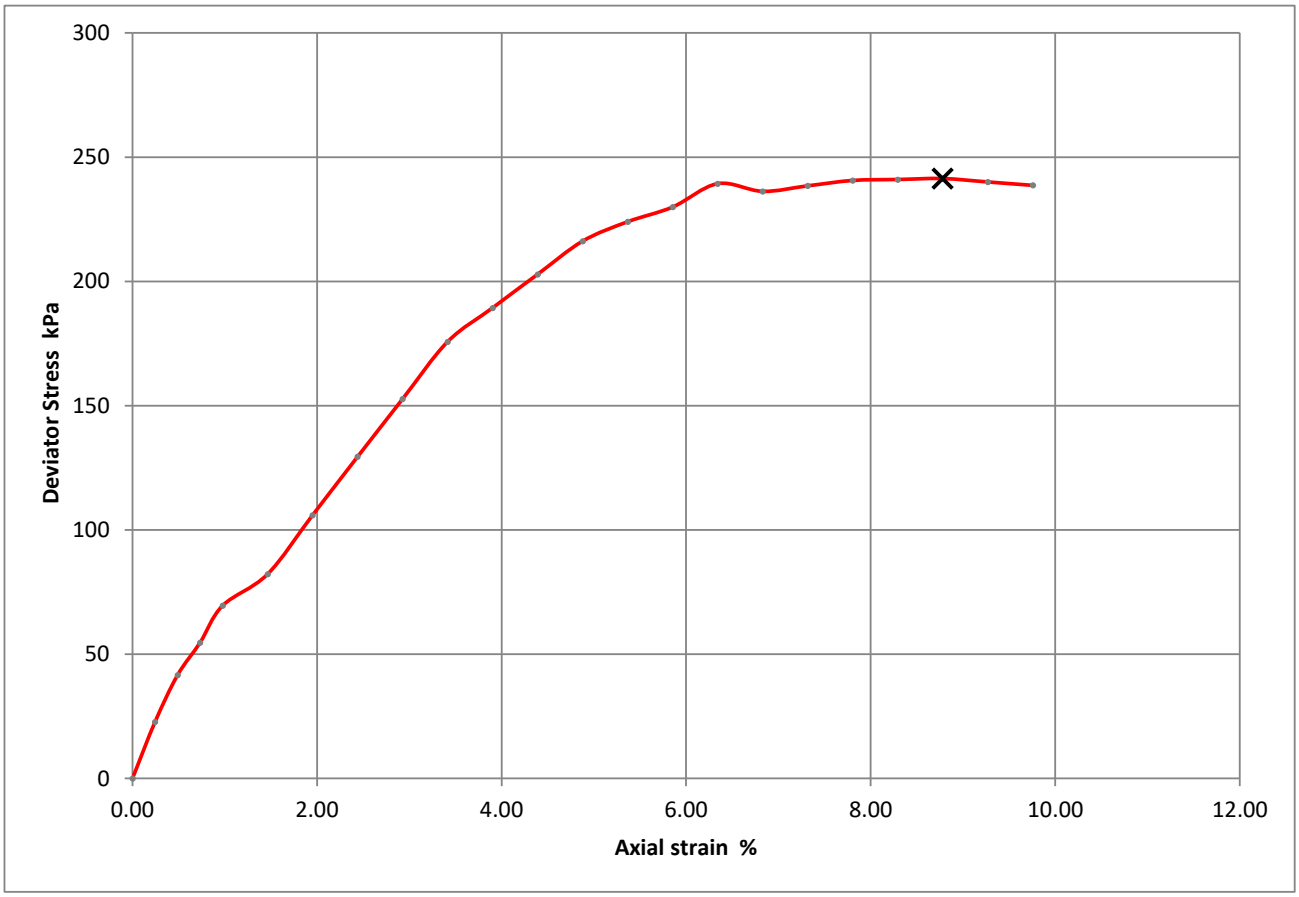
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

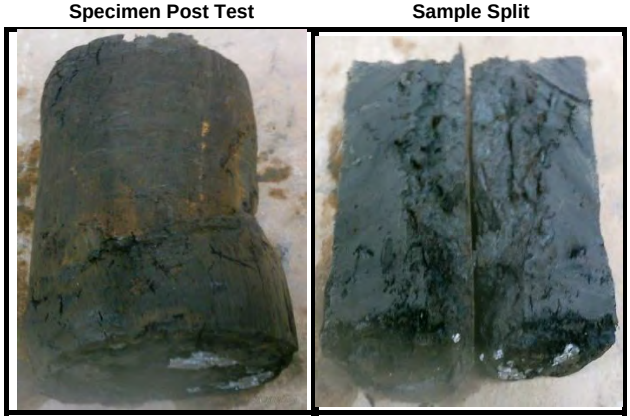
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing PEAT.	Depth Top (m)	15.00
		Depth Base (m)	15.45
		Sample Type	U



Moisture Content (%)	1018
Bulk Density (Mg/m^3)	1.92
Dry Density (Mg/m^3)	0.17
Specimen Length (mm)	205
Specimen Diameter (mm)	104
Cell Pressure (kPa)	220
Deviator Stress (kPa)	241
Undrained Shear Strength (kPa)	121
Failure Strain (%)	8.78
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

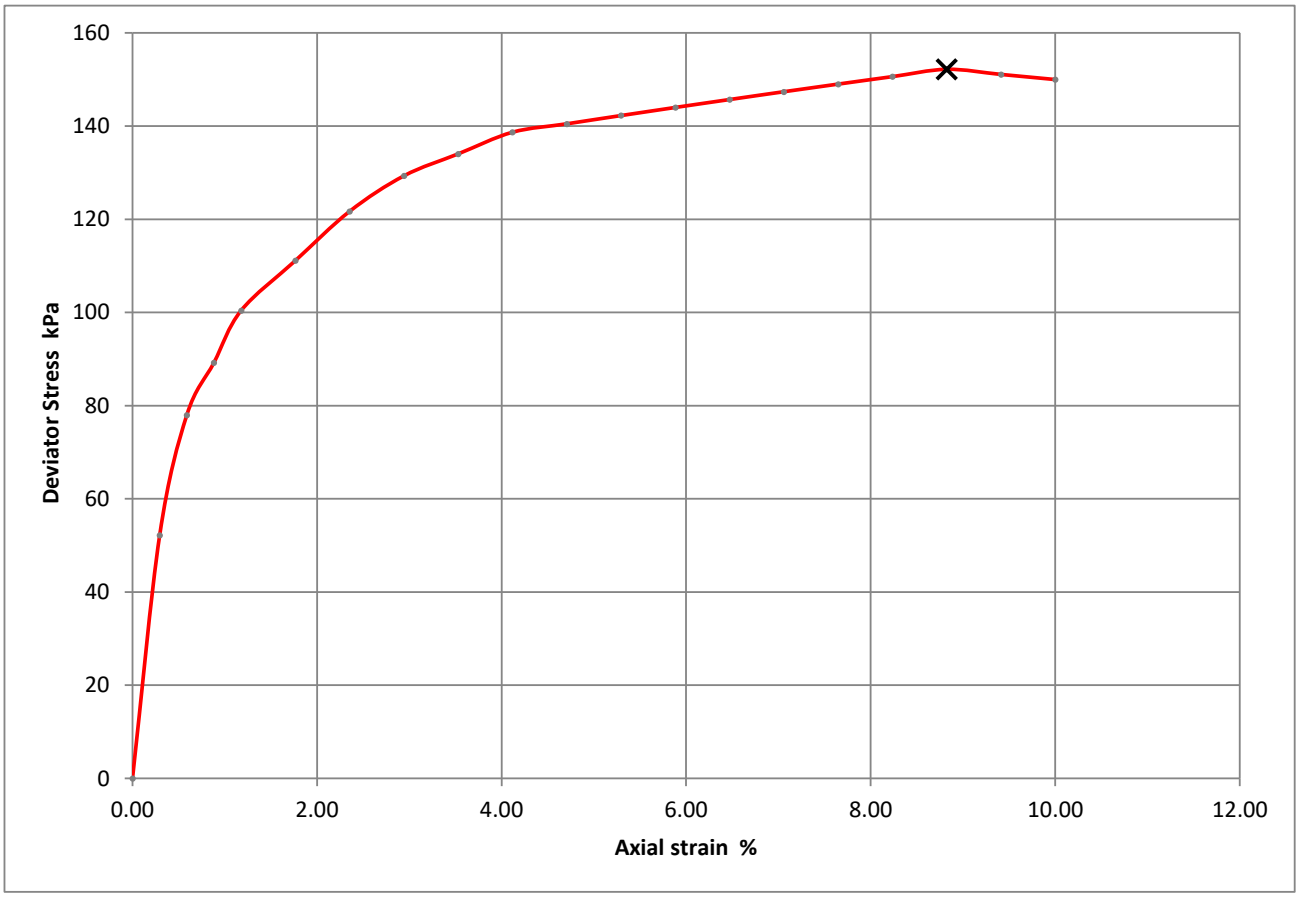
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown silty CLAY with shell fragments.	Depth Top (m)	27.84
		Depth Base (m)	28.00
		Sample Type	U



Moisture Content (%)	27
Bulk Density (Mg/m^3)	2.16
Dry Density (Mg/m^3)	1.70
Specimen Length (mm)	170
Specimen Diameter (mm)	85
Cell Pressure (kPa)	465
Deviator Stress (kPa)	152
Undrained Shear Strength (kPa)	76
Failure Strain (%)	8.82
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test	Sample Split
Image Missing	Image Missing

Checked	05-07-18	Emma Sharp	
Approved	06-07-18	Paul Evans	

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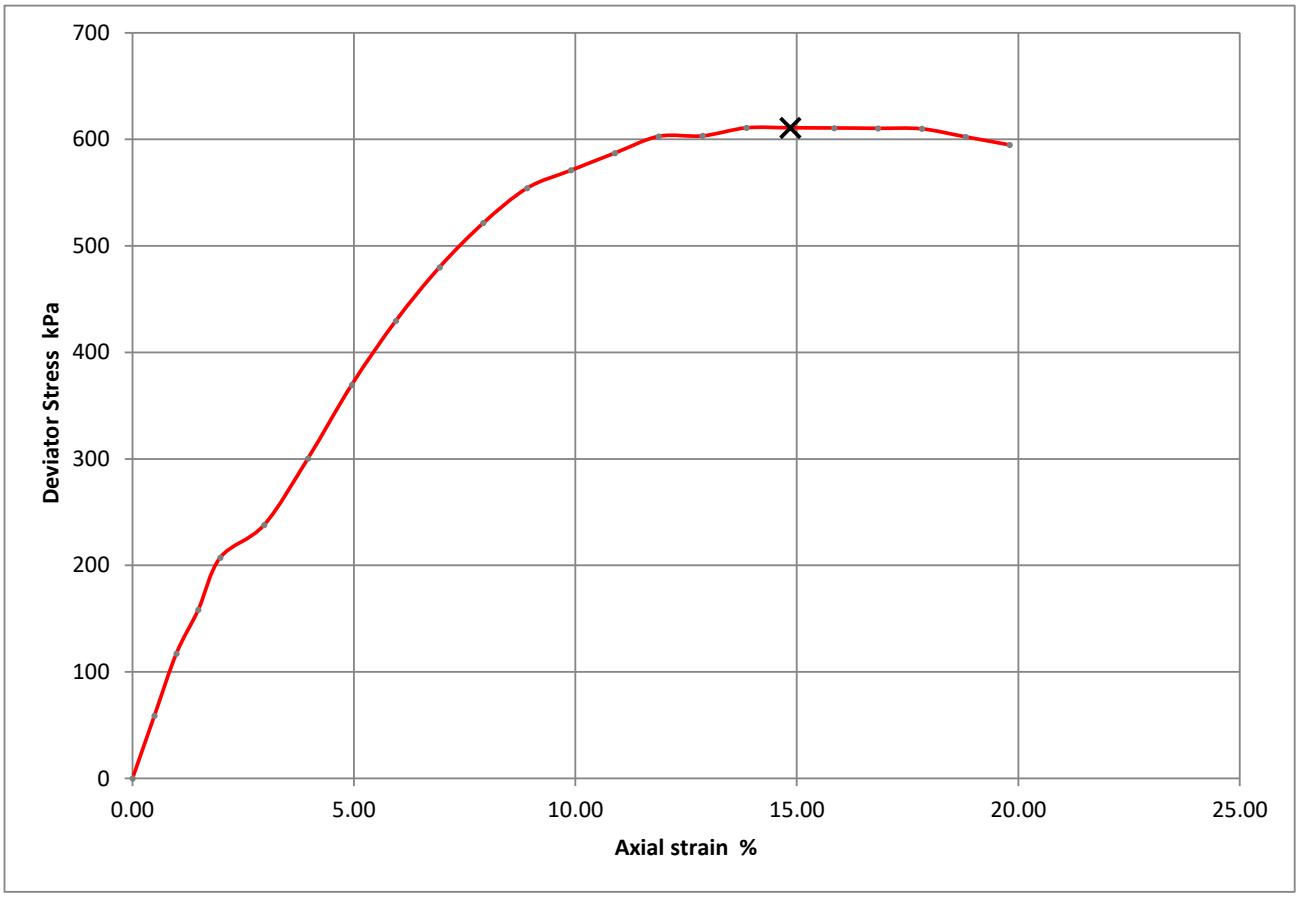
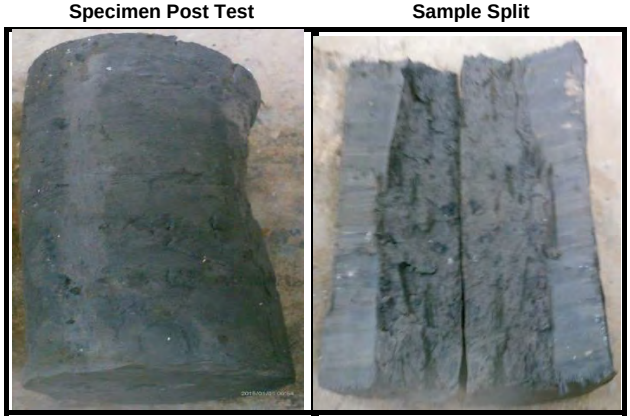
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown sandy silty CLAY	Depth Top (m)	30.00
		Depth Base (m)	30.30
		Sample Type	U



Moisture Content (%)	15
Bulk Density (Mg/m^3)	4.39
Dry Density (Mg/m^3)	3.83
Specimen Length (mm)	101
Specimen Diameter (mm)	90
Cell Pressure (kPa)	505
Deviator Stress (kPa)	611
Undrained Shear Strength (kPa)	305
Failure Strain (%)	14.85
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

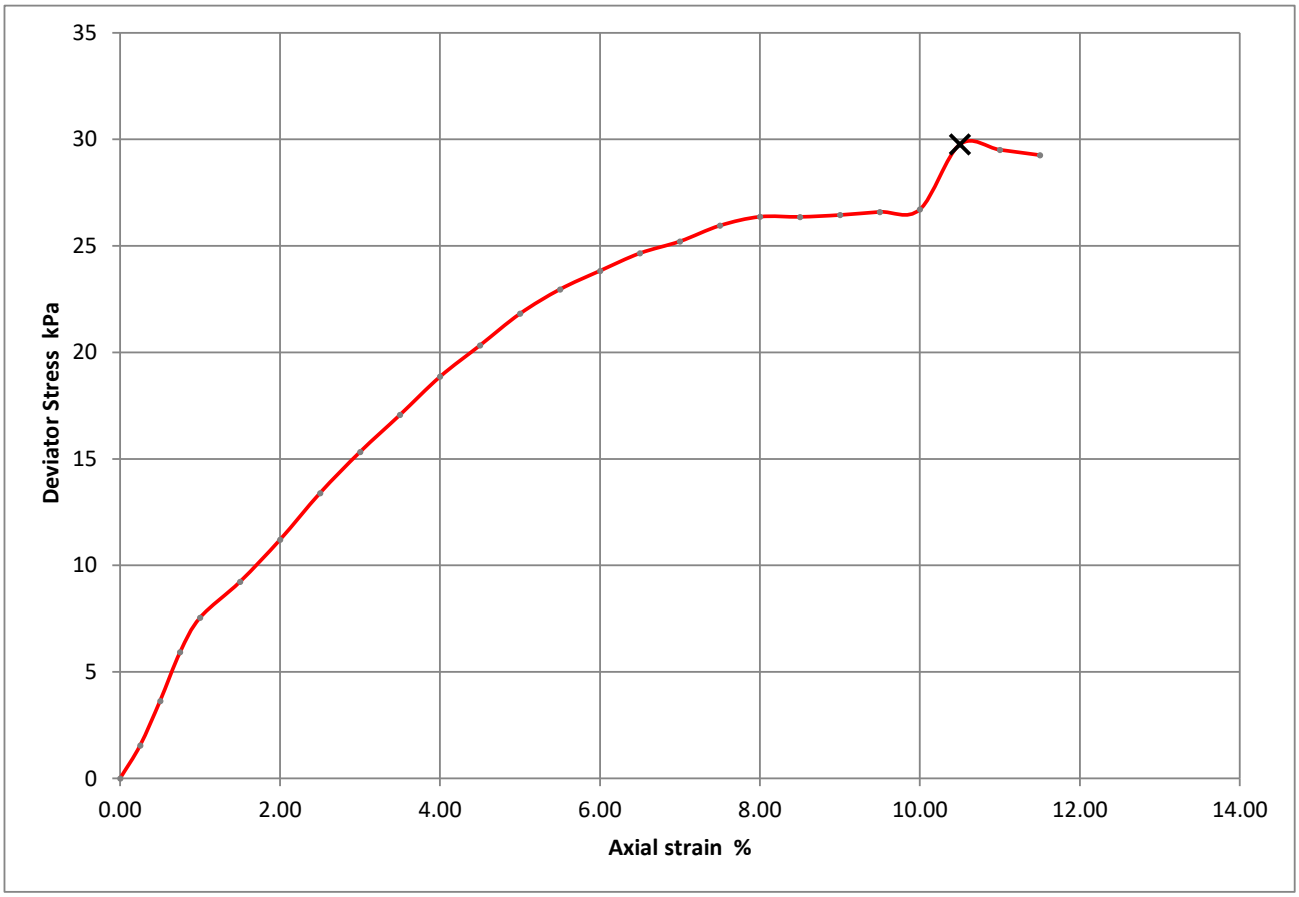
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

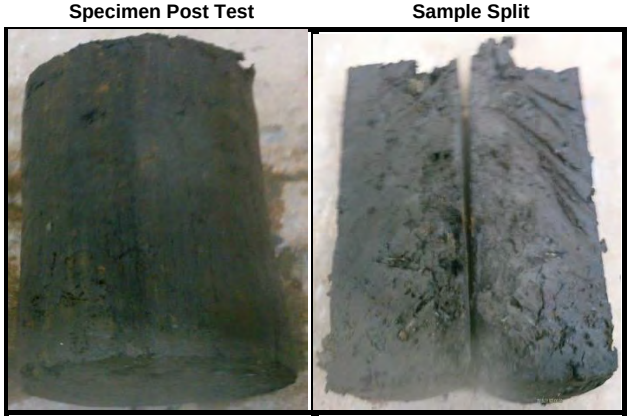
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with peat material.	Depth Top (m)	3.00
		Depth Base (m)	3.45
		Sample Type	U



Moisture Content (%)	164
Bulk Density (Mg/m^3)	1.32
Dry Density (Mg/m^3)	0.50
Specimen Length (mm)	200
Specimen Diameter (mm)	100
Cell Pressure (kPa)	40
Deviator Stress (kPa)	30
Undrained Shear Strength (kPa)	15
Failure Strain (%)	10.50
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

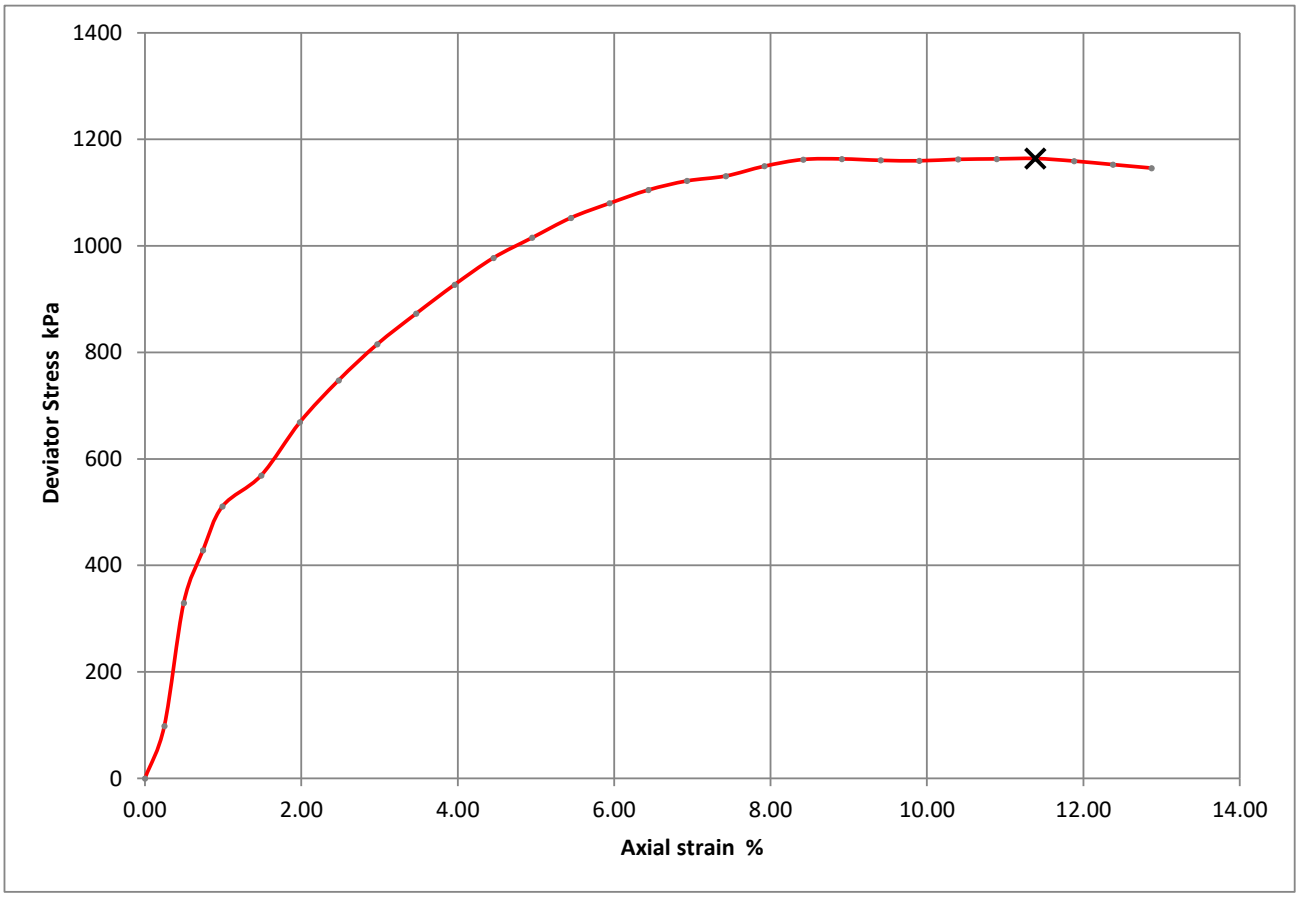
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

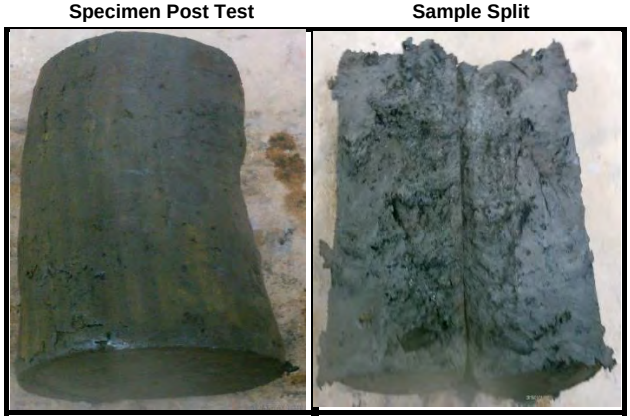
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY contaning peat material.	Depth Top (m)	6.00
		Depth Base (m)	6.45
		Sample Type	U



Moisture Content (%)	162
Bulk Density (Mg/m^3)	1.31
Dry Density (Mg/m^3)	0.50
Specimen Length (mm)	202
Specimen Diameter (mm)	100
Cell Pressure (kPa)	75
Deviator Stress (kPa)	1164
Undrained Shear Strength (kPa)	582
Failure Strain (%)	11.39
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

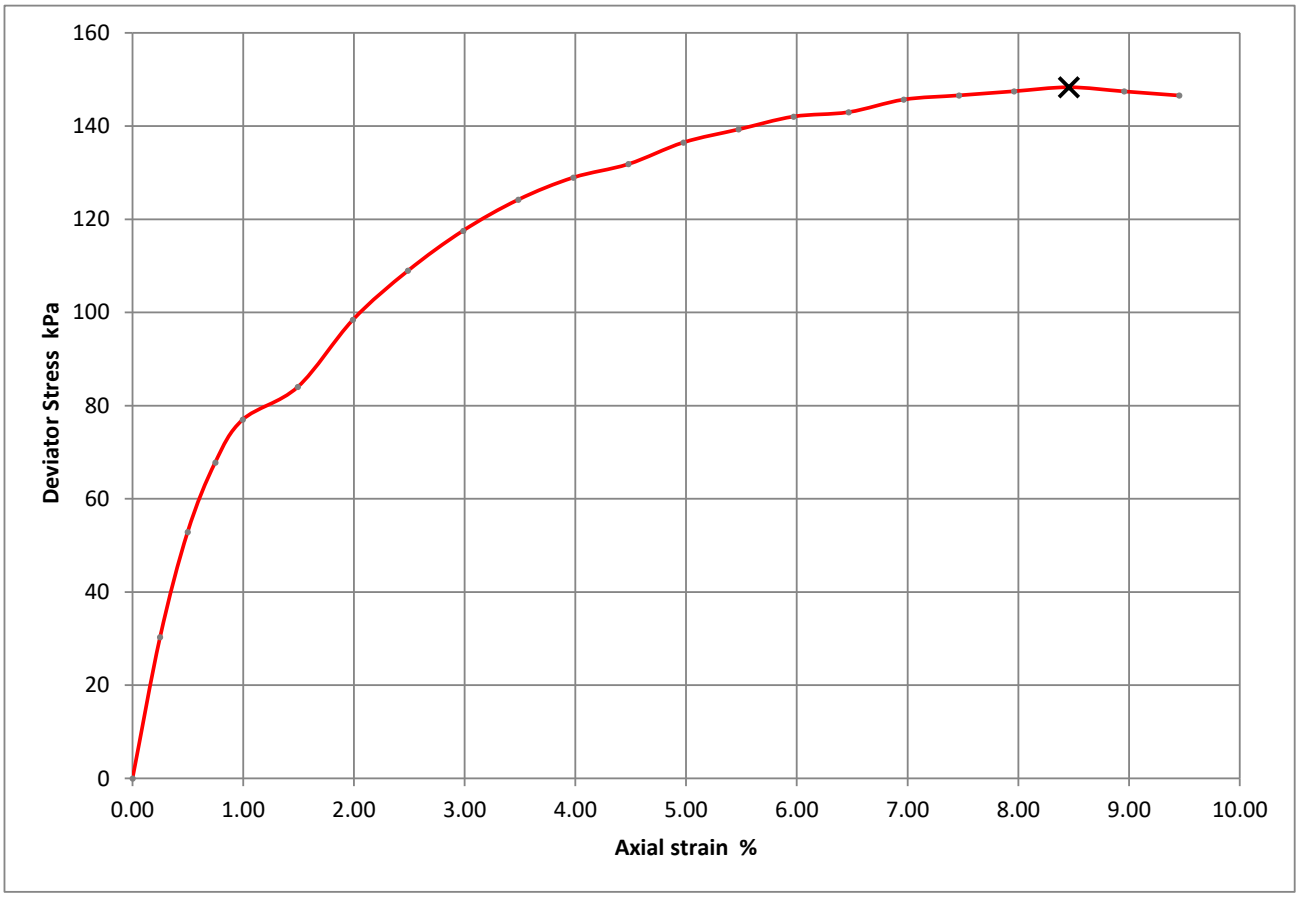
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

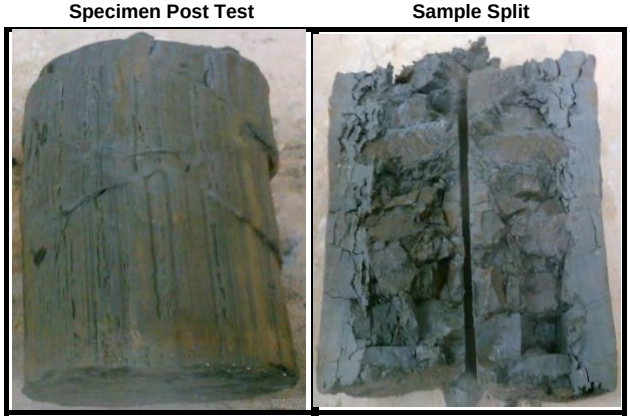
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown silty CLAY	Depth Top (m)	16.50
		Depth Base (m)	16.95
		Sample Type	U



Moisture Content (%)	35
Bulk Density (Mg/m^3)	1.85
Dry Density (Mg/m^3)	1.37
Specimen Length (mm)	201
Specimen Diameter (mm)	104
Cell Pressure (kPa)	240
Deviator Stress (kPa)	148
Undrained Shear Strength (kPa)	74
Failure Strain (%)	8.46
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

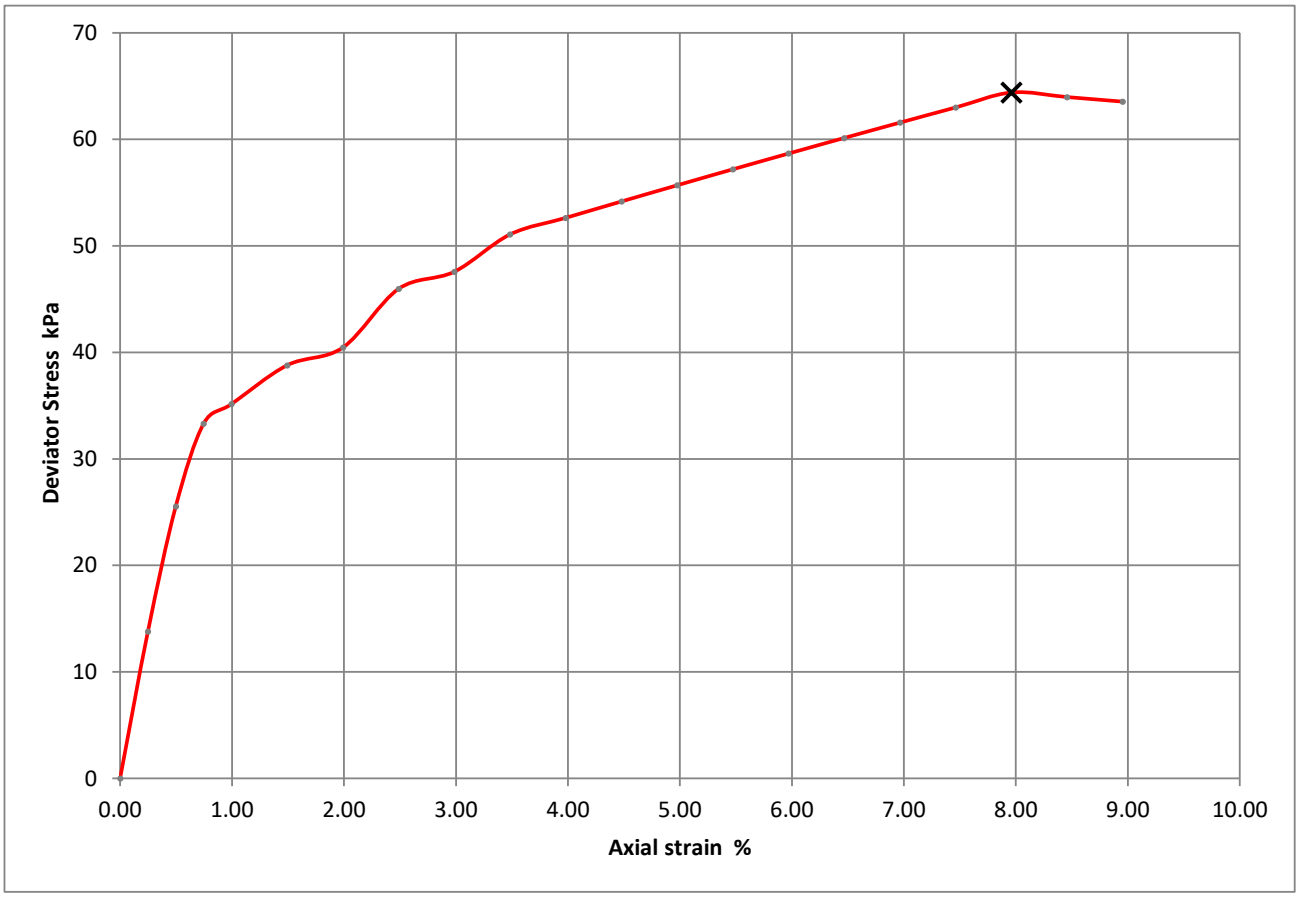
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]	
Approved	06-07-18	Paul Evans		

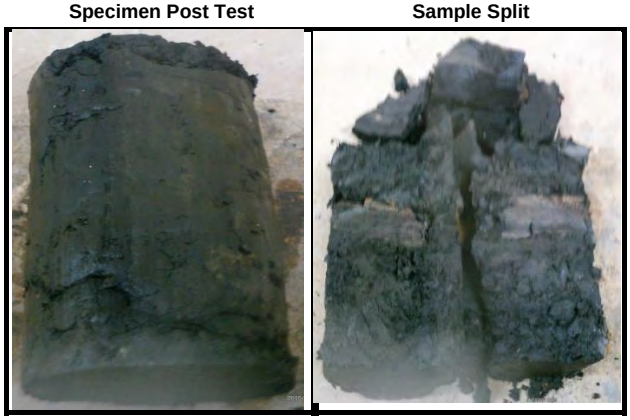
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Brown sandy silty CLAY containing peat material.	Depth Top (m)	19.50
		Depth Base (m)	19.95
		Sample Type	U



Moisture Content (%)	173
Bulk Density (Mg/m^3)	1.17
Dry Density (Mg/m^3)	0.43
Specimen Length (mm)	201
Specimen Diameter (mm)	103
Cell Pressure (kPa)	300
Deviator Stress (kPa)	64
Undrained Shear Strength (kPa)	32
Failure Strain (%)	7.96
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

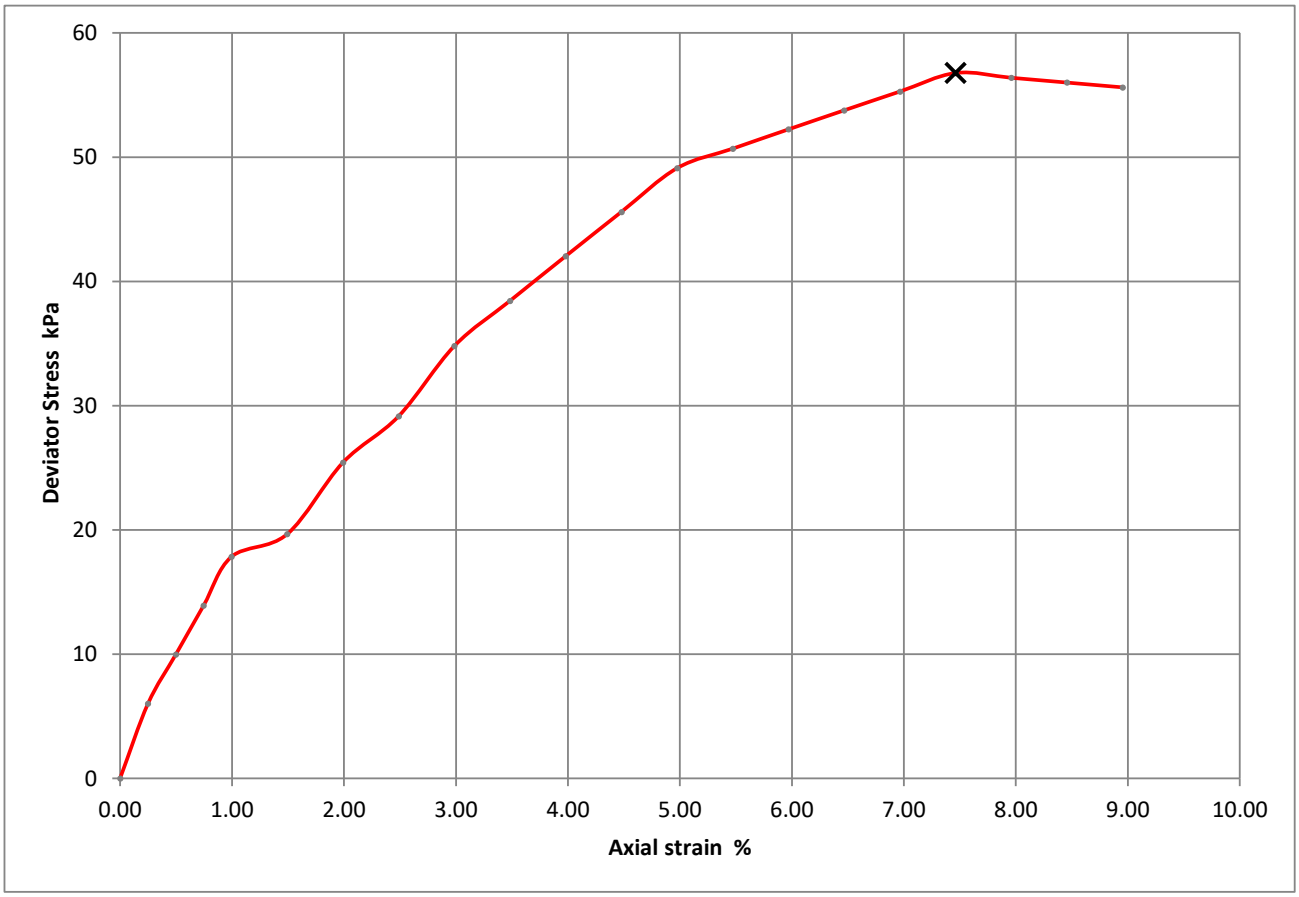
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Black PEAT	Depth Top (m)	3.50
		Depth Base (m)	3.95
		Sample Type	U



Moisture Content (%)	260
Bulk Density (Mg/m^3)	1.13
Dry Density (Mg/m^3)	0.32
Specimen Length (mm)	201
Specimen Diameter (mm)	102
Cell Pressure (kPa)	45
Deviator Stress (kPa)	57
Undrained Shear Strength (kPa)	28
Failure Strain (%)	7.46
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

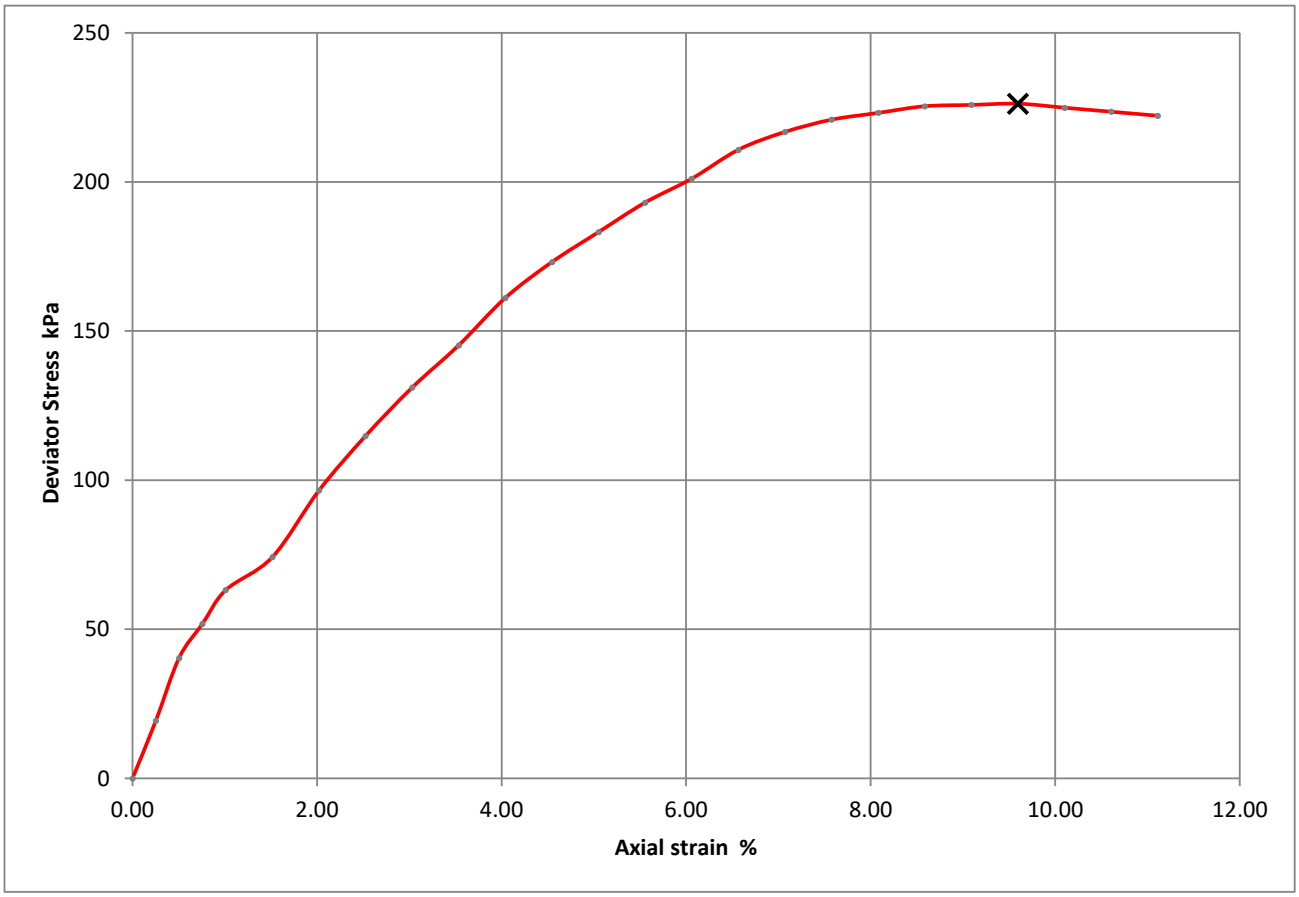
Specimen Post Test

Sample Split

Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

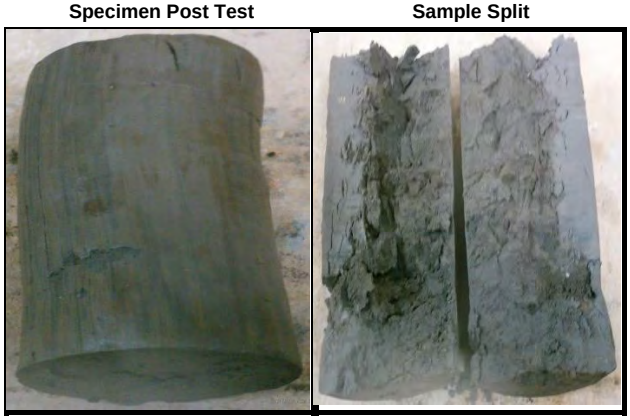
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Brown sandy silty CLAY	Depth Top (m)	14.00
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	25
Bulk Density (Mg/m^3)	2.01
Dry Density (Mg/m^3)	1.61
Specimen Length (mm)	198
Specimen Diameter (mm)	103
Cell Pressure (kPa)	45
Deviator Stress (kPa)	226
Undrained Shear Strength (kPa)	113
Failure Strain (%)	9.60
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

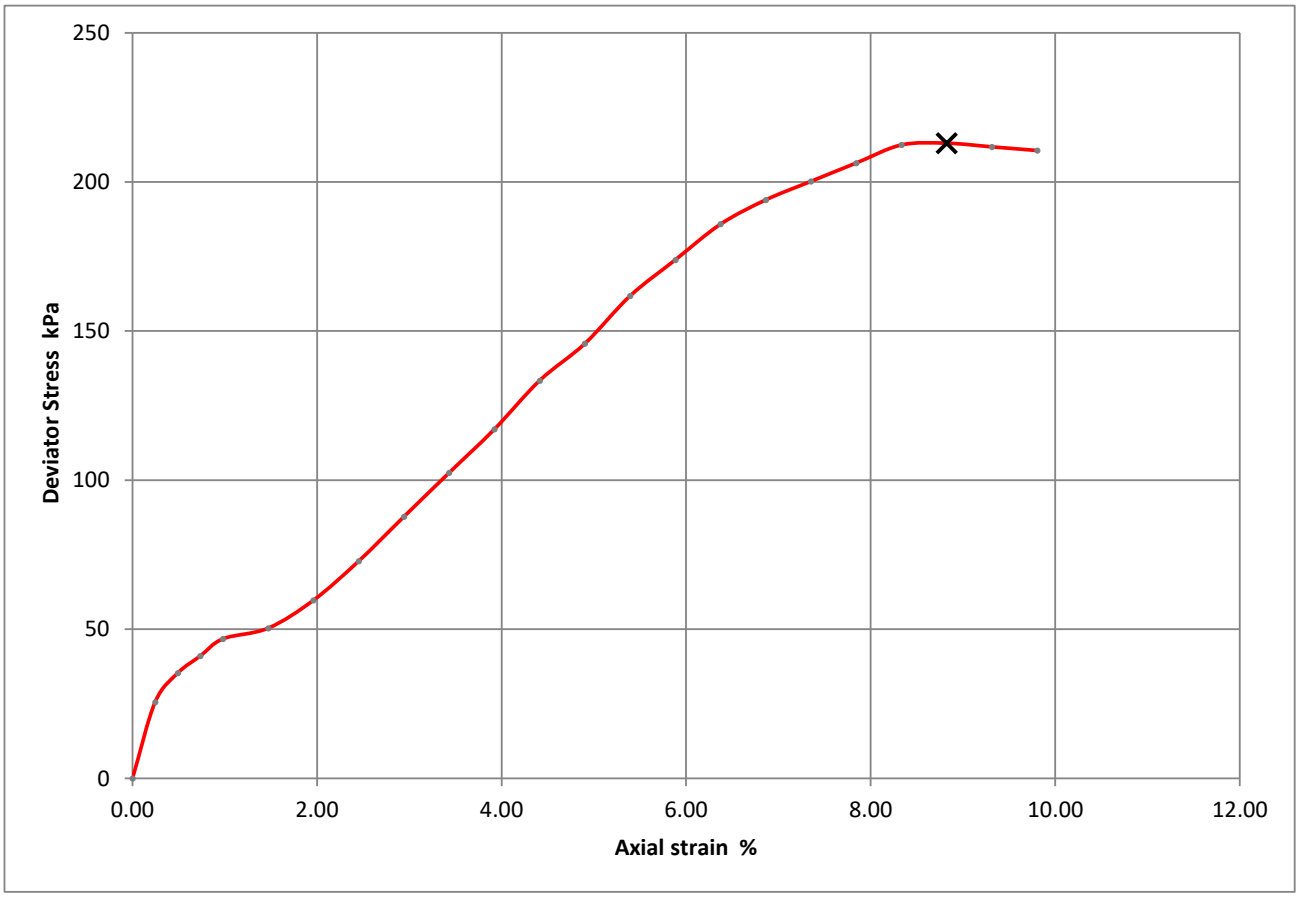
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

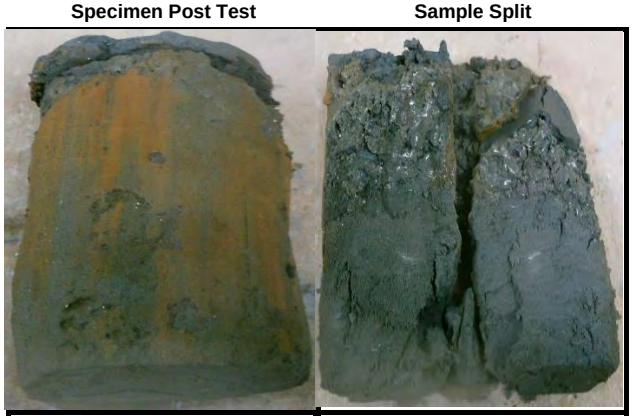
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown fine to coarse gravelly sandy silty CLAY.	Depth Top (m)	17.00
		Depth Base (m)	17.45
		Sample Type	U



Moisture Content (%)	25
Bulk Density (Mg/m^3)	1.99
Dry Density (Mg/m^3)	1.59
Specimen Length (mm)	204
Specimen Diameter (mm)	102
Cell Pressure (kPa)	45
Deviator Stress (kPa)	213
Undrained Shear Strength (kPa)	107
Failure Strain (%)	8.82
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

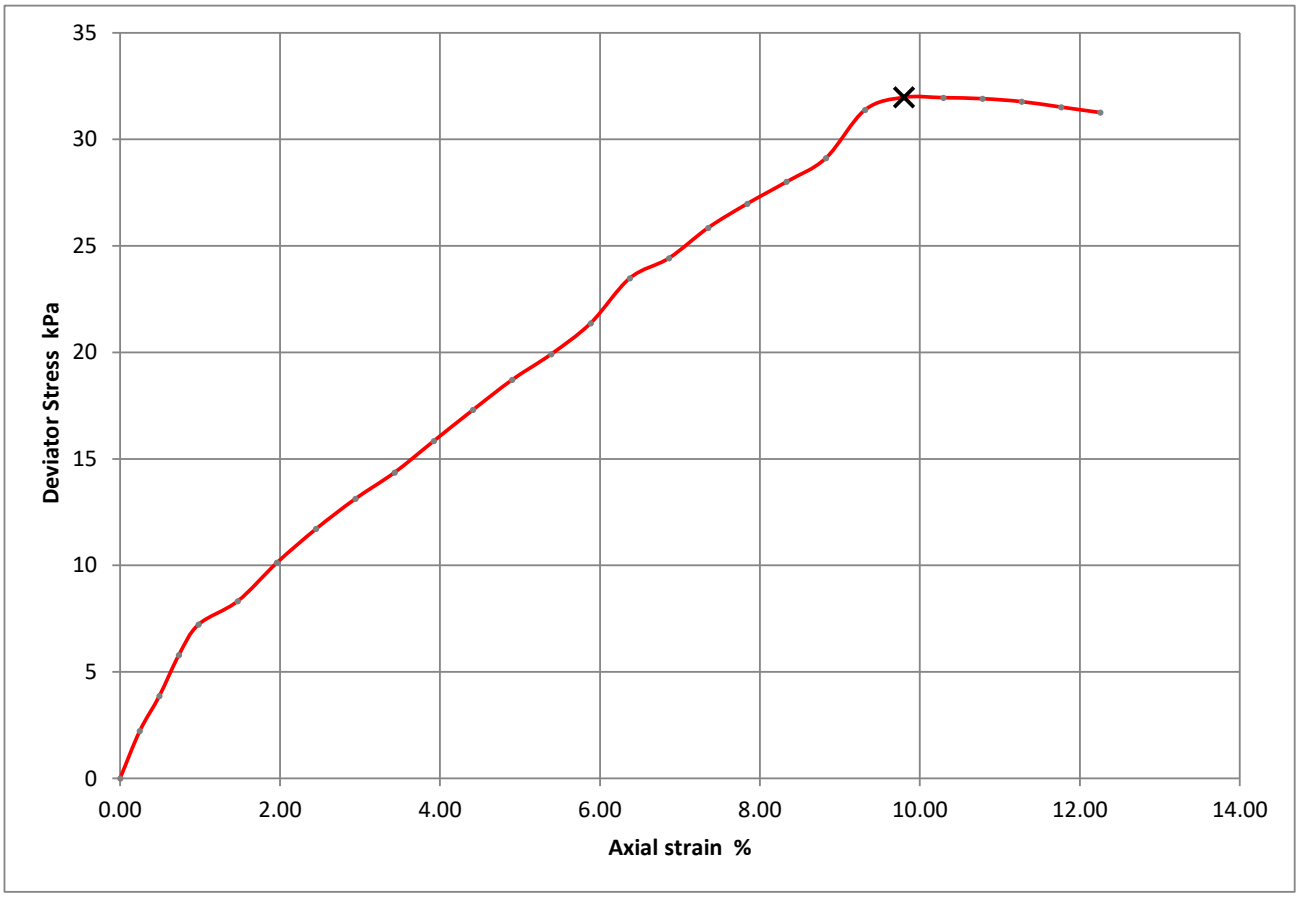
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

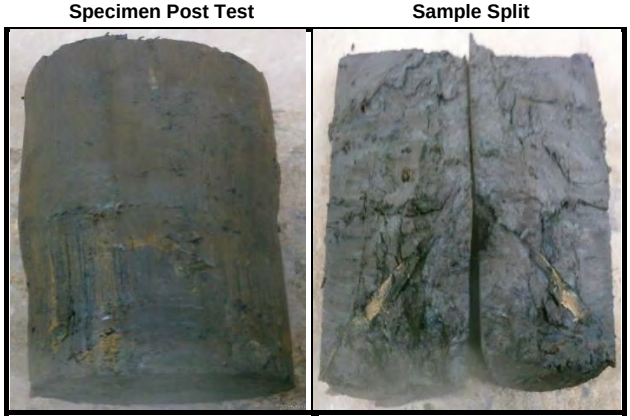
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with peat material.	Depth Top (m)	3.00
		Depth Base (m)	3.45
		Sample Type	U



Moisture Content (%)	111
Bulk Density (Mg/m^3)	1.35
Dry Density (Mg/m^3)	0.64
Specimen Length (mm)	204
Specimen Diameter (mm)	102
Cell Pressure (kPa)	40
Deviator Stress (kPa)	32
Undrained Shear Strength (kPa)	16
Failure Strain (%)	9.80
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

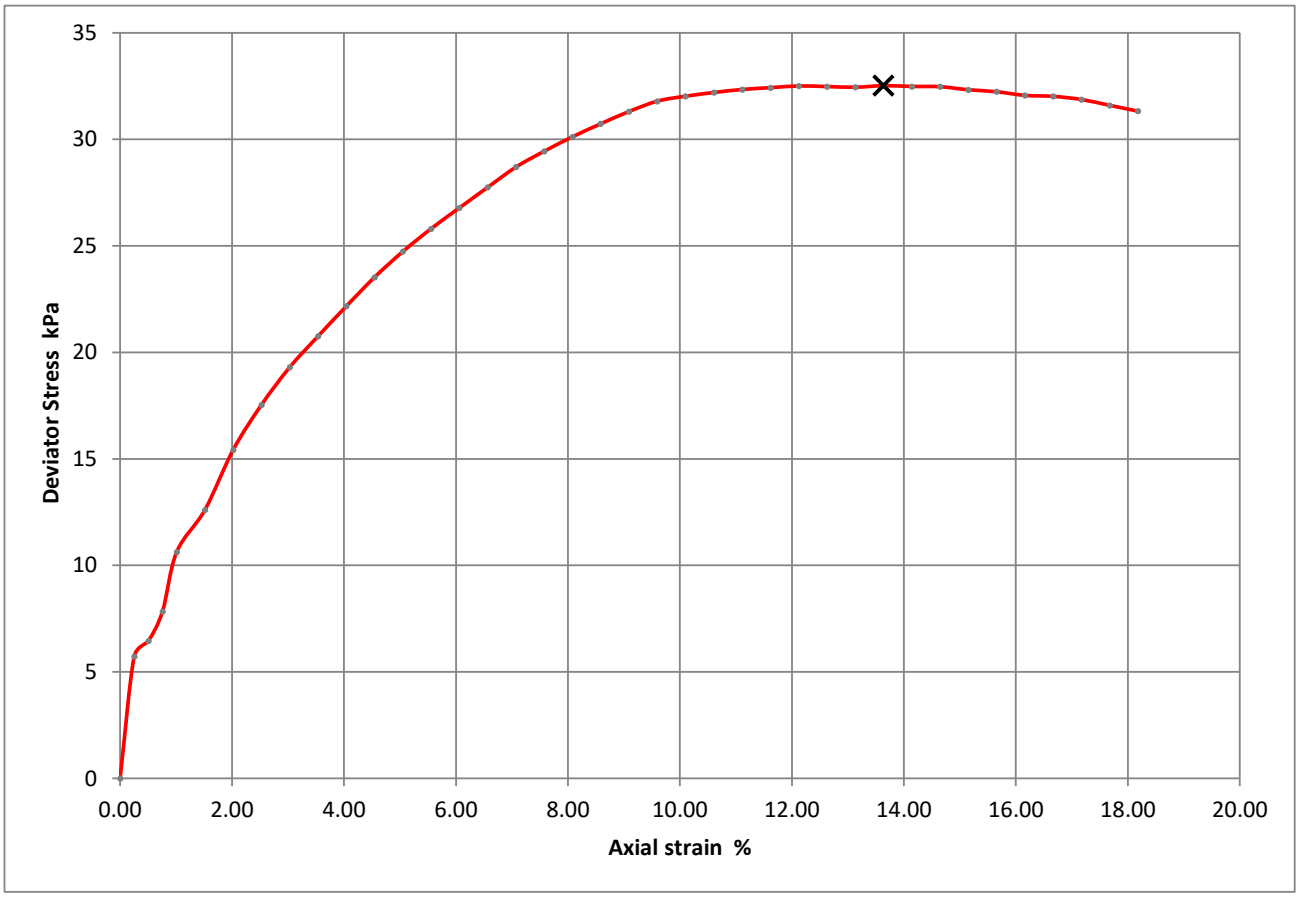
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

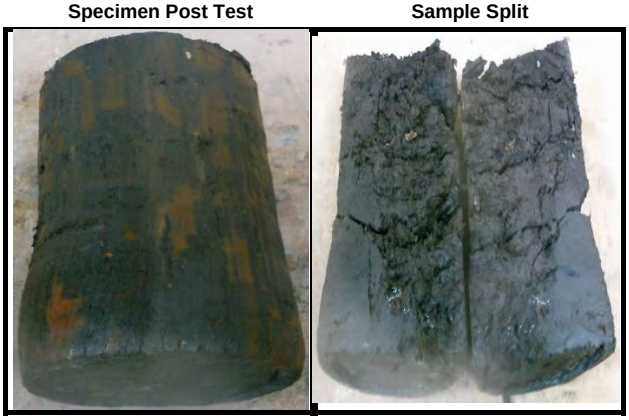
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with peat material.	Depth Top (m)	9.00
		Depth Base (m)	9.45
		Sample Type	U



Moisture Content (%)	260
Bulk Density (Mg/m^3)	1.11
Dry Density (Mg/m^3)	0.31
Specimen Length (mm)	198
Specimen Diameter (mm)	107
Cell Pressure (kPa)	110
Deviator Stress (kPa)	33
Undrained Shear Strength (kPa)	16
Failure Strain (%)	13.64
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

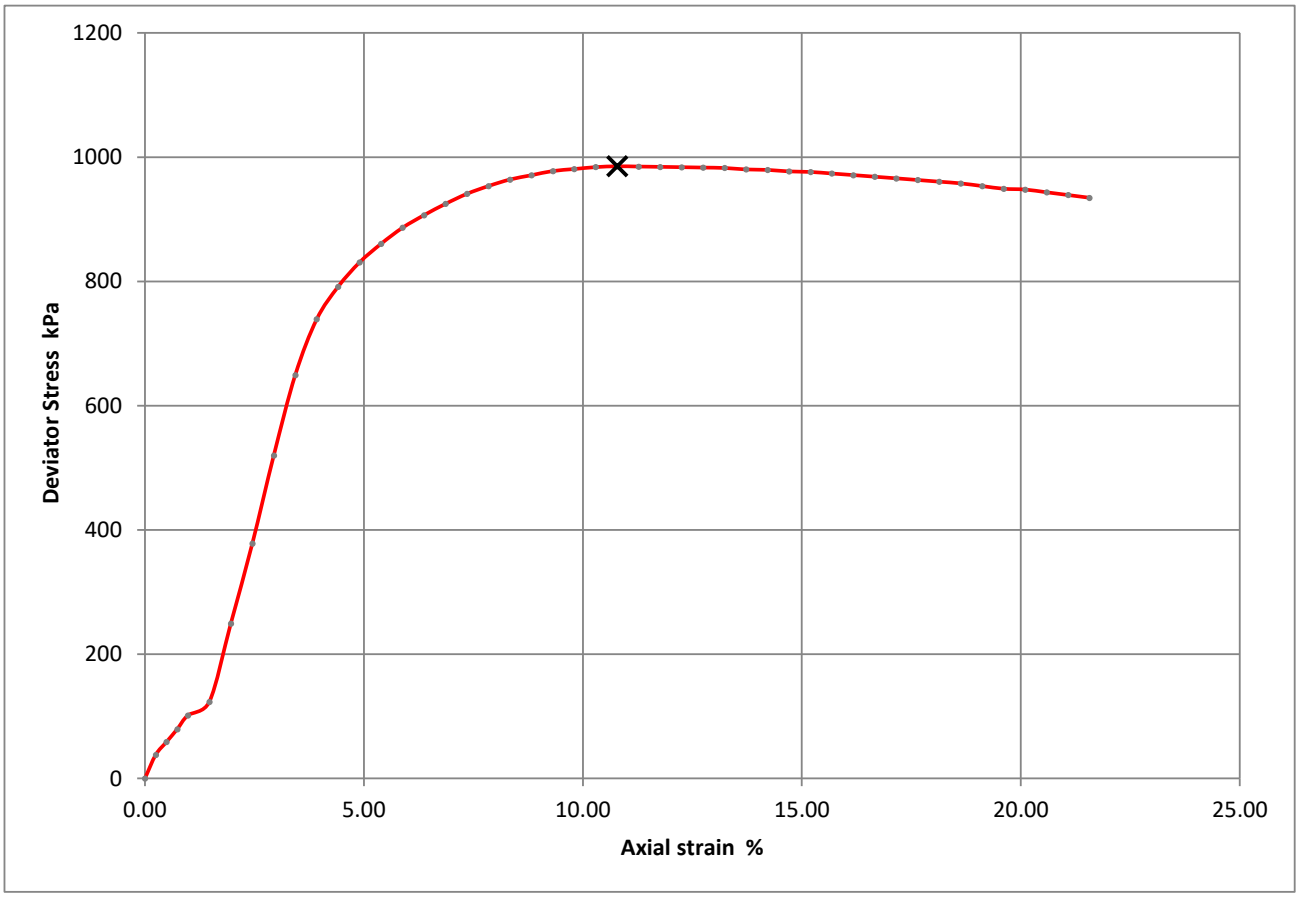
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

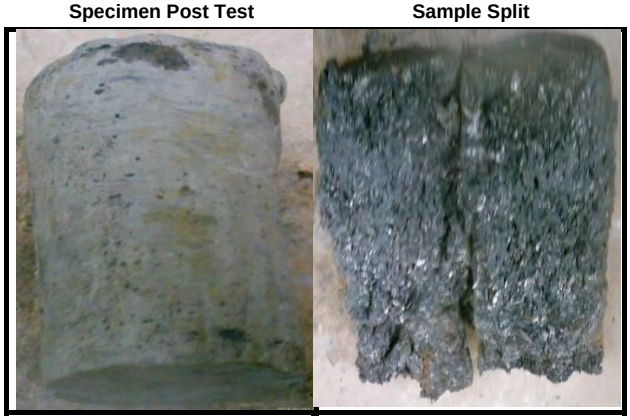
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH10A
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown sandy silty CLAY.	Depth Top (m)	29.50
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	9.3
Bulk Density (Mg/m^3)	2.16
Dry Density (Mg/m^3)	1.98
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	510
Deviator Stress (kPa)	985
Undrained Shear Strength (kPa)	493
Failure Strain (%)	10.78
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

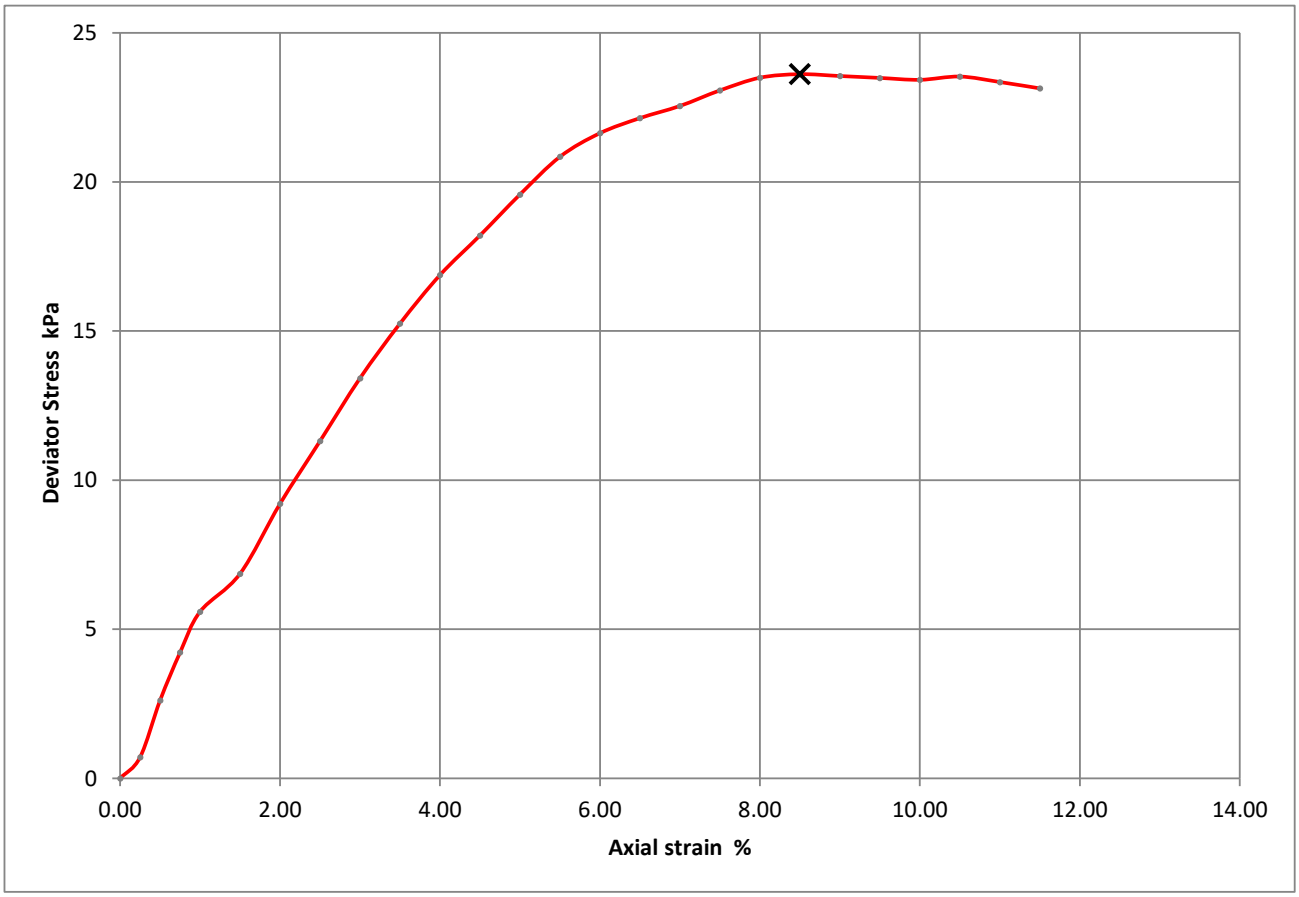
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

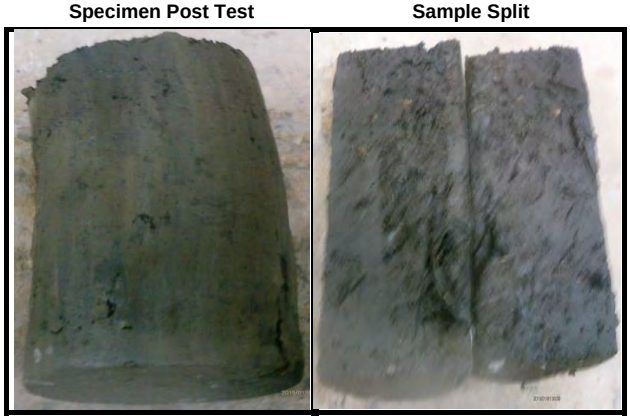
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with peat material.	Depth Top (m)	2.50
		Depth Base (m)	2.95
		Sample Type	U



Moisture Content (%)	26
Bulk Density (Mg/m^3)	1.21
Dry Density (Mg/m^3)	0.96
Specimen Length (mm)	200
Specimen Diameter (mm)	103
Cell Pressure (kPa)	35
Deviator Stress (kPa)	24
Undrained Shear Strength (kPa)	12
Failure Strain (%)	8.50
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

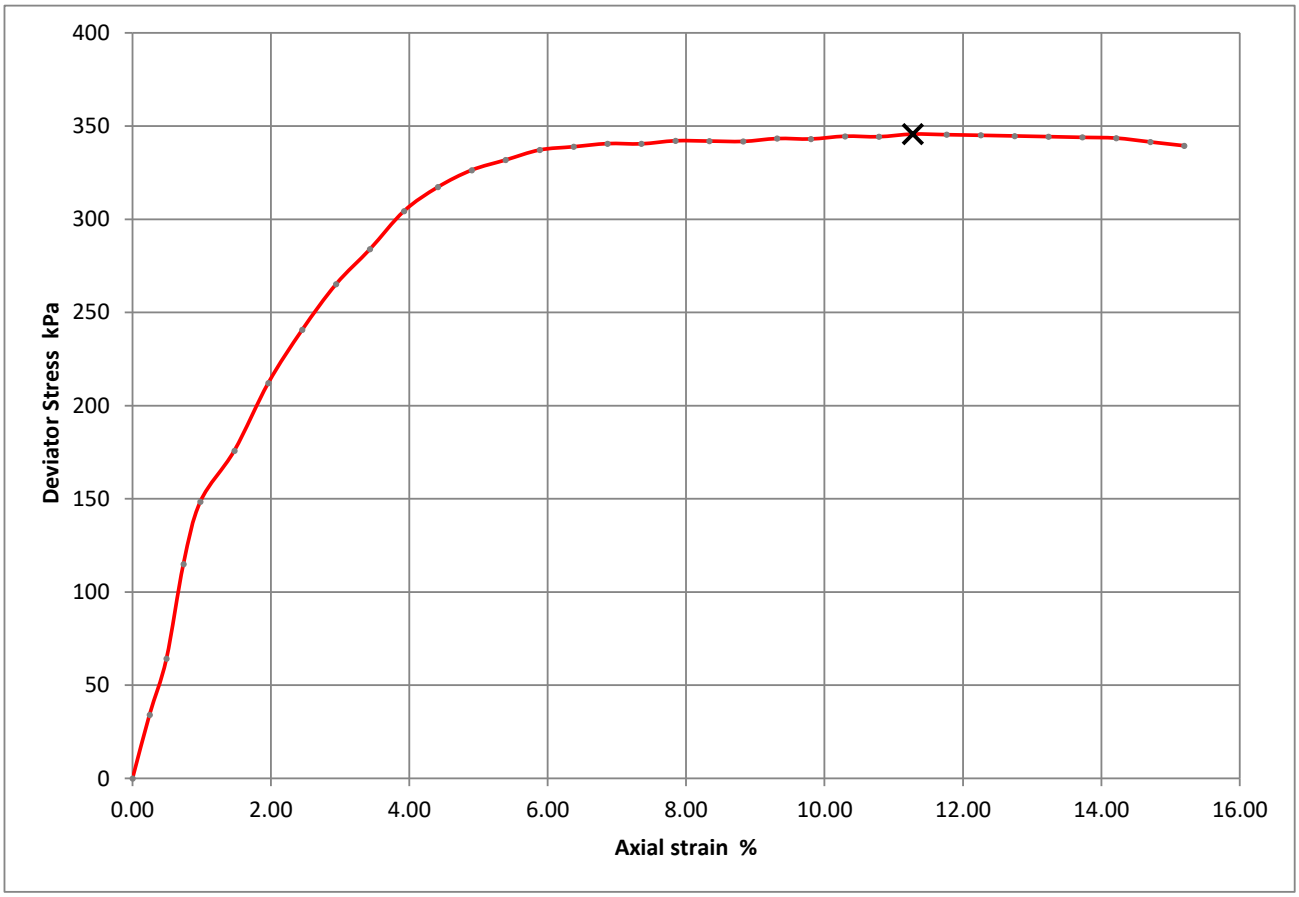
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with shell fragments.	Depth Top (m)	27.00
		Depth Base (m)	27.45
		Sample Type	U



Moisture Content (%)	21
Bulk Density (Mg/m^3)	2.08
Dry Density (Mg/m^3)	1.72
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	455
Deviator Stress (kPa)	346
Undrained Shear Strength (kPa)	173
Failure Strain (%)	11.27
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

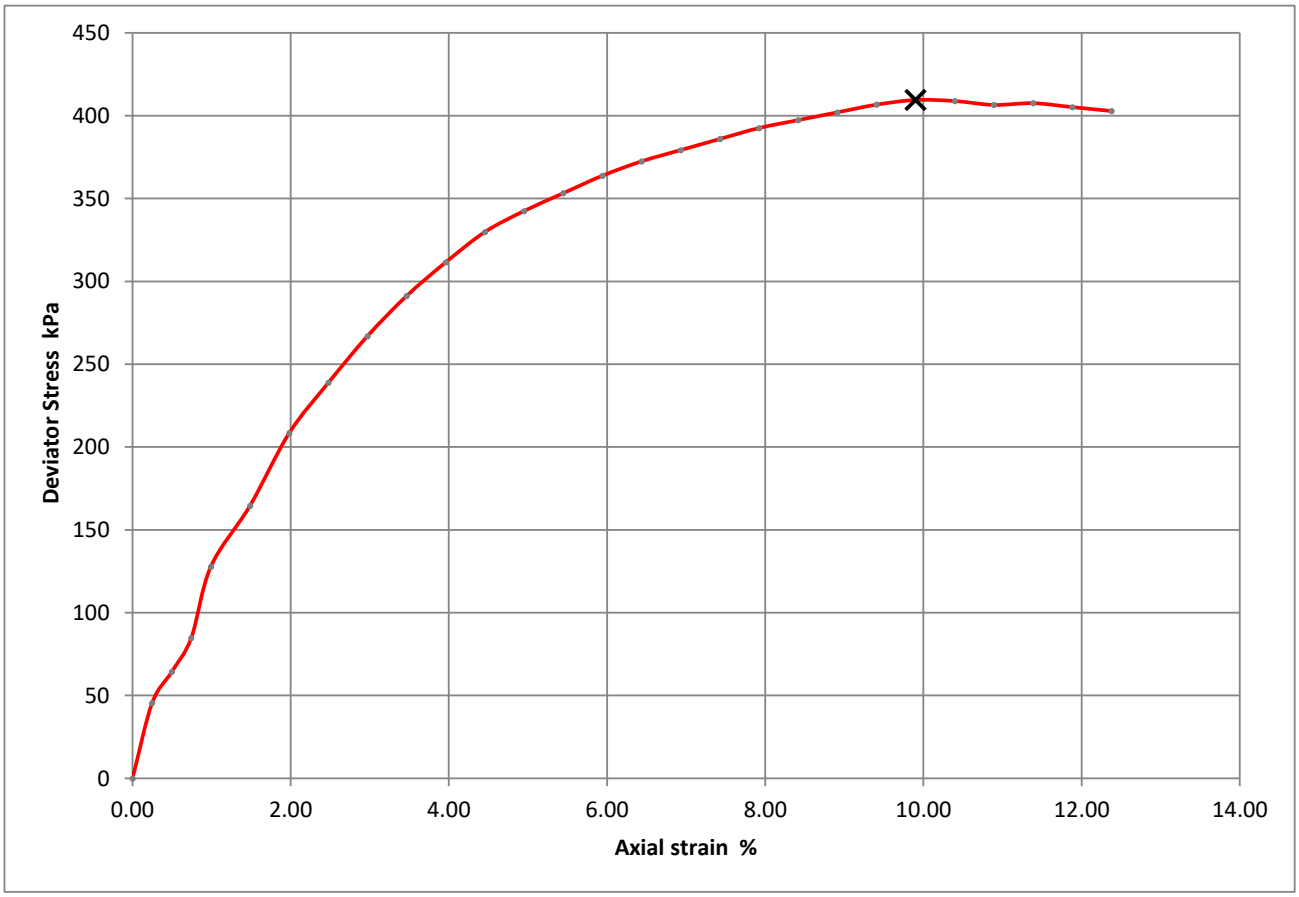
Specimen Post Test

Sample Split

Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

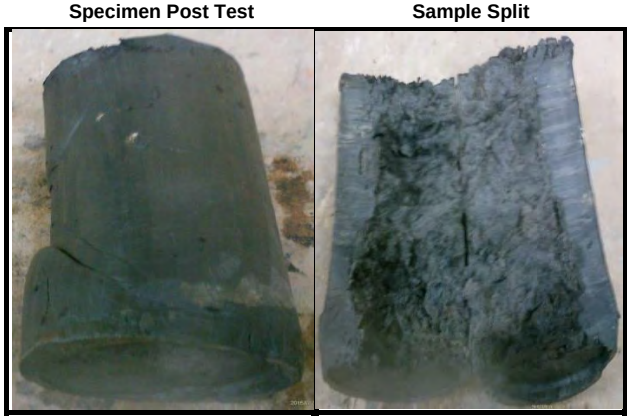
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown sandy silty CLAY	Depth Top (m)	30.00
		Depth Base (m)	30.45
		Sample Type	U



Moisture Content (%)	18
Bulk Density (Mg/m^3)	2.09
Dry Density (Mg/m^3)	1.78
Specimen Length (mm)	202
Specimen Diameter (mm)	104
Cell Pressure (kPa)	510
Deviator Stress (kPa)	409
Undrained Shear Strength (kPa)	205
Failure Strain (%)	9.90
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

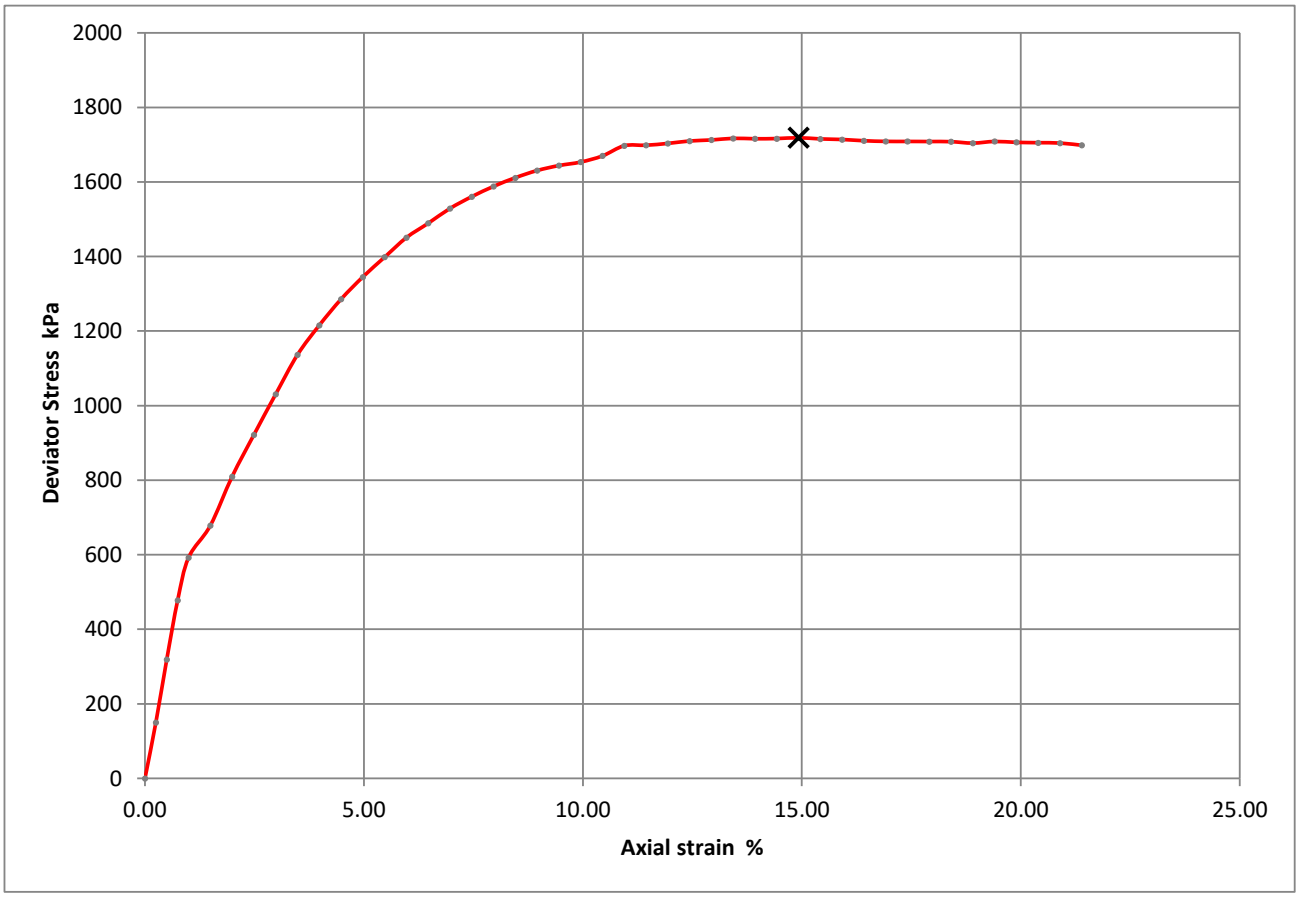
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	
Approved	06-07-18	Paul Evans	

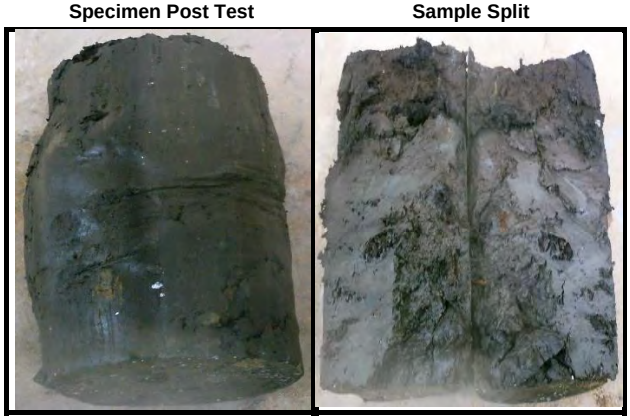
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH12
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown sandy silty CLAY containing peat material.	Depth Top (m)	4.50
		Depth Base (m)	4.95
		Sample Type	U



Moisture Content (%)	126
Bulk Density (Mg/m^3)	1.26
Dry Density (Mg/m^3)	0.56
Specimen Length (mm)	201
Specimen Diameter (mm)	100
Cell Pressure (kPa)	55
Deviator Stress (kPa)	1719
Undrained Shear Strength (kPa)	859
Failure Strain (%)	14.93
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

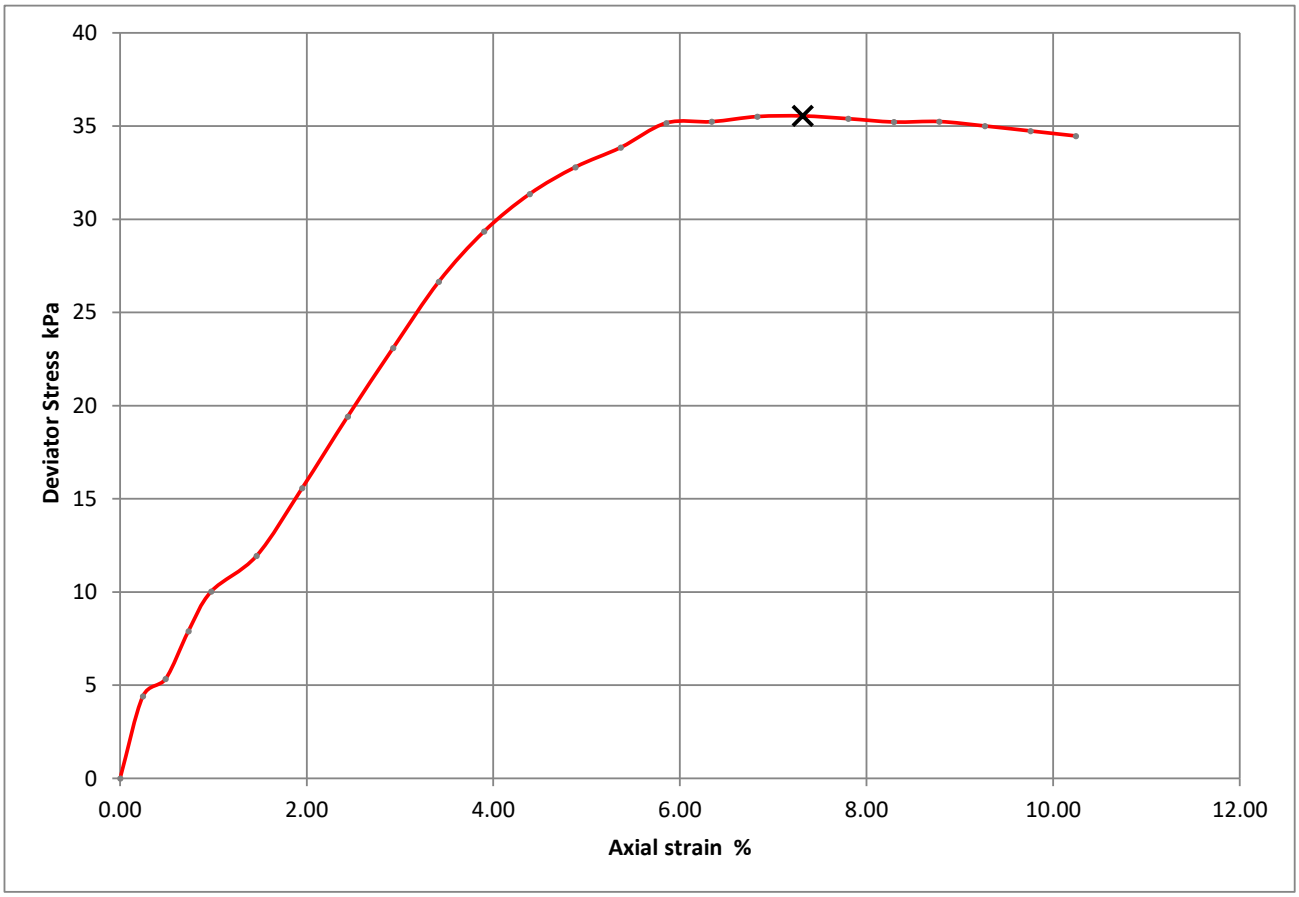
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

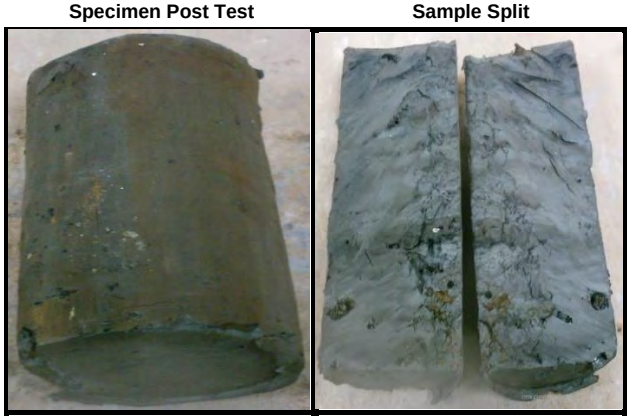
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH12
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	7.00
		Depth Base (m)	7.45
		Sample Type	U



Moisture Content (%)	93
Bulk Density (Mg/m^3)	1.42
Dry Density (Mg/m^3)	0.74
Specimen Length (mm)	205
Specimen Diameter (mm)	104
Cell Pressure (kPa)	85
Deviator Stress (kPa)	36
Undrained Shear Strength (kPa)	18
Failure Strain (%)	7.32
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

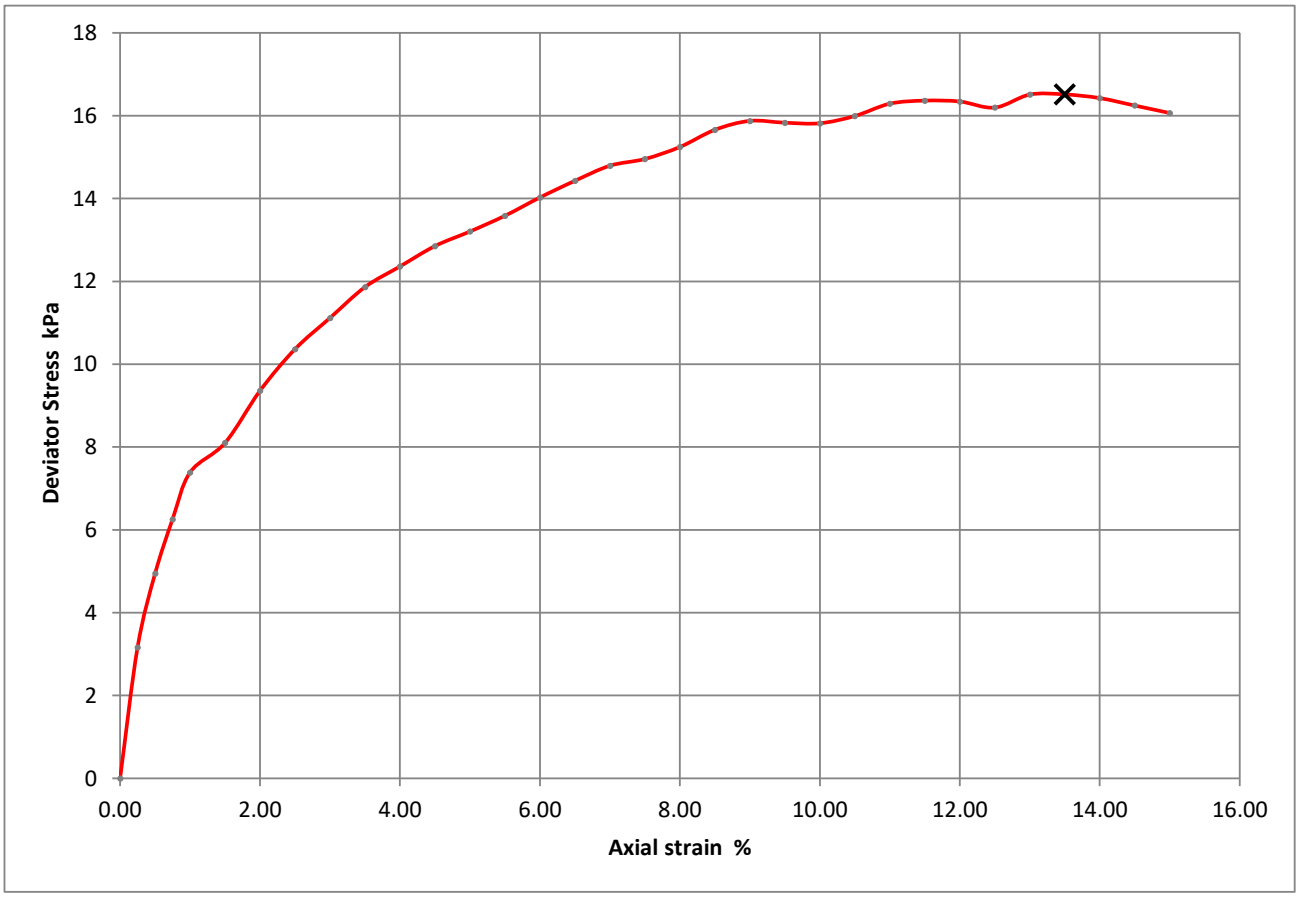
Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing peat material.	Depth Top (m)	6.00
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	154
Bulk Density (Mg/m^3)	1.32
Dry Density (Mg/m^3)	0.52
Specimen Length (mm)	200
Specimen Diameter (mm)	99
Cell Pressure (kPa)	80
Deviator Stress (kPa)	17
Undrained Shear Strength (kPa)	8
Failure Strain (%)	13.50
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

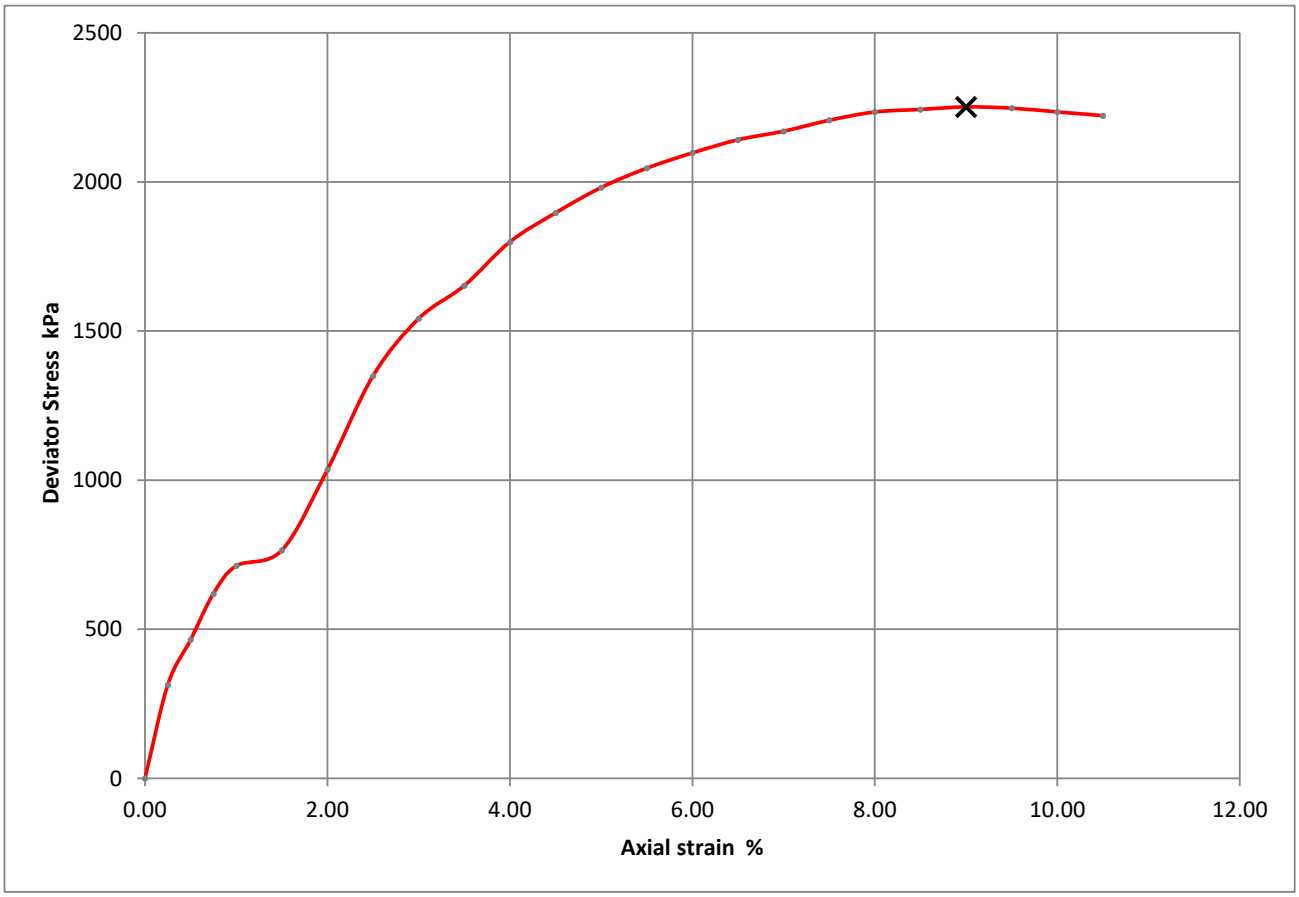
Specimen Post Test

Sample Split

Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing peat material.	Depth Top (m)	9.00
		Depth Base (m)	9.45
		Sample Type	U



Moisture Content (%)	87
Bulk Density (Mg/m^3)	1.38
Dry Density (Mg/m^3)	0.74
Specimen Length (mm)	200
Specimen Diameter (mm)	95
Cell Pressure (kPa)	115
Deviator Stress (kPa)	2252
Undrained Shear Strength (kPa)	1126
Failure Strain (%)	9.00
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

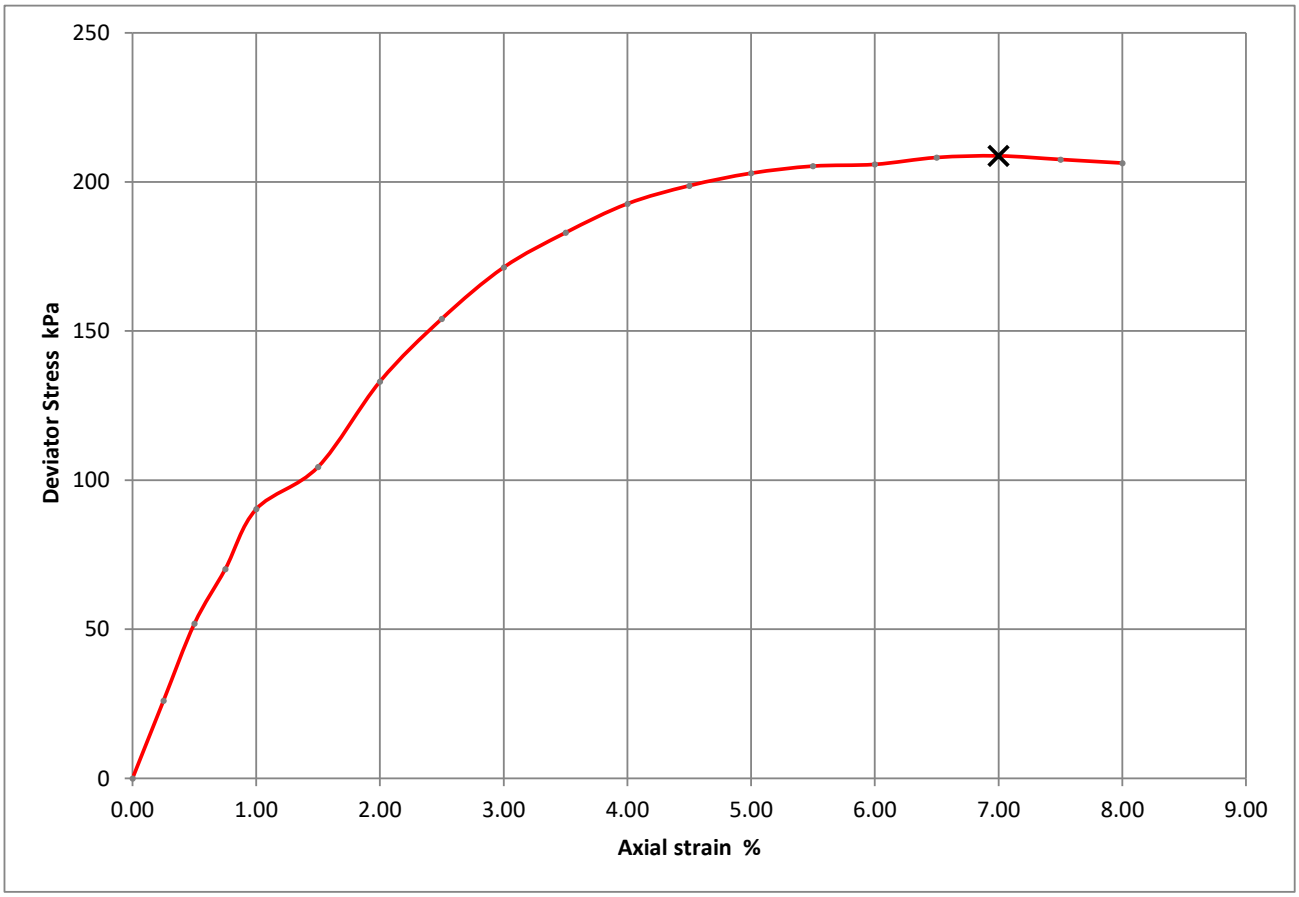
Specimen Post Test

Sample Split

Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

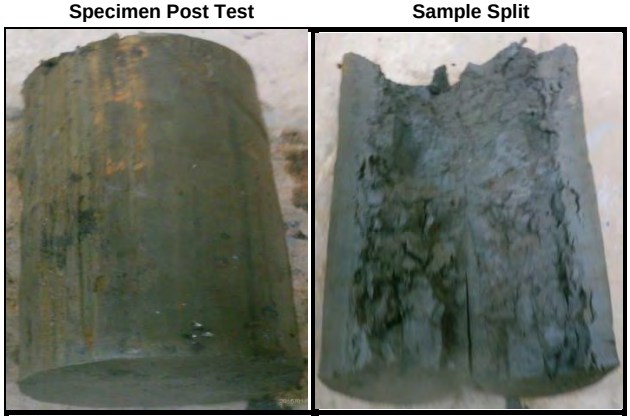
UKAS TESTING 2788

GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
		Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown silty LCAY.	Depth Top (m)	16.50
		Depth Base (m)	16.95
		Sample Type	U



Moisture Content (%)	25
Bulk Density (Mg/m^3)	1.89
Dry Density (Mg/m^3)	1.51
Specimen Length (mm)	200
Specimen Diameter (mm)	105
Cell Pressure (kPa)	250
Deviator Stress (kPa)	209
Undrained Shear Strength (kPa)	104
Failure Strain (%)	7.00
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test **Sample Split**



Checked	05-07-18	Emma Sharp	[redacted]
Approved	06-07-18	Paul Evans	

UKAS TESTING 2788

Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	
Date		25/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Greyish brown slightly sandy silty CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	74.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	83.92
Mass	g	163.70	164.00	164.50
Dry Mass	g	129.10	129.00	129.00
Density	Mg/m^3	1.90	1.90	1.96
Dry Density	Mg/m^3	1.50	1.50	1.54
Moisture Content	%	27	27	28
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	29	28	28
Density	Mg/m^3	2.01	2.12	2.32
Dry Density	Mg/m^3	1.56	1.65	1.82

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09/07/18
Date

Client Ref

Riverside

Contract No

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GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Test Setup

Date started	20/06/2018	20/06/2018	20/06/2018
Date Finished	24/06/2018	24/06/2018	24/06/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P10	P13	P11
Cell Number	C10	C13	C11

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	300.00	300.00	400.00
Final Pore Pressure	kPa	298.00	349.00	400.00
Final B Value		0.98	0.95	0.97

Consolidation

Effective Pressure	kPa	70.00	140.00	285.00
Cell Pressure	kPa	300.00	300.00	400.00
Back Pressure	kPa	230.00	160.00	115.00
Excess Pore Pressure	kPa	70.00	140.00	285.00
Pore Pressure at End	kPa	230.00	160.00	115.00
Consolidated Volume	cm^3	82.69	77.99	71.02
Consolidated Height	mm	74.97	73.59	70.21
Consolidated Area	mm^2	1103.41	1062.19	1017.90
Vol. Compressibility	m^2/MN	0.17655	0.59460	1.33660
Consolidation Coef.	$m^2/yr.$	0.85294	1.44147	12.97326

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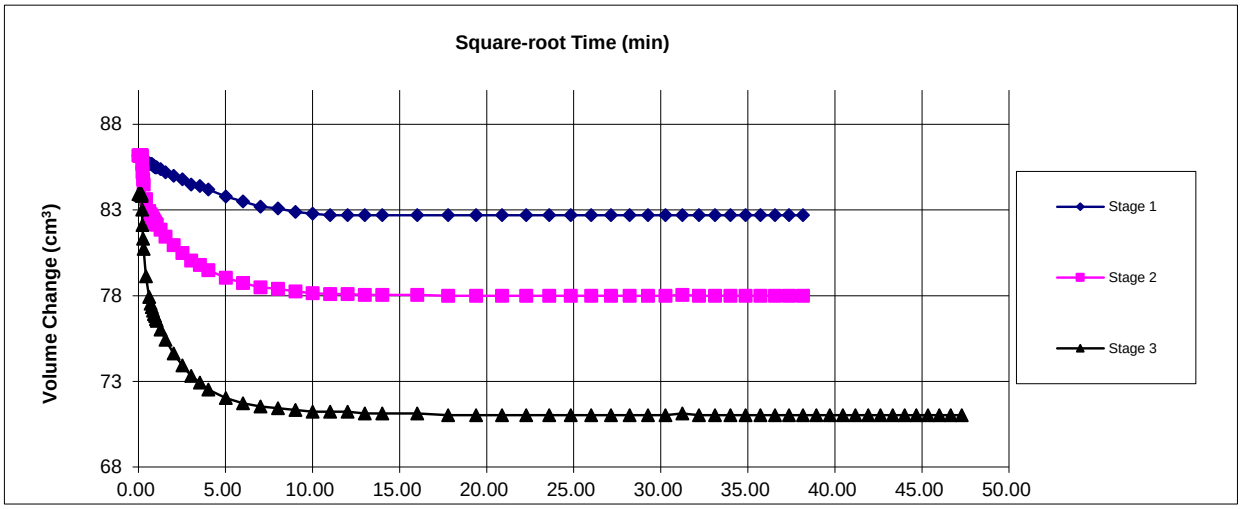
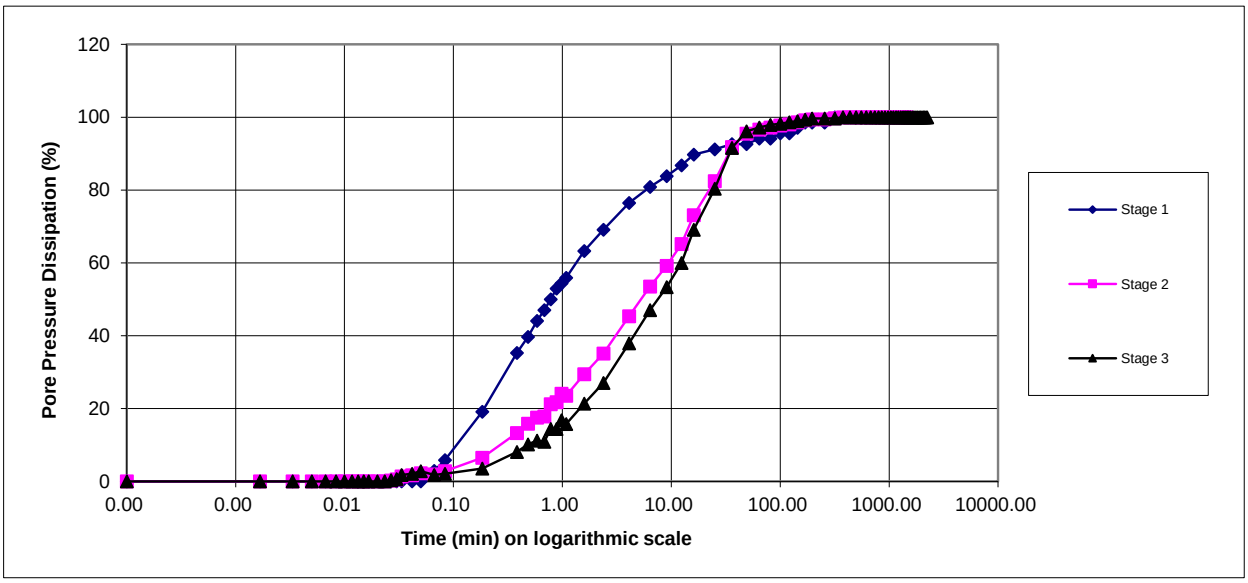
Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Consolidation Stage





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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	300	300	400
Initial Pore Pressure	kPa	230	160	60
Rate of Strain	mm/min	0.0467	0.0774	0.6648
Max Deviator Stress				
Axial Strain		6.816	6.665	8.176
Axial Stress	kPa	295.282	450.80	650.54
Cor. Deviator stress	kPa	284.484	439.03	638.36
Effective Major Stress	kPa	347.484	575.03	877.36
Effective Minor Stress	kPa	64.000	136.00	239.00
Effective Stress Ratio		5.429	4.228	3.67
s'	kPa	205.742	355.52	558.18
t'	kPa	141.742	219.52	319.18
Max Effective Priciple Stress Ratio				
Axial Strain		2.988	5.667	7.350
Axial Stress	kPa	270.486	446.052	645.359
Cor. Deviator stress	kPa	259.472	434.490	633.313
Effective Major Stress	kPa	310.472	566.990	868.313
Effective Minor Stress	kPa	51.000	132.500	235.000
Effective Stress Ratio		6.088	4.279	3.695
s'	kPa	180.736	349.745	551.657
t'	kPa	129.736	217.245	316.657
Shear Resistance Angle	degs			30.0
Cohesion c'	kPa			47

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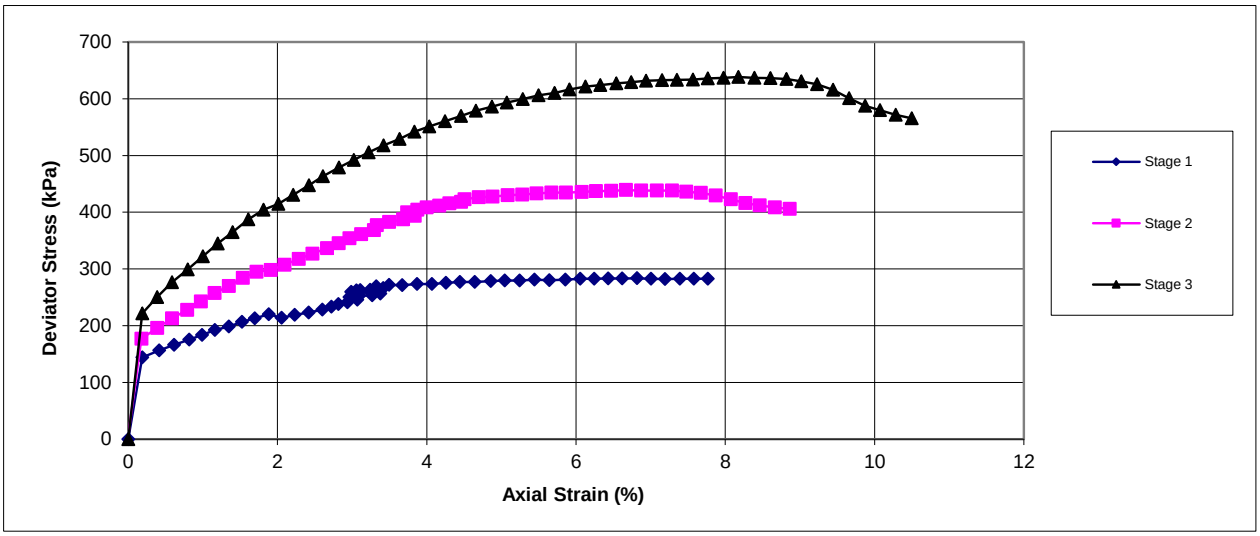
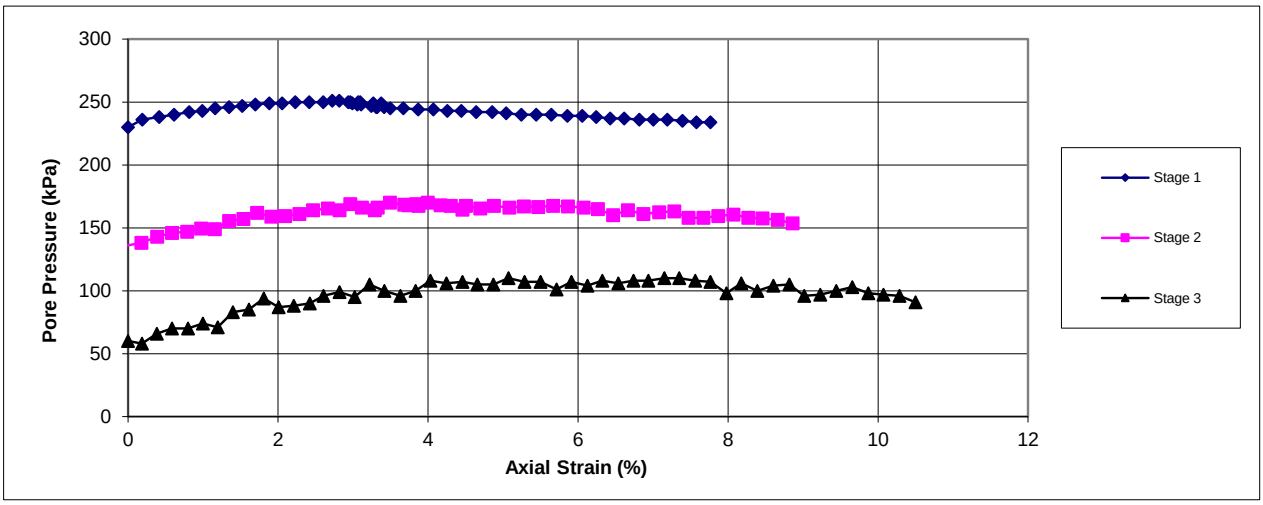
Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Shearing Stage





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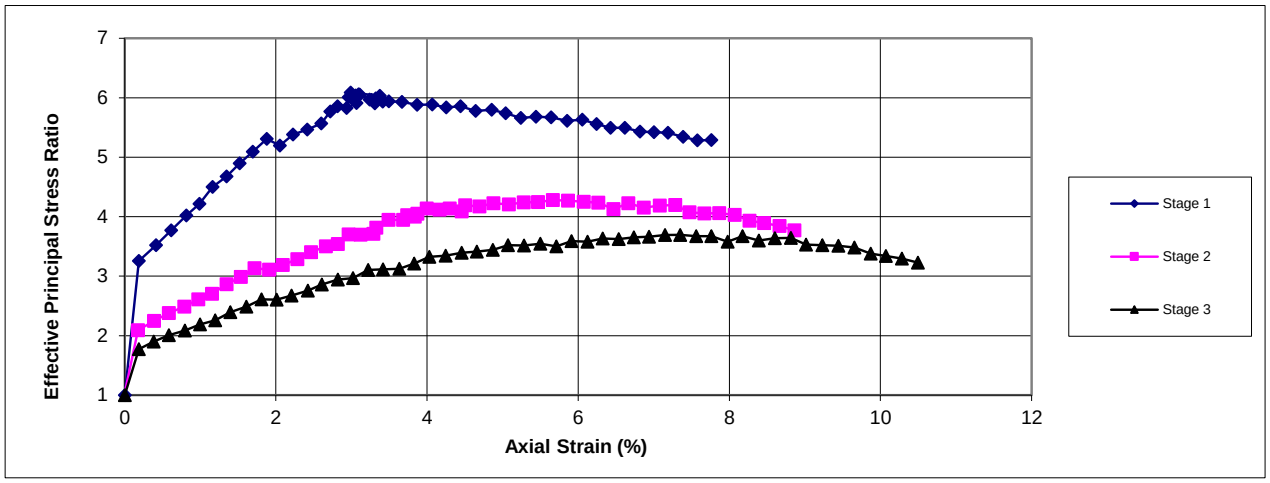
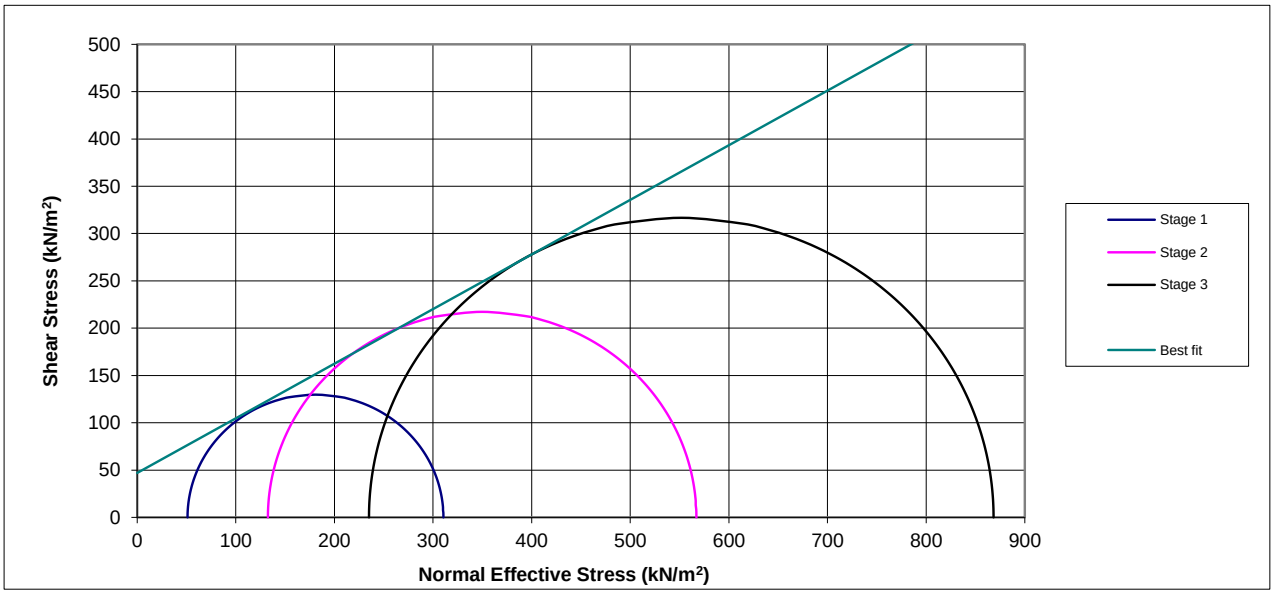
Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Shearing Stage





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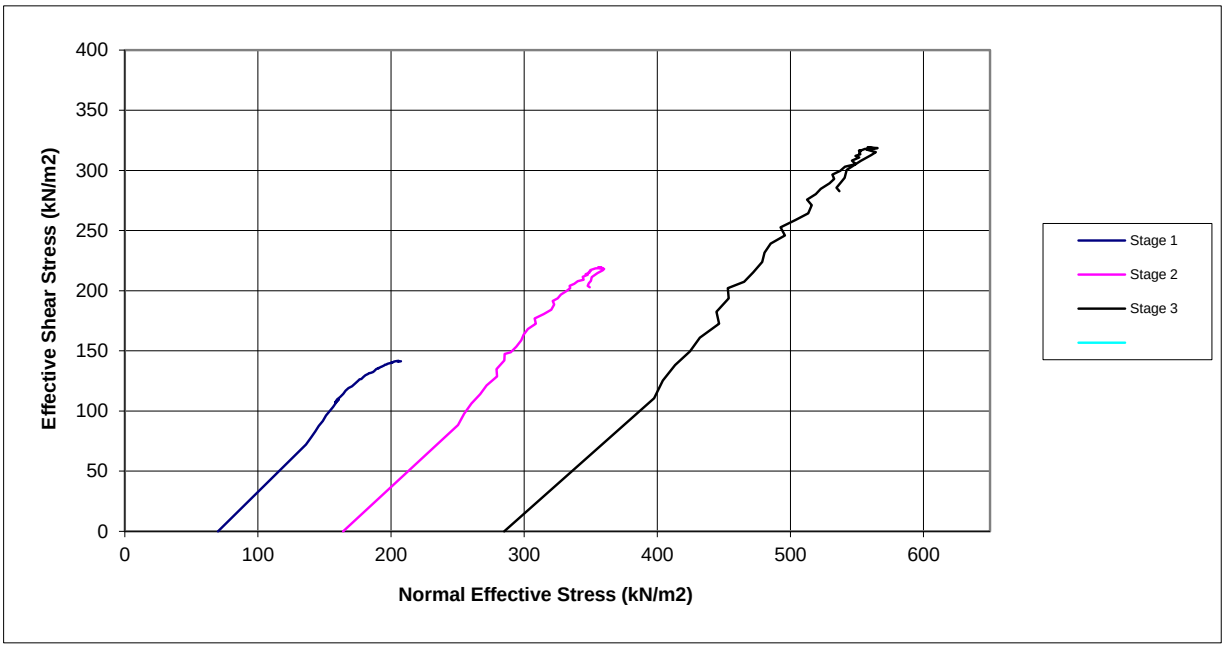
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	
Date		18/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown sl silty soft CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	74.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	83.92
Mass	g	162.10	163.00	163.40
Dry Mass	g	118.08	119.00	118.00
Density	Mg/m^3	1.88	1.89	1.95
Dry Density	Mg/m^3	1.37	1.38	1.41
Moisture Content	%	37	37	38
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	35	34	35
Density	Mg/m^3	2.26	2.30	2.43
Dry Density	Mg/m^3	1.67	1.72	1.80

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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Test Setup

Date started	14/06/2018	14/06/2018	14/06/2018
Date Finished	17/06/2018	17/06/2018	17/06/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P10	P8	P9
Cell Number	C10	C8	C9

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	300.00	300.00	300.00
Final Pore Pressure	kPa	300.00	300.00	300.00
Final B Value		1.06	0.95	1.00

Consolidation

Effective Pressure	kPa	55.00	110.00	225.00
Cell Pressure	kPa	300.00	300.00	300.00
Back Pressure	kPa	245.00	190.00	75.00
Excess Pore Pressure	kPa	55.00	108.00	225.00
Pore Pressure at End	kPa	245.00	190.00	75.00
Consolidated Volume	cm^3	70.59	69.21	65.62
Consolidated Height	mm	71.41	71.01	68.62
Consolidated Area	mm^2	997.27	985.17	969.25
Vol. Compressibility	m^2/MN	0.73873	1.03684	2.90737
Consolidation Coef.	$m^2/yr.$	29.18983	29.18983	20.27071

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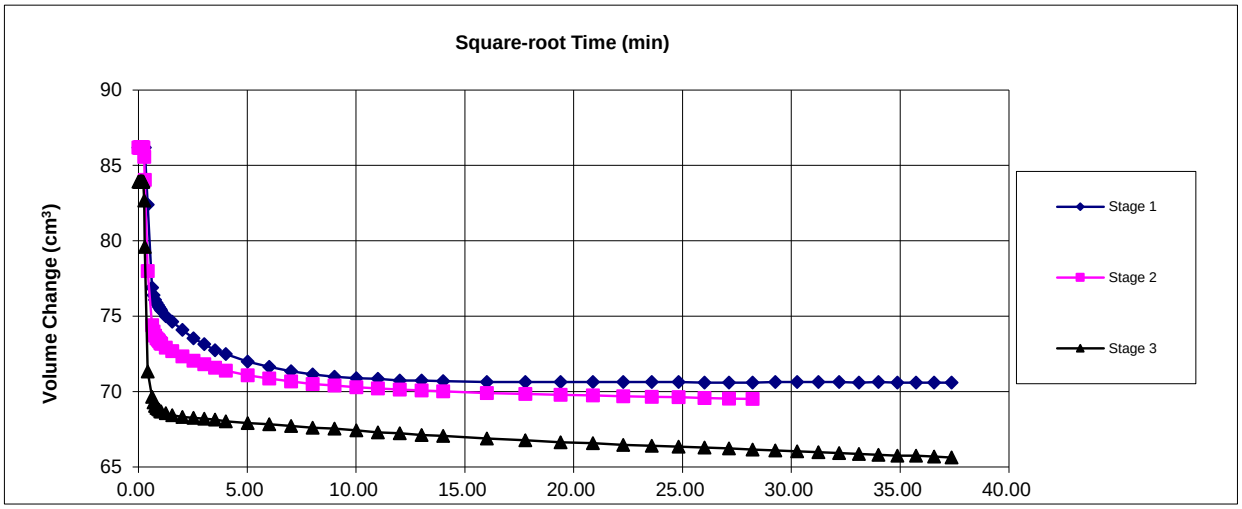
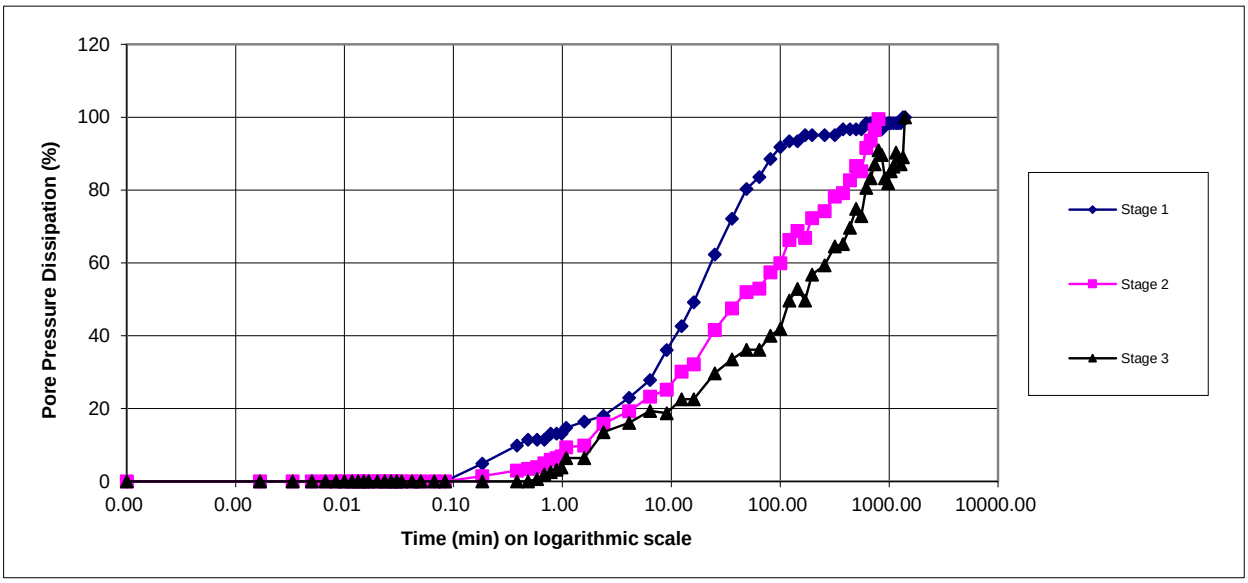
Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Consolidation Stage





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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	300	300	300
Initial Pore Pressure	kPa	245	190	60
Rate of Strain	mm/min	1.5216	1.5130	1.0153
Max Deviator Stress				
Axial Strain		1.778	1.788	7.826
Axial Stress	kPa	69.337	97.60	129.81
Cor. Deviator stress	kPa	69.830	96.83	117.69
Effective Major Stress	kPa	114.830	192.83	267.69
Effective Minor Stress	kPa	46.000	96.00	150.00
Effective Stress Ratio		2.496	2.009	1.78
s'	kPa	80.415	144.41	208.84
t'	kPa	34.415	48.41	58.84
Max Effective Priciple Stress Ratio				
Axial Strain		1.778	1.788	7.826
Axial Stress	kPa	69.337	97.597	129.810
Cor. Deviator stress	kPa	68.830	96.829	117.688
Effective Major Stress	kPa	114.830	192.829	267.688
Effective Minor Stress	kPa	46.000	96.000	150.000
Effective Stress Ratio		2.496	2.009	1.785
s'	kPa	80.415	144.414	208.844
t'	kPa	34.415	48.414	58.844
Shear Resistance Angle	degs			11.0
Cohesion c'	kPa			20

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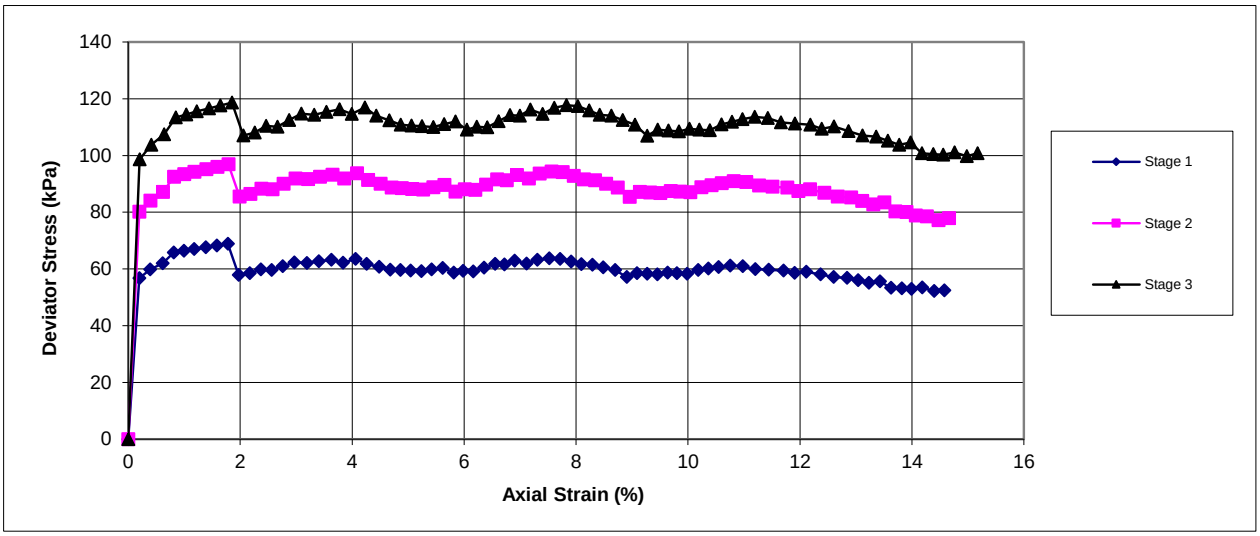
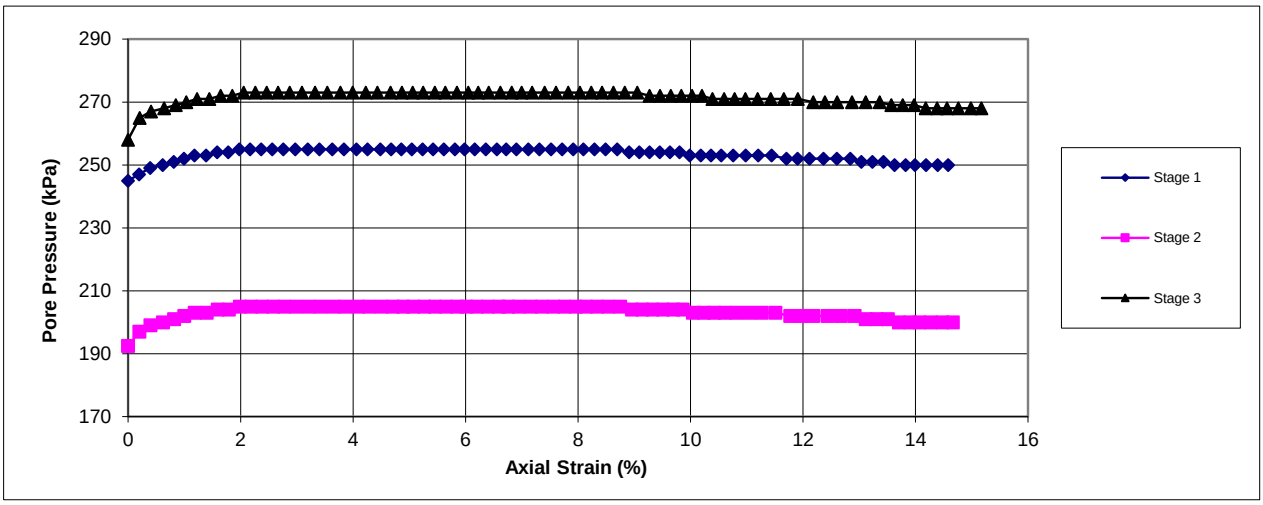
Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Shearing Stage





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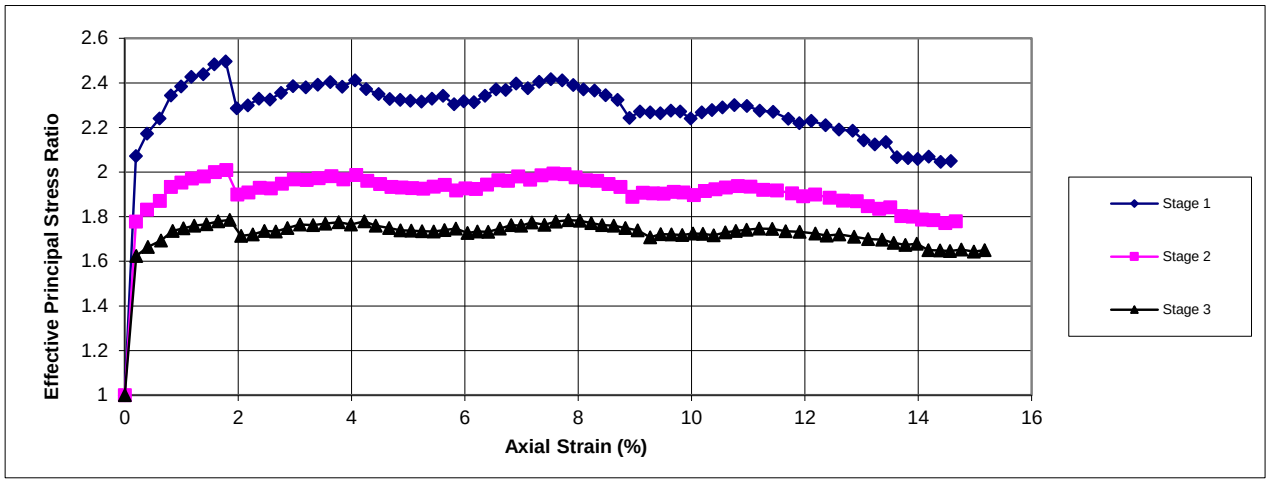
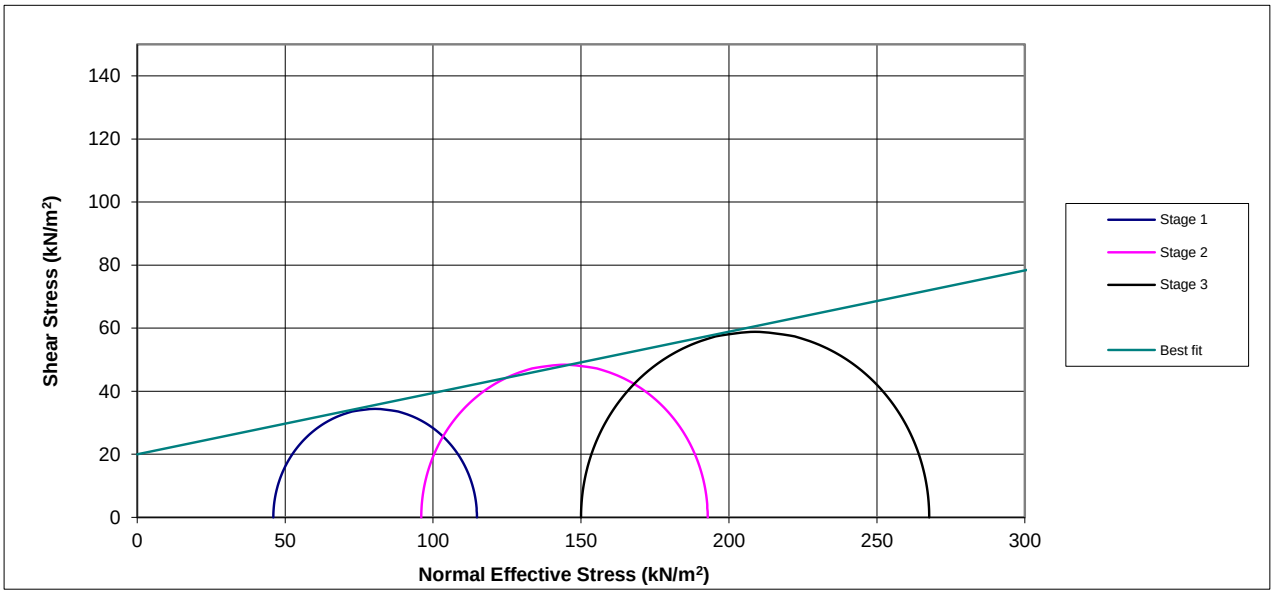
Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Shearing Stage





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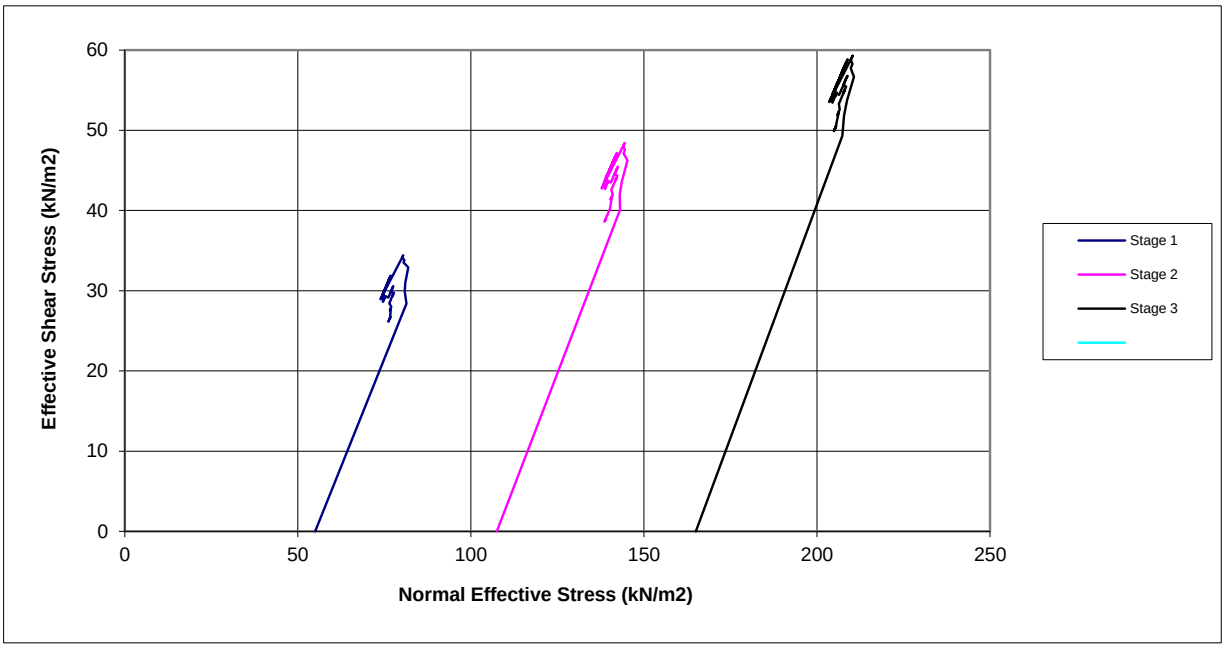
Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	
Date		25/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Greyish brown sl silty CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	76.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	86.19
Mass	g	118.80	119.00	119.50
Dry Mass	g	70.60	72.00	72.00
Density	Mg/m^3	1.38	1.38	1.39
Dry Density	Mg/m^3	0.82	0.84	0.84
Moisture Content	%	68	65	66
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	51	48	48
Density	Mg/m^3	1.55	1.60	1.66
Dry Density	Mg/m^3	1.03	1.08	1.12

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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Test Setup

Date started	20/06/2018	20/06/2018	20/06/2018
Date Finished	24/06/2018	24/06/2018	24/06/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P11	P13	P12
Cell Number	C11	C13	C12

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	300.00	400.00	600.00
Final Pore Pressure	kPa	294.00	445.00	596.00
Final B Value		0.97	0.95	0.97

Consolidation

Effective Pressure	kPa	130.00	255.00	515.00
Cell Pressure	kPa	300.00	400.00	600.00
Back Pressure	kPa	170.00	145.00	85.00
Excess Pore Pressure	kPa	125.00	255.00	511.00
Pore Pressure at End	kPa	170.00	145.00	85.00
Consolidated Volume	cm^3	68.49	66.38	64.24
Consolidated Height	mm	70.80	70.18	69.55
Consolidated Area	mm^2	978.85	960.34	941.57
Vol. Compressibility	m^2/MN	1.20796	1.58506	2.99602
Consolidation Coef.	$m^2/yr.$	36.03683	4.58192	4.00409

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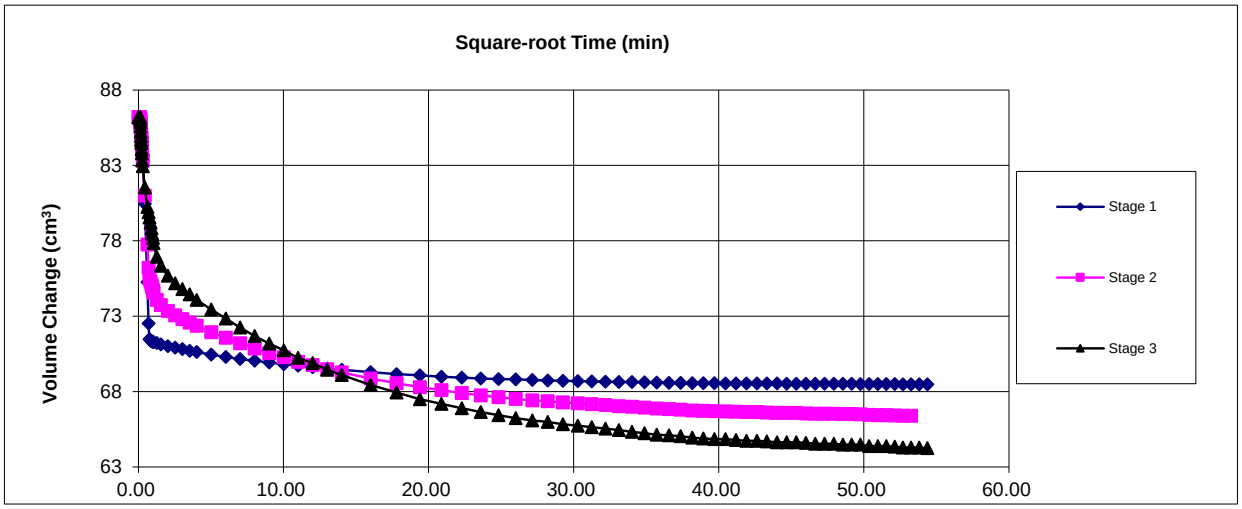
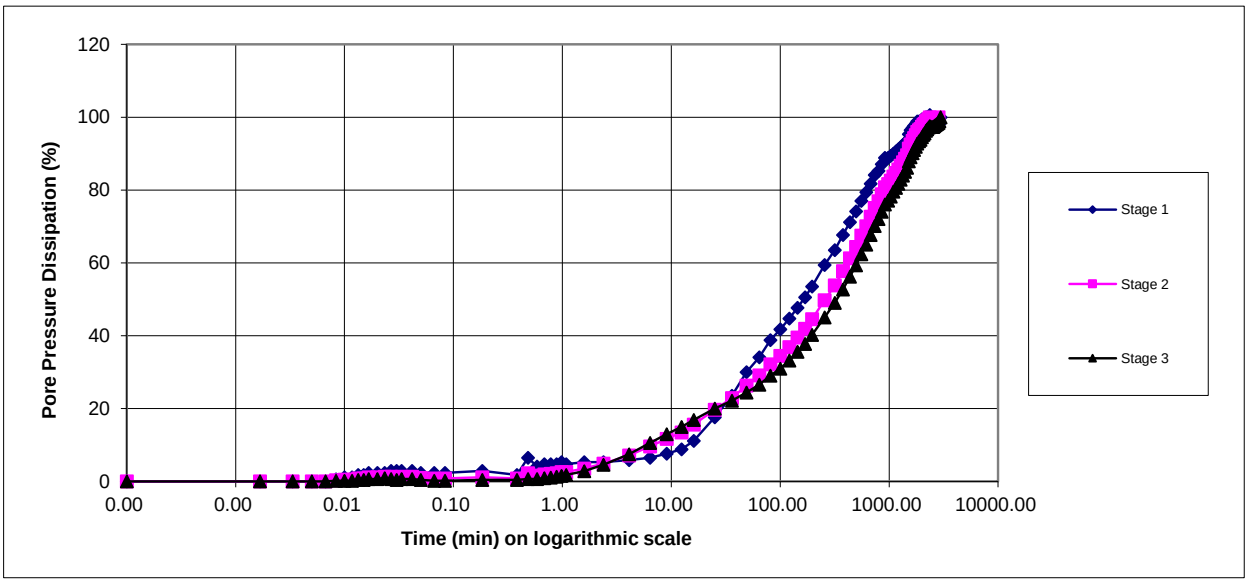
Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Consolidation Stage





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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	300	400	600
Initial Pore Pressure	kPa	170	145	60
Rate of Strain	mm/min	1.8623	0.2347	0.2033
Max Deviator Stress				
Axial Strain		11.964	4.175	5.320
Axial Stress	kPa	166.386	230.50	328.21
Cor. Deviator stress	kPa	154.534	219.24	316.49
Effective Major Stress	kPa	255.534	449.24	731.49
Effective Minor Stress	kPa	102.000	230.00	415.00
Effective Stress Ratio		2.505	1.953	1.76
s'	kPa	178.767	339.62	573.25
t'	kPa	76.767	109.62	158.25
Max Effective Priciple Stress Ratio				
Axial Strain		11.964	6.127	6.370
Axial Stress	kPa	166.386	227.267	327.617
Cor. Deviator stress	kPa	153.534	215.610	315.728
Effective Major Stress	kPa	255.534	437.610	725.728
Effective Minor Stress	kPa	102.000	222.000	410.000
Effective Stress Ratio		2.505	1.971	1.770
s'	kPa	178.767	329.805	567.864
t'	kPa	76.767	107.805	157.864
Shear Resistance Angle	degs			12.0
Cohesion c'	kPa			40

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Client Ref

Riverside

Contract No

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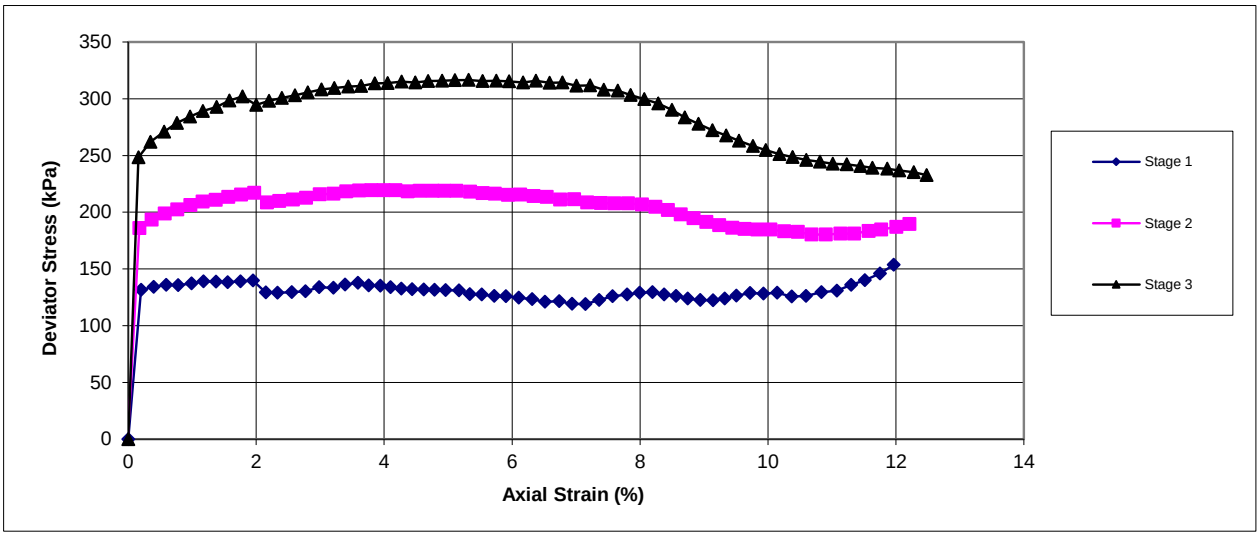
GSTL
GEO SITE & TESTING SERVICES LTD

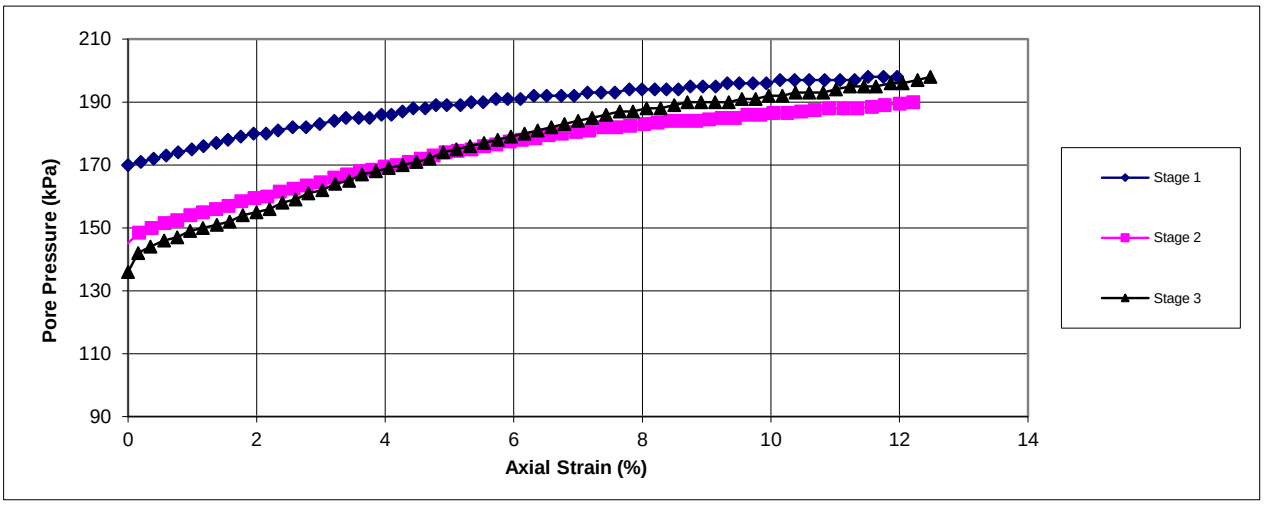
Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Shearing Stage





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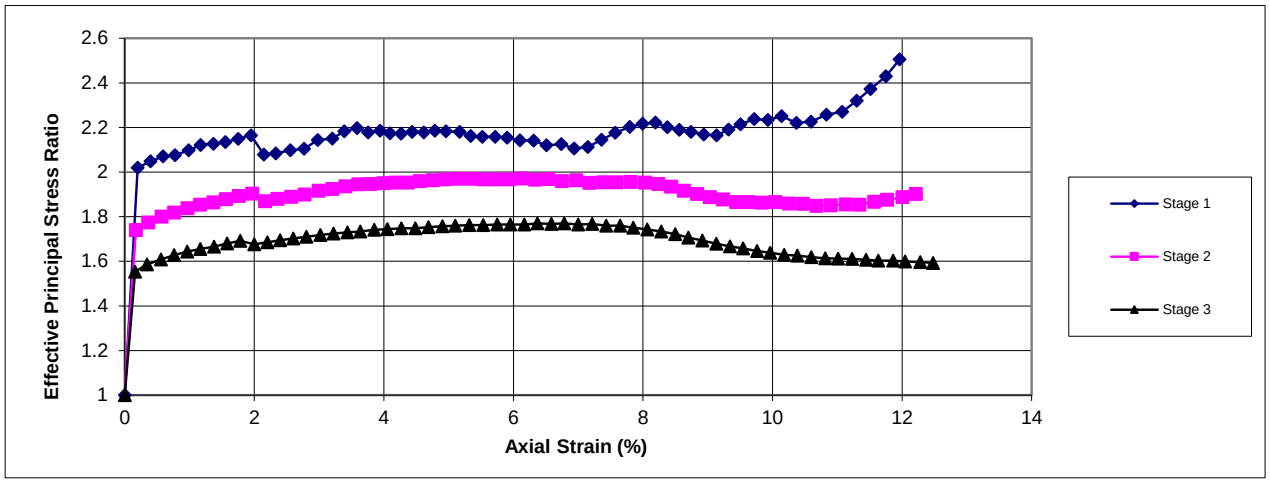
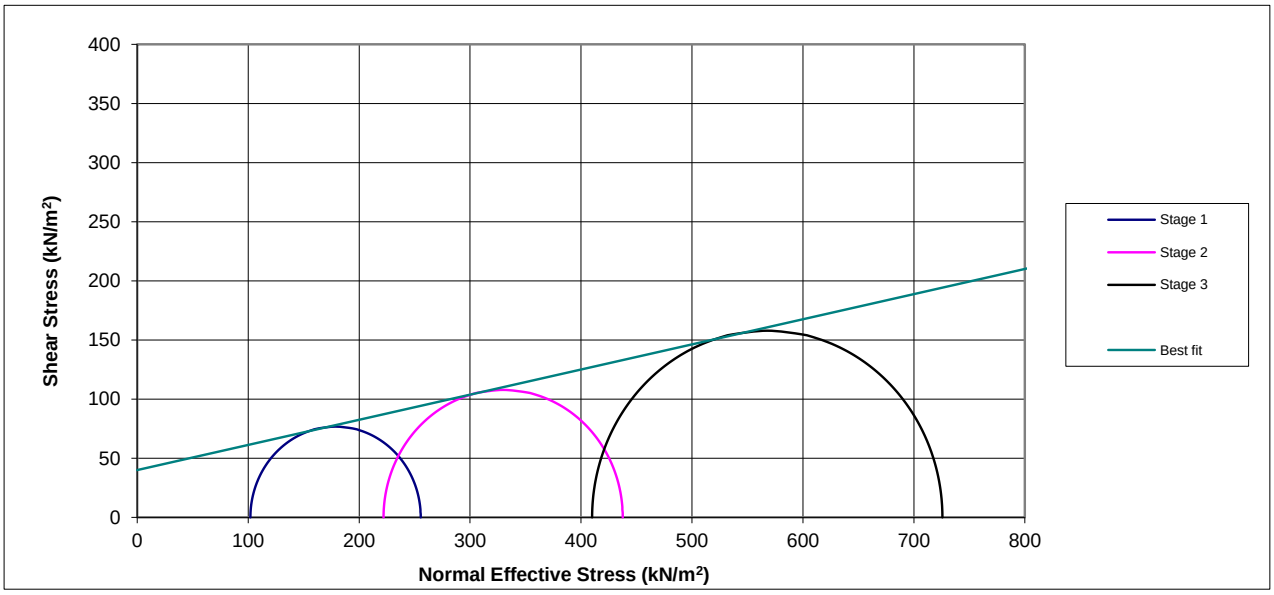
Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Shearing Stage





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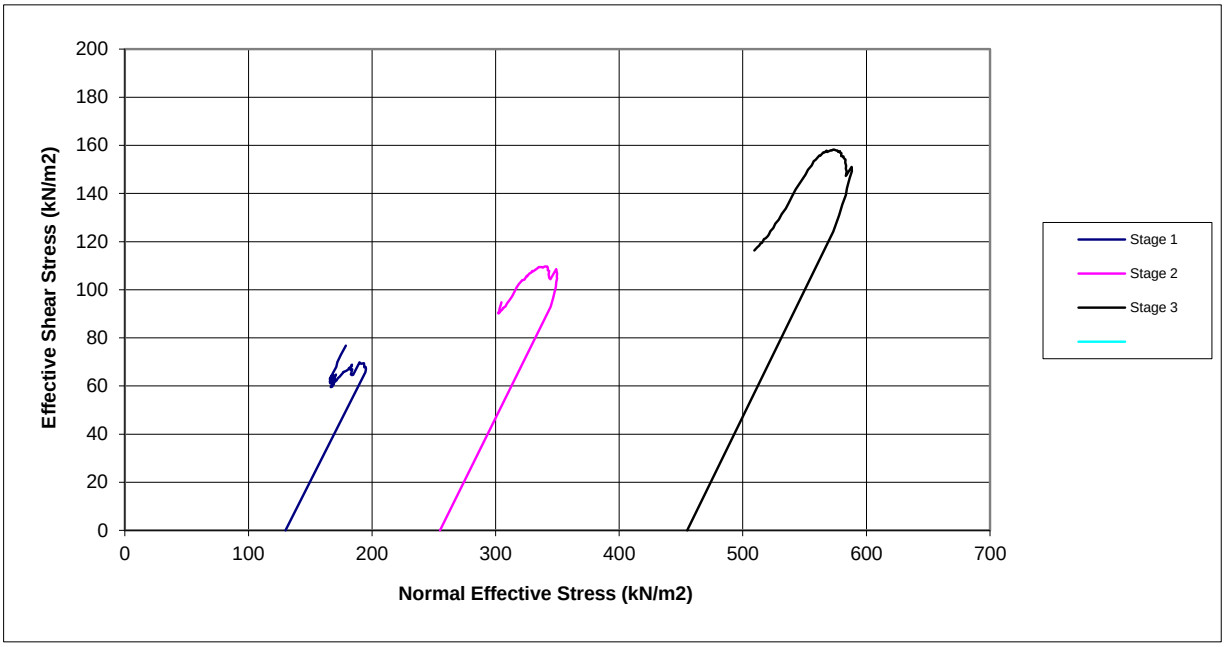
Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	
Date		18/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown sl silty soft CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	74.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	83.92
Mass	g	164.50	164.70	164.90
Dry Mass	g	126.00	128.00	128.00
Density	Mg/m^3	1.91	1.91	1.96
Dry Density	Mg/m^3	1.46	1.49	1.53
Moisture Content	%	31	29	29
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	30	28	28
Density	Mg/m^3	2.36	2.40	2.54
Dry Density	Mg/m^3	1.82	1.88	1.98

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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

Test Setup

Date started	14/06/2018	14/06/2018	14/06/2018
Date Finished	17/06/2018	17/06/2018	17/06/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P12	P13	P11
Cell Number	C12	C13	C11

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	300.00	300.00	300.00
Final Pore Pressure	kPa	292.00	293.00	294.00
Final B Value		0.99	0.95	0.98

Consolidation

Effective Pressure	kPa	60.00	120.00	235.00
Cell Pressure	kPa	300.00	300.00	300.00
Back Pressure	kPa	240.00	180.00	65.00
Excess Pore Pressure	kPa	60.00	118.00	229.00
Pore Pressure at End	kPa	240.00	180.00	65.00
Consolidated Volume	cm^3	69.39	68.07	64.48
Consolidated Height	mm	71.06	70.67	68.29
Consolidated Area	mm^2	986.75	975.17	958.98
Vol. Compressibility	m^2/MN	0.81213	1.16793	3.56364
Consolidation Coef.	$m^2/yr.$	81.08286	29.18983	14.89277

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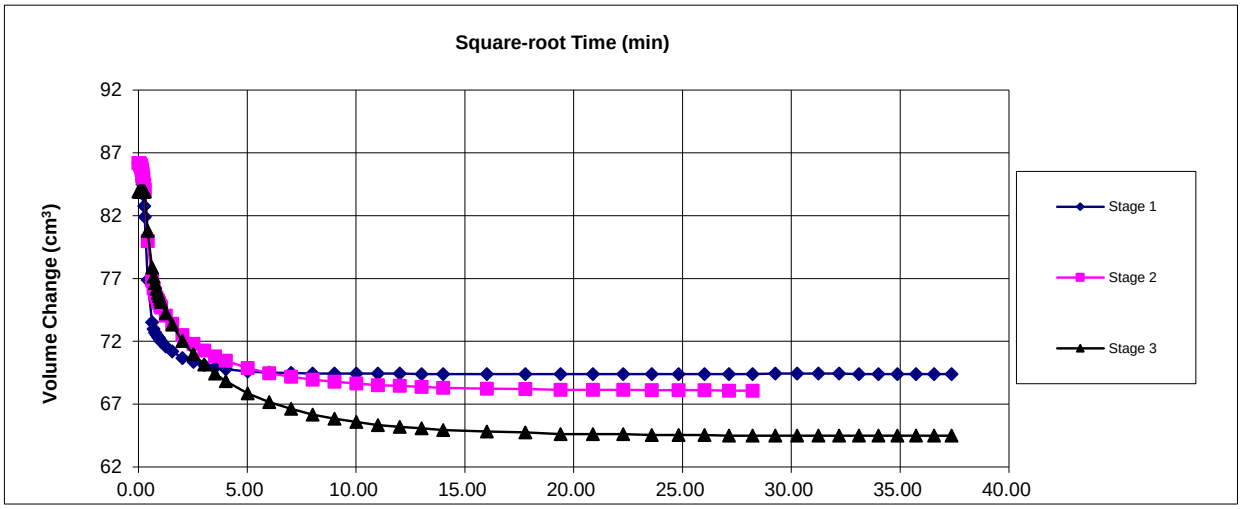
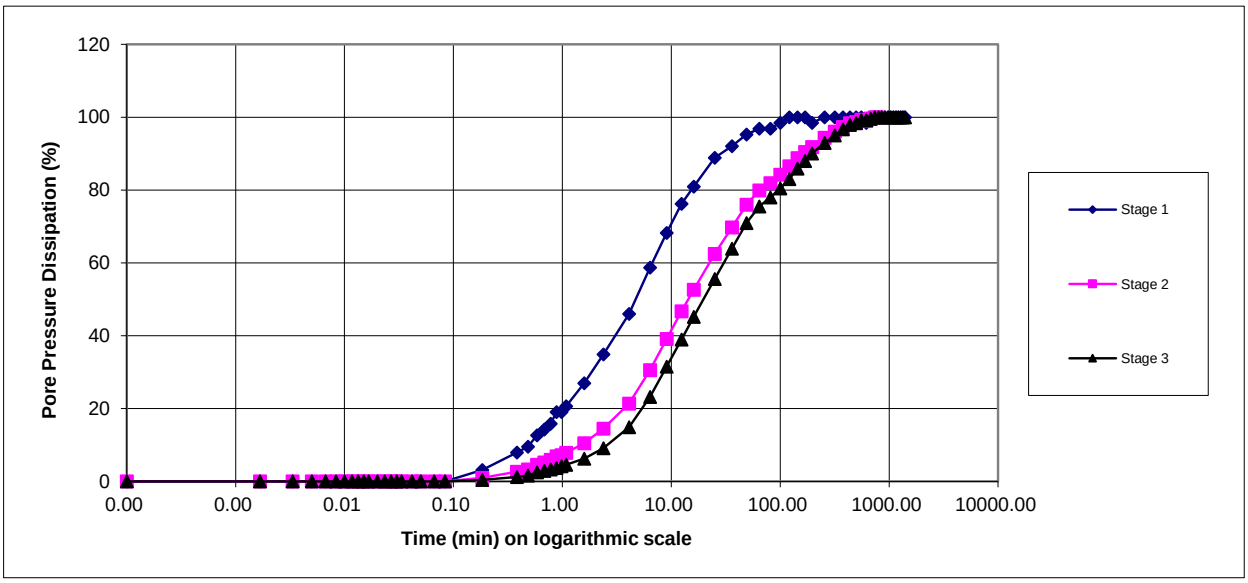
Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

Consolidation Stage





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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	300	300	300
Initial Pore Pressure	kPa	240	180	60
Rate of Strain	mm/min	4.2058	1.5058	0.7423
Max Deviator Stress				
Axial Strain		13.931	9.622	7.395
Axial Stress	kPa	146.537	206.86	357.72
Cor. Deviator stress	kPa	134.282	194.49	345.67
Effective Major Stress	kPa	183.282	293.49	560.67
Effective Minor Stress	kPa	50.000	99.00	215.00
Effective Stress Ratio		3.666	2.965	2.61
s'	kPa	116.641	196.24	387.83
t'	kPa	66.641	97.24	172.83
Max Effective Priciple Stress Ratio				
Axial Strain		2.800	9.622	8.464
Axial Stress	kPa	120.176	206.861	356.682
Cor. Deviator stress	kPa	119.378	194.489	344.457
Effective Major Stress	kPa	160.378	293.489	557.457
Effective Minor Stress	kPa	41.000	99.000	213.000
Effective Stress Ratio		3.912	2.965	2.617
s'	kPa	100.689	196.244	385.228
t'	kPa	59.689	97.244	172.228
Shear Resistance Angle	degs			23.0
Cohesion c'	kPa			23

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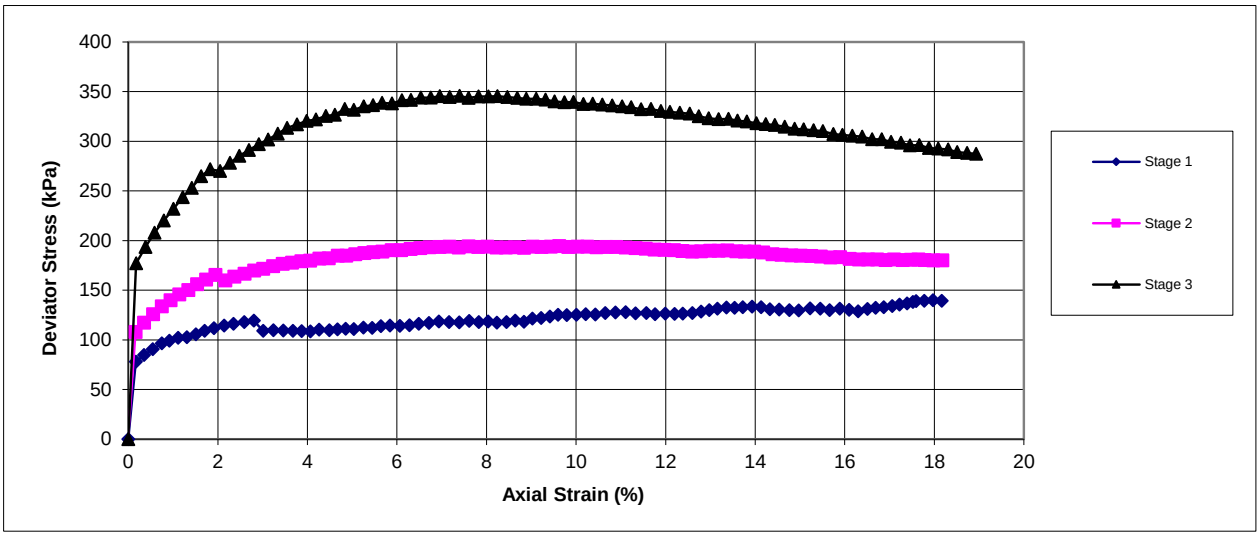
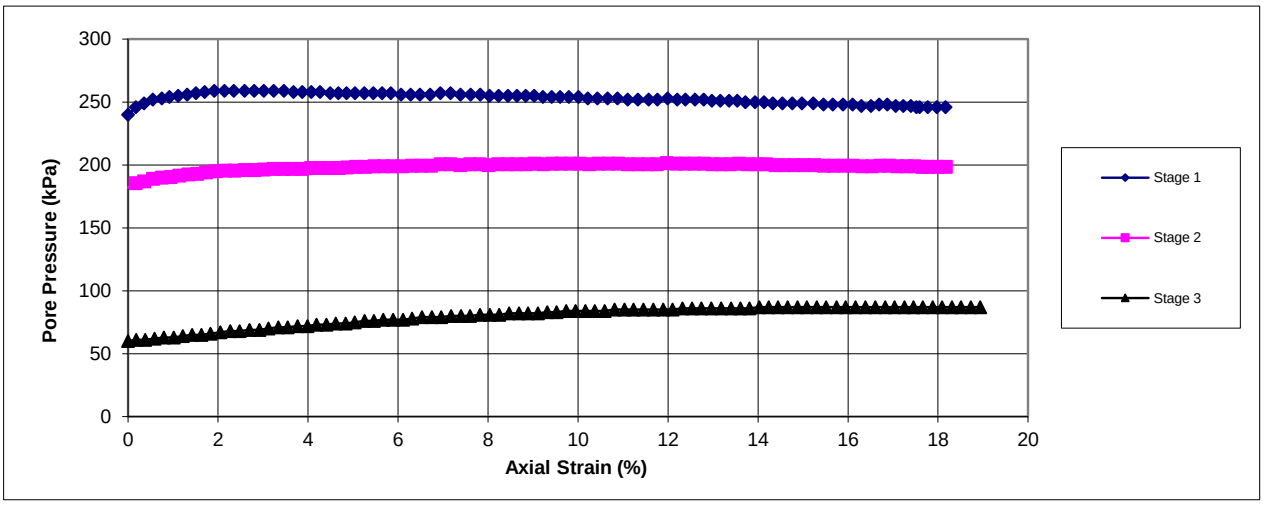
Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

Shearing Stage





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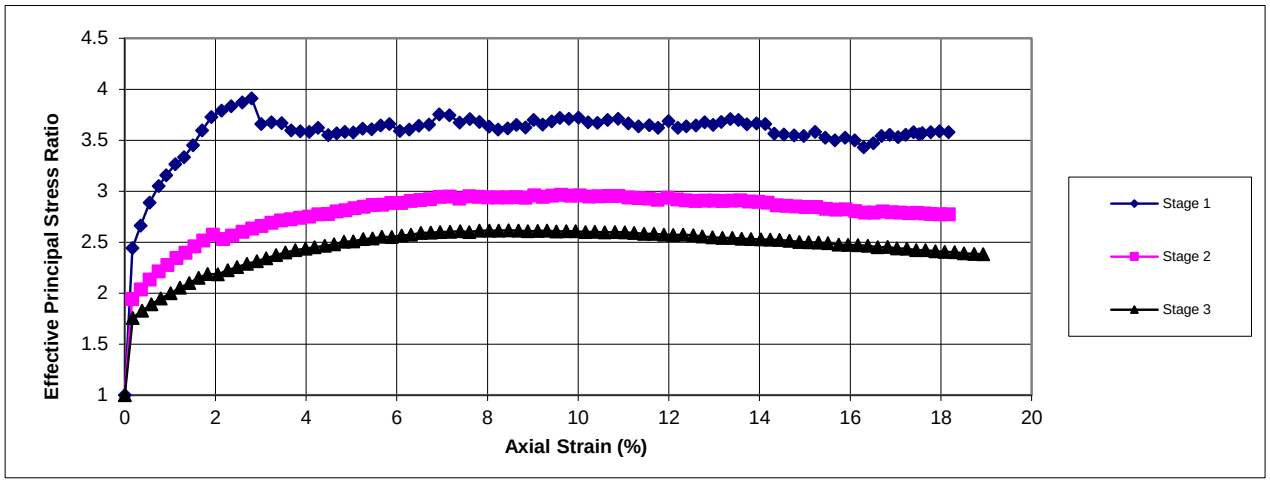
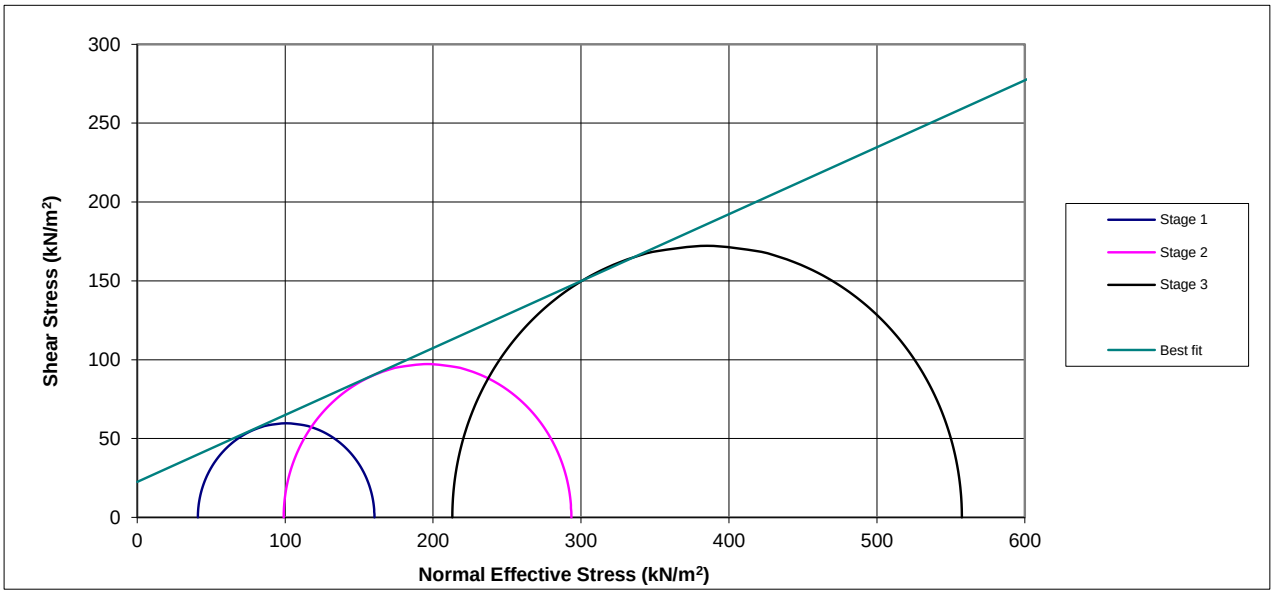
Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

Shearing Stage





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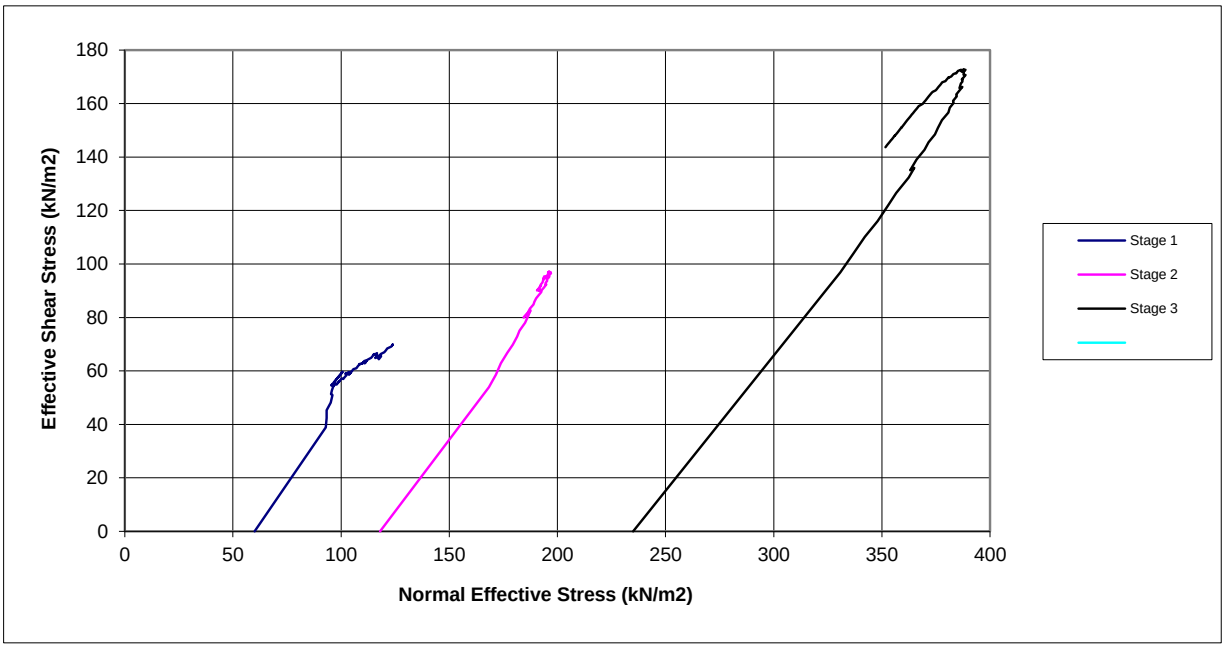
Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	
Date		06/07/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown silty CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	74.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	83.92
Mass	g	164.00	164.20	164.60
Dry Mass	g	131.10	130.00	131.00
Density	Mg/m^3	1.90	1.91	1.96
Dry Density	Mg/m^3	1.52	1.51	1.56
Moisture Content	%	25	26	26
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	27	27	26
Density	Mg/m^3	2.31	2.74	3.55
Dry Density	Mg/m^3	1.82	2.15	2.82

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Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Test Setup

Date started	03/07/2018	03/07/2018	03/07/2018
Date Finished	05/07/2018	05/07/2018	05/07/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P10	P13	P11
Cell Number	C10	C13	C11

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	300.00	400.00	600.00
Final Pore Pressure	kPa	300.00	450.00	600.00
Final B Value		1.05	0.95	0.97

Consolidation

Effective Pressure	kPa	145.00	290.00	575.00
Cell Pressure	kPa	300.00	400.00	600.00
Back Pressure	kPa	155.00	110.00	25.00
Excess Pore Pressure	kPa	145.00	290.00	575.00
Pore Pressure at End	kPa	155.00	110.00	25.00
Consolidated Volume	cm^3	72.09	60.44	46.52
Consolidated Height	mm	71.86	68.43	63.01
Consolidated Area	mm^2	1010.43	908.24	797.18
Vol. Compressibility	m^2/MN	1.05540	2.71590	17.82554
Consolidation Coef.	$m^2/yr.$	45.60911	63.36702	81.08286

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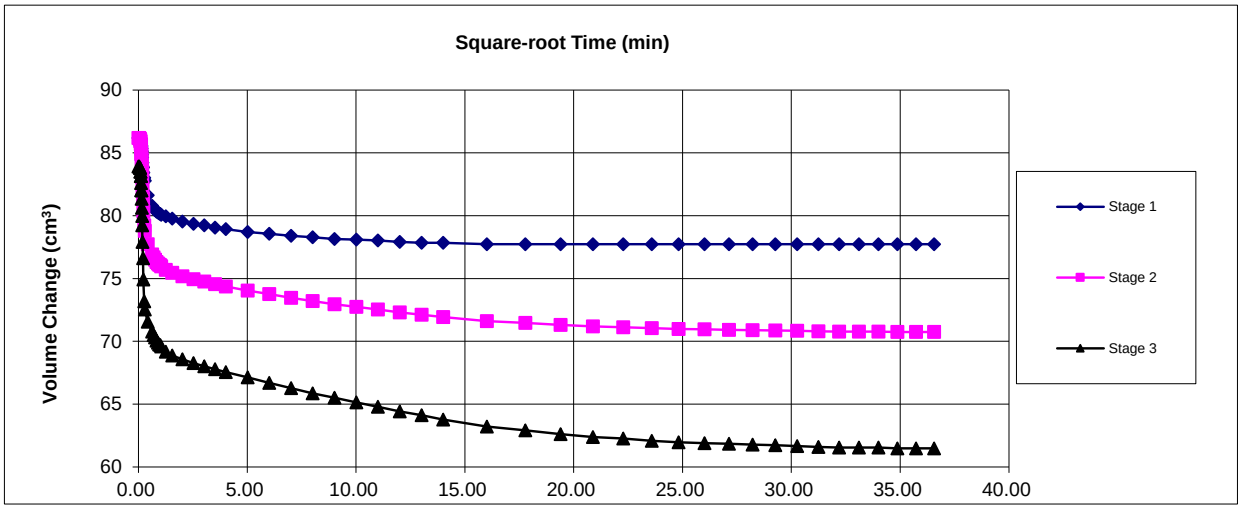
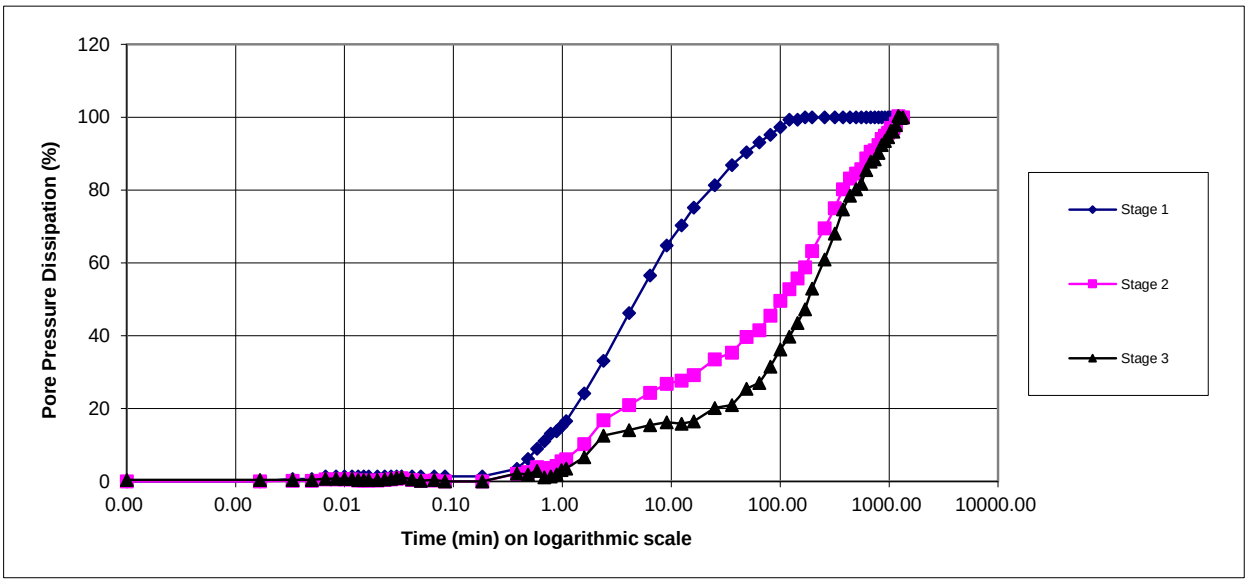
Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Consolidation Stage





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Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	300	400	600
Initial Pore Pressure	kPa	155	110	25
Rate of Strain	mm/min	2.3922	3.1652	3.7291
Max Deviator Stress				
Axial Strain		3.869	5.969	6.698
Axial Stress	kPa	217.868	358.22	541.38
Cor. Deviator stress	kPa	207.765	346.59	529.44
Effective Major Stress	kPa	340.765	665.59	1095.44
Effective Minor Stress	kPa	134.000	319.00	566.00
Effective Stress Ratio		2.543	2.086	1.94
s'	kPa	237.382	492.30	830.72
t'	kPa	103.382	173.30	264.72
Max Effective Priciple Stress Ratio				
Axial Strain		3.869	5.772	7.158
Axial Stress	kPa	217.868	356.374	540.018
Cor. Deviator stress	kPa	206.765	344.790	528.003
Effective Major Stress	kPa	340.765	661.290	1088.003
Effective Minor Stress	kPa	134.000	316.500	560.000
Effective Stress Ratio		2.543	2.089	1.943
s'	kPa	237.382	488.895	824.001
t'	kPa	103.382	172.395	264.001
Shear Resistance Angle	degs			16.0
Cohesion c'	kPa			40

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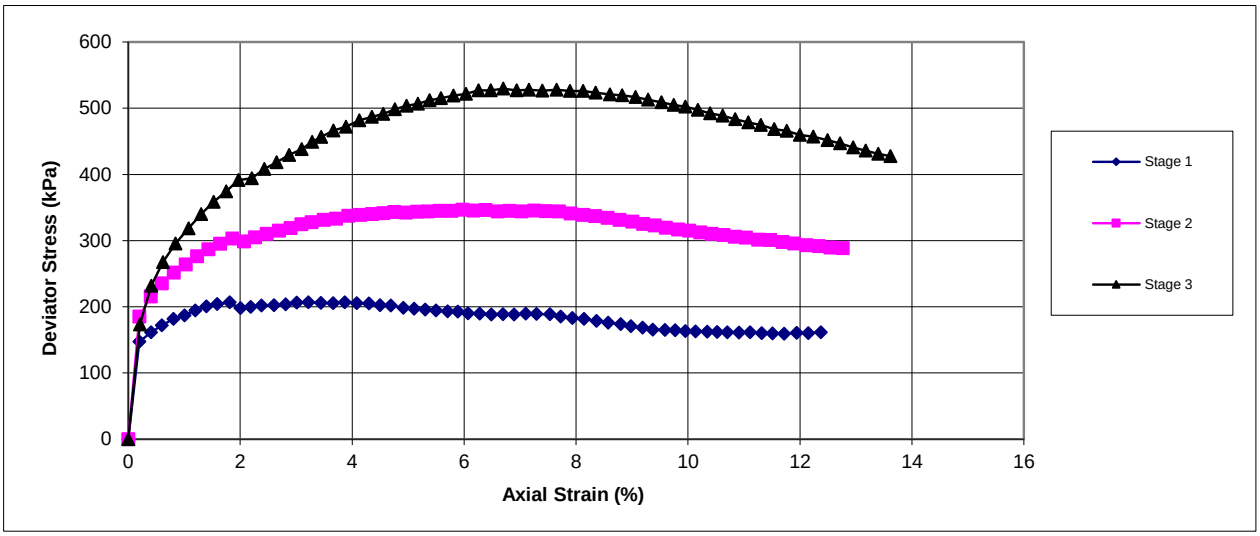
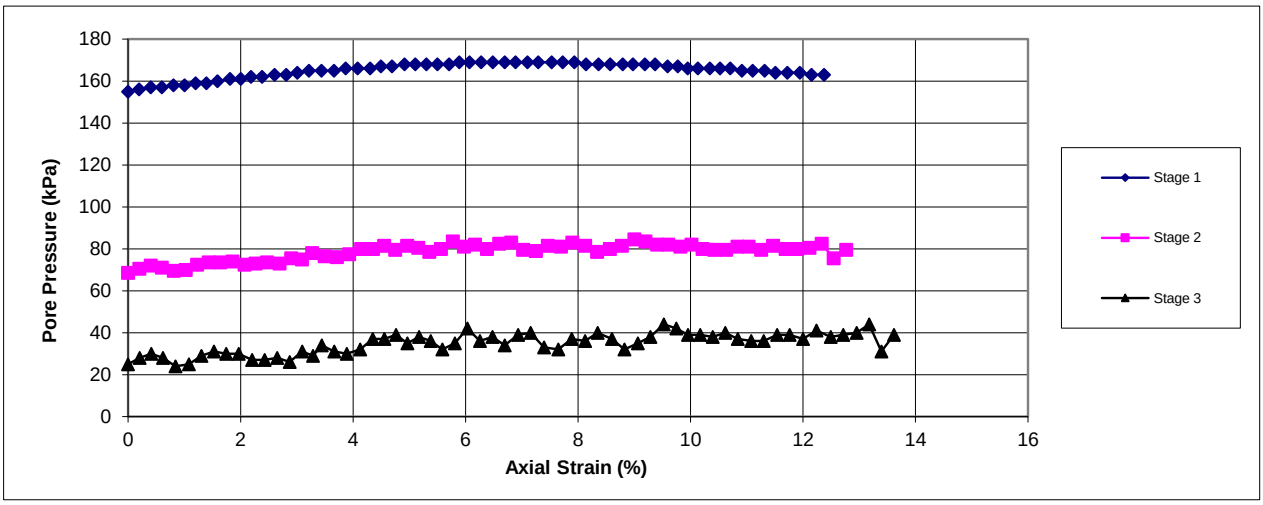
Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Shearing Stage





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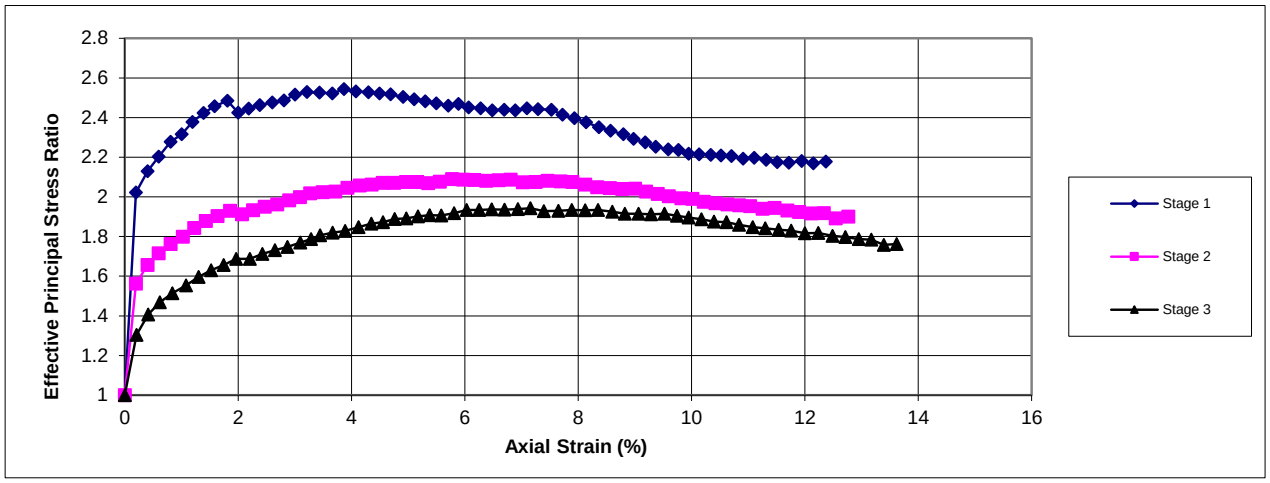
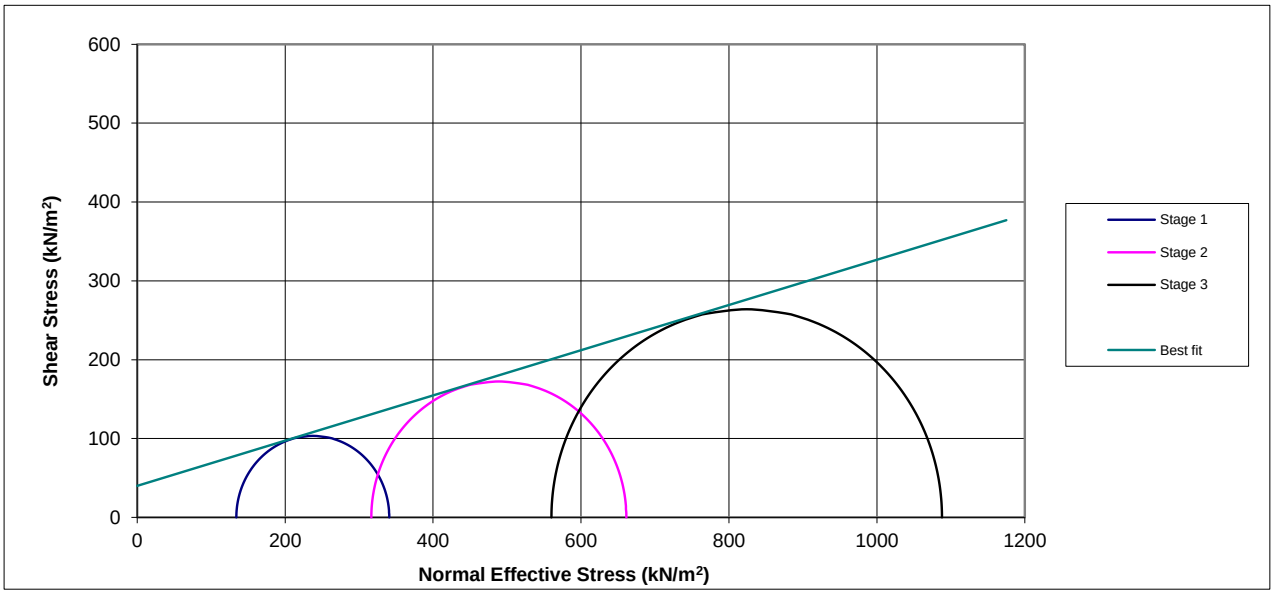
Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Shearing Stage





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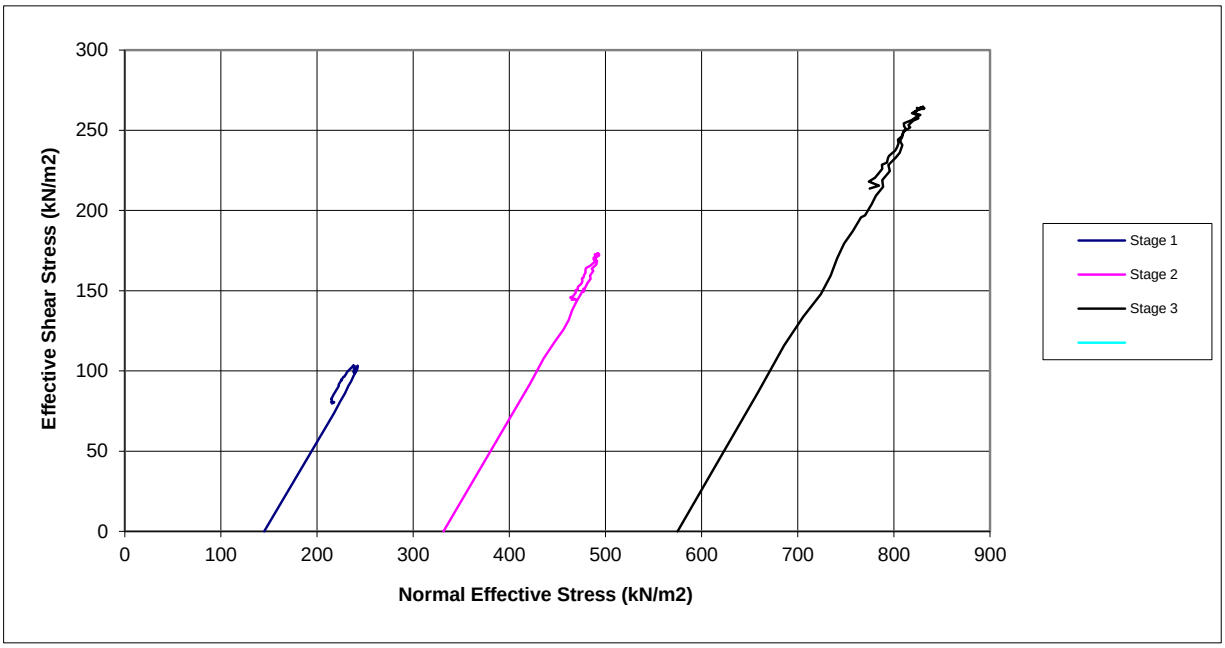
Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

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Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	
Date		06/07/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown sandy silty CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	74.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	83.92
Mass	g	162.70	163.00	163.00
Dry Mass	g	128.60	130.00	130.00
Density	Mg/m^3	1.89	1.89	1.94
Dry Density	Mg/m^3	1.49	1.51	1.55
Moisture Content	%	27	25	25
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	27	26	26
Density	Mg/m^3	2.17	2.31	2.54
Dry Density	Mg/m^3	1.71	1.83	2.02

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Client Ref

Riverside

Contract No

39466

GSTL
GEO SITE & TESTING SERVICES LTD

Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Test Setup

Date started	03/07/2018	03/07/2018	03/07/2018
Date Finished	05/07/2018	05/07/2018	05/07/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P12	P13	P11
Cell Number	C12	C13	C11

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	200.00	300.00	400.00
Final Pore Pressure	kPa	199.00	299.50	400.00
Final B Value		0.99	0.95	0.97

Consolidation

Effective Pressure	kPa	70.00	140.00	280.00
Cell Pressure	kPa	200.00	300.00	400.00
Back Pressure	kPa	130.00	160.00	120.00
Excess Pore Pressure	kPa	69.00	140.00	280.00
Pore Pressure at End	kPa	130.00	160.00	120.00
Consolidated Volume	cm^3	75.09	70.86	64.32
Consolidated Height	mm	72.74	71.49	68.24
Consolidated Area	mm^2	1036.75	999.64	957.54
Vol. Compressibility	m^2/MN	0.99062	1.11161	1.94619
Consolidation Coef.	$m^2/yr.$	45.60911	1.44147	14.89277

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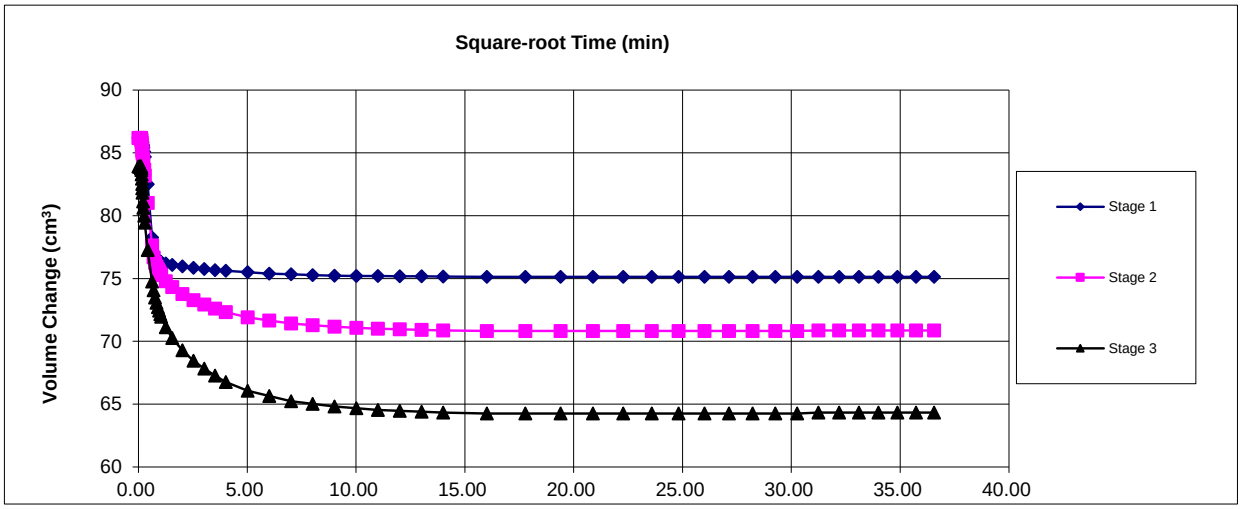
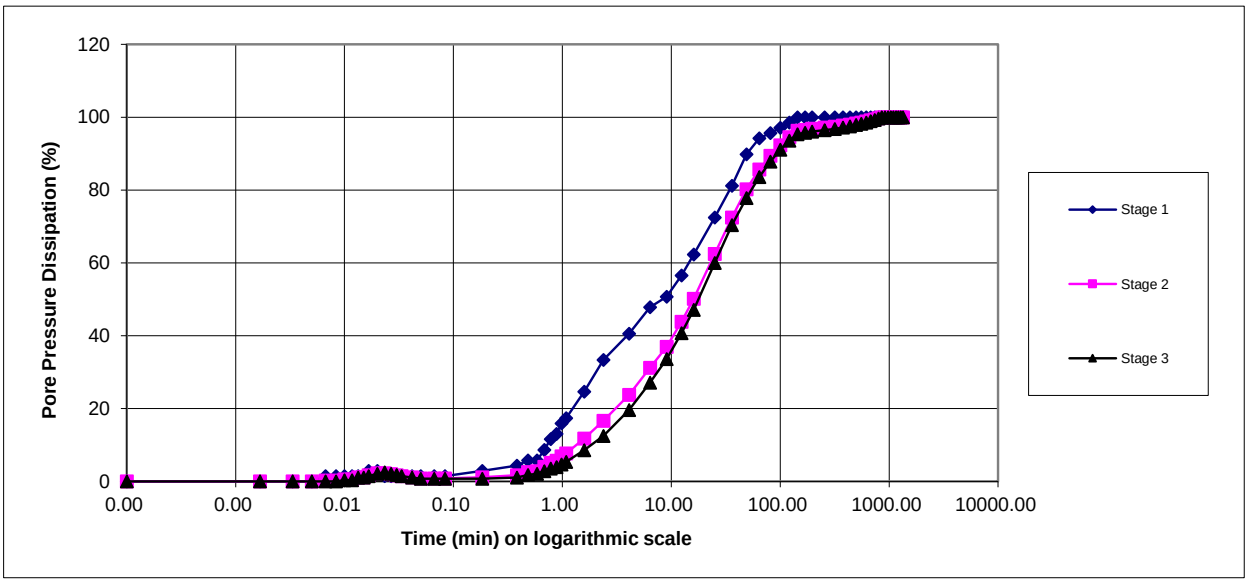
Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Consolidation Stage





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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	200	300	400
Initial Pore Pressure	kPa	130	160	120
Rate of Strain	mm/min	2.4215	0.0752	0.7418
Max Deviator Stress				
Axial Strain		8.895	8.315	6.023
Axial Stress	kPa	175.752	294.40	494.21
Cor. Deviator stress	kPa	164.528	282.30	482.37
Effective Major Stress	kPa	173.528	389.80	751.37
Effective Minor Stress	kPa	10.000	107.50	269.00
Effective Stress Ratio		17.353	3.626	2.79
s'	kPa	91.764	248.65	510.19
t'	kPa	81.764	141.15	241.19
Max Effective Priciple Stress Ratio				
Axial Strain		8.895	6.427	5.613
Axial Stress	kPa	175.752	290.637	493.703
Cor. Deviator stress	kPa	163.528	278.919	481.936
Effective Major Stress	kPa	173.528	384.419	749.936
Effective Minor Stress	kPa	10.000	105.500	268.000
Effective Stress Ratio		17.353	3.644	2.798
s'	kPa	91.764	244.960	508.968
t'	kPa	81.764	139.460	240.968
Shear Resistance Angle	degs			22.5
Cohesion c'	kPa			49

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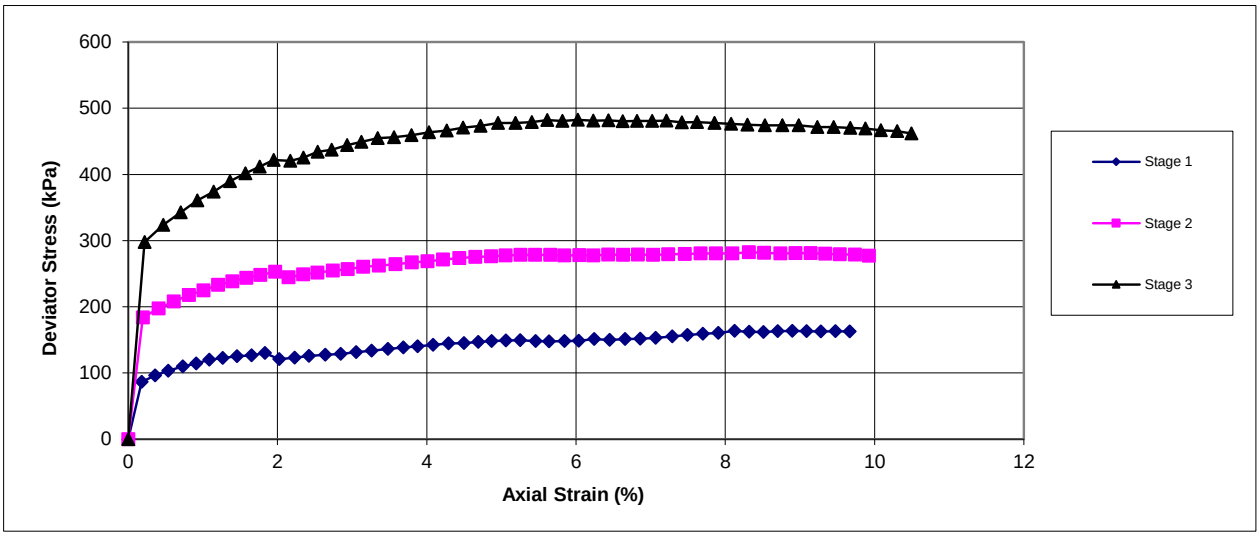
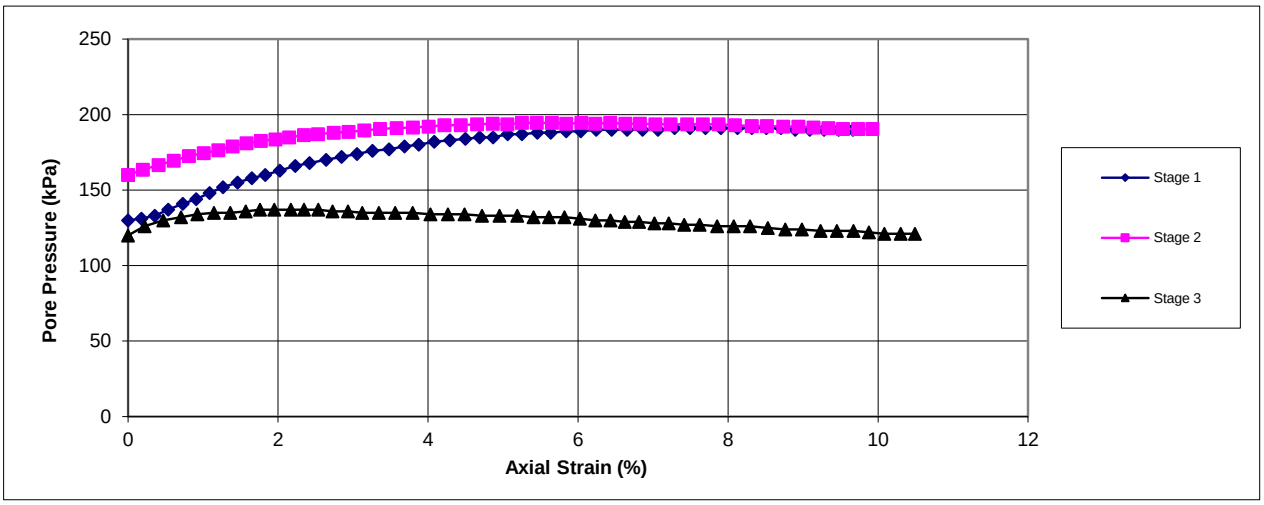
Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Shearing Stage





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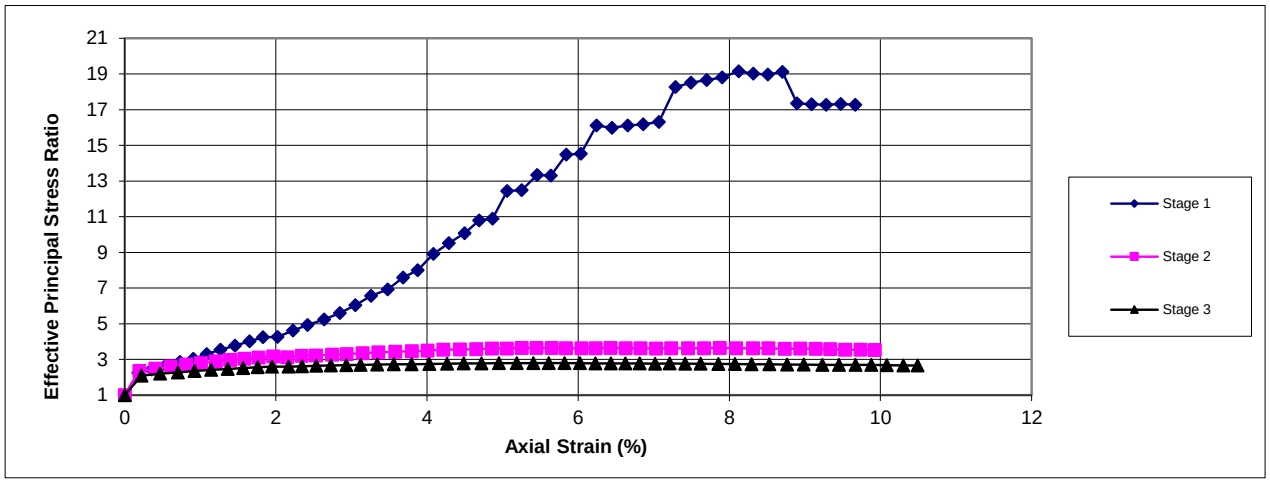
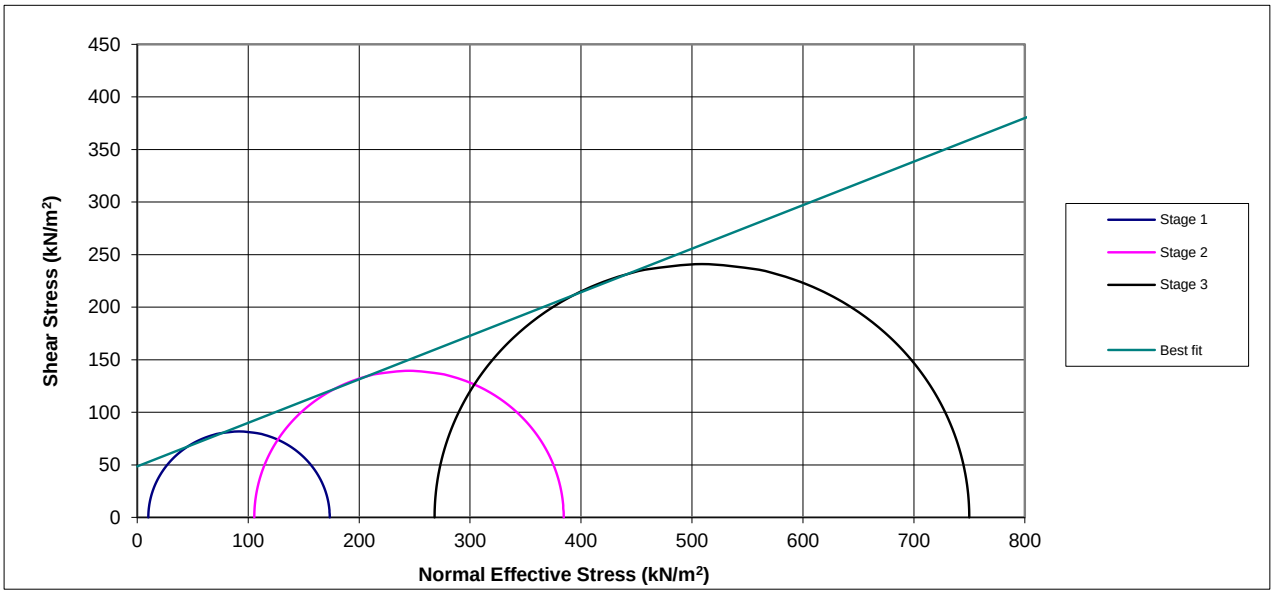
Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Shearing Stage





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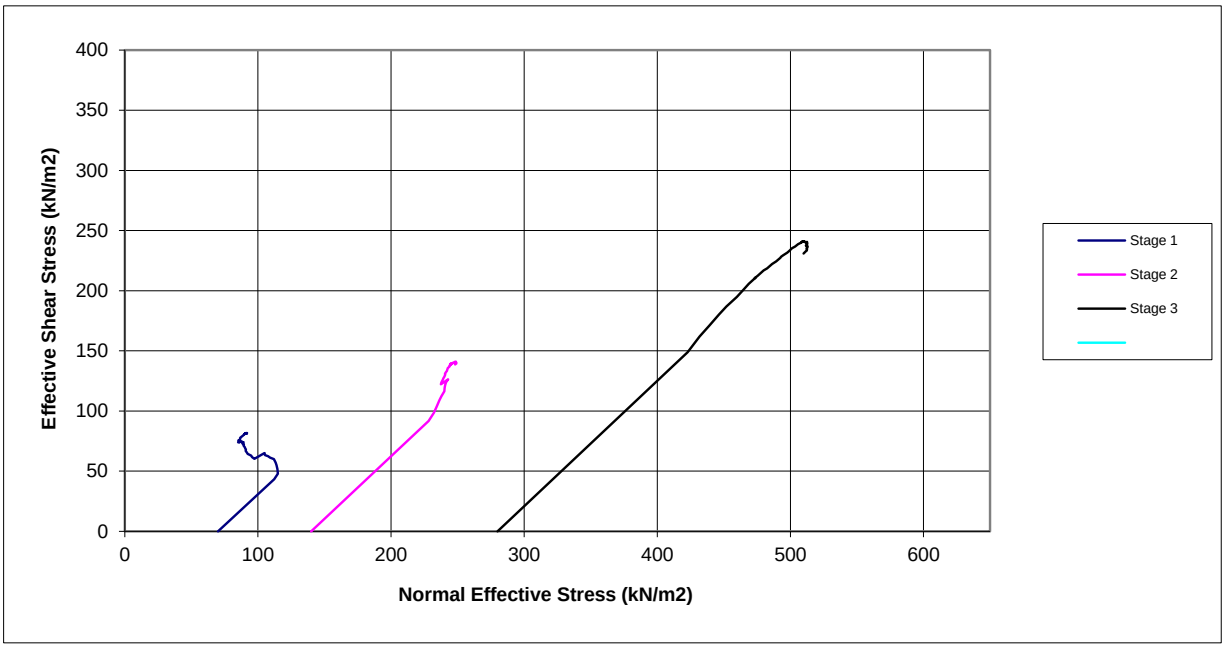
Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown slightly grey silty sandy CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	76.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	86.19
Mass	g	181.30	181.70	182.30
Dry Mass	g	155.80	158.00	158.00
Density	Mg/m^3	2.10	2.11	2.12
Dry Density	Mg/m^3	1.81	1.83	1.83
Moisture Content	%	16	15	15
Specific Gravity (assumed/measured)	kN/m^3	2.65 assumed	2.65 assumed	2.65 assumed

Final Specimen Conditions

Moisture Content	%	14	13	13
Density	Mg/m^3	2.13	2.19	2.34
Dry Density	Mg/m^3	1.86	1.94	2.07

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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Test Setup

Date started	25/06/2018	25/06/2018	25/06/2018
Date Finished	01/07/2018	01/07/2018	01/07/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P14	P15	P16
Cell Number	C14	C15	C16

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	400.00	500.00	700.00
Final Pore Pressure	kPa	391.00	493.00	481.00
Final B Value		0.95	0.98	0.95

Consolidation

Effective Pressure	kPa	125.00	250.00	500.00
Cell Pressure	kPa	400.00	500.00	700.00
Back Pressure	kPa	275.00	250.00	200.00
Excess Pore Pressure	kPa	116.00	243.00	481.00
Pore Pressure at End	kPa	275.00	250.00	200.00
Consolidated Volume	cm^3	83.69	81.29	76.39
Consolidated Height	mm	75.27	74.56	73.12
Consolidated Area	mm^2	1112.19	1091.13	1048.15
Vol. Compressibility	m^2/MN	0.10547	0.22740	0.56849
Consolidation Coef.	$m^2/yr.$	1.00102	0.32686	0.18386

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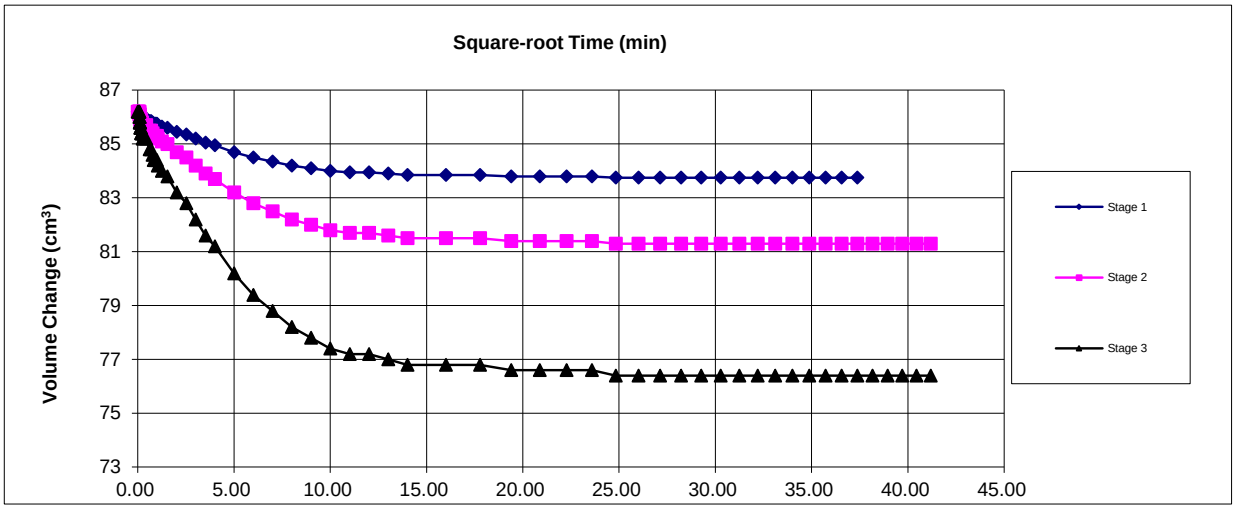
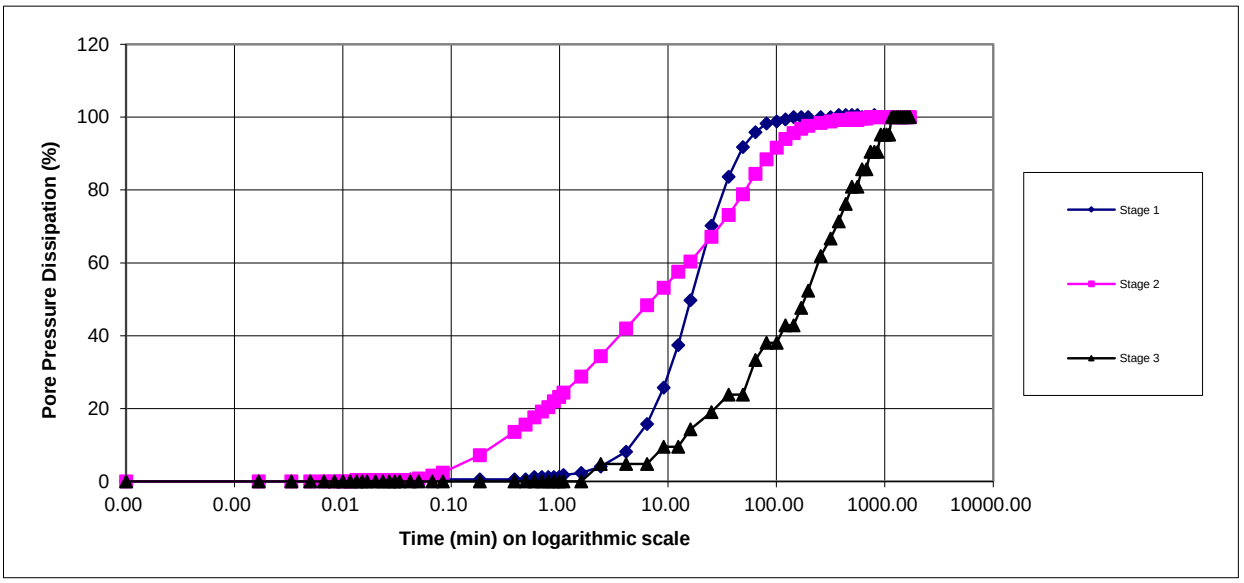
Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Consolidation Stage





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Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Shearing

Initial Cell Pressure	kPa	400	500	700
Initial Pore Pressure	kPa	275	250	200
Rate of Strain	mm/min	0.0550	0.0178	0.0098
Max Deviator Stress				
Axial Strain		10.350	11.280	11.379
Axial Stress	kPa	171.741	345.86	691.62
Cor. Deviator stress	kPa	160.220	333.15	678.93
Effective Major Stress	kPa	231.720	481.15	974.93
Effective Minor Stress	kPa	72.500	148.00	296.00
Effective Stress Ratio		3.196	3.251	3.29
s'	kPa	152.110	314.57	635.46
t'	kPa	79.610	166.57	339.46
Max Effective Priciple Stress Ratio				
Axial Strain		6.178	7.001	6.346
Axial Stress	kPa	159.614	324.425	637.973
Cor. Deviator stress	kPa	147.947	312.590	626.088
Effective Major Stress	kPa	213.447	445.590	888.088
Effective Minor Stress	kPa	65.500	133.000	262.000
Effective Stress Ratio		3.259	3.350	3.390
s'	kPa	139.473	289.295	575.044
t'	kPa	73.973	156.295	313.044
Shear Resistance Angle	degs			33.0
Cohesion c'	kPa			0

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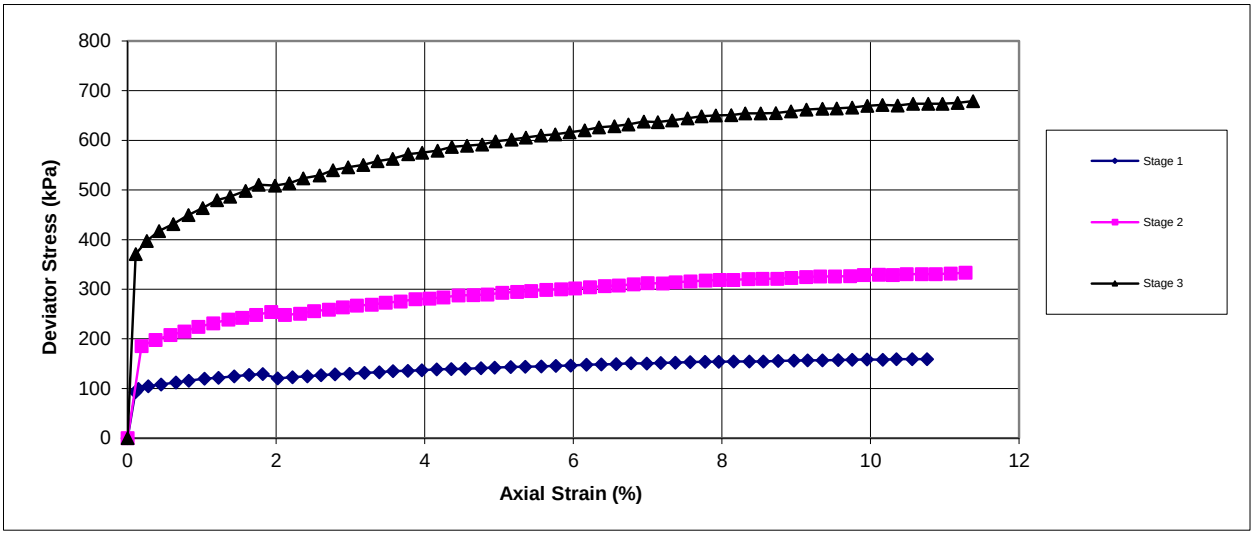
Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

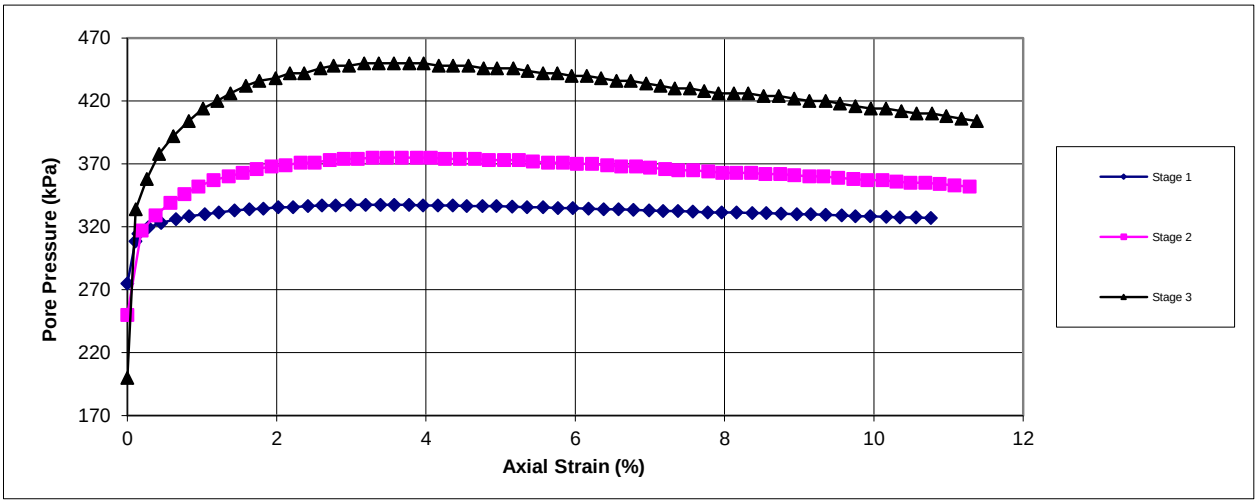
Stage 1

Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Shearing Stage





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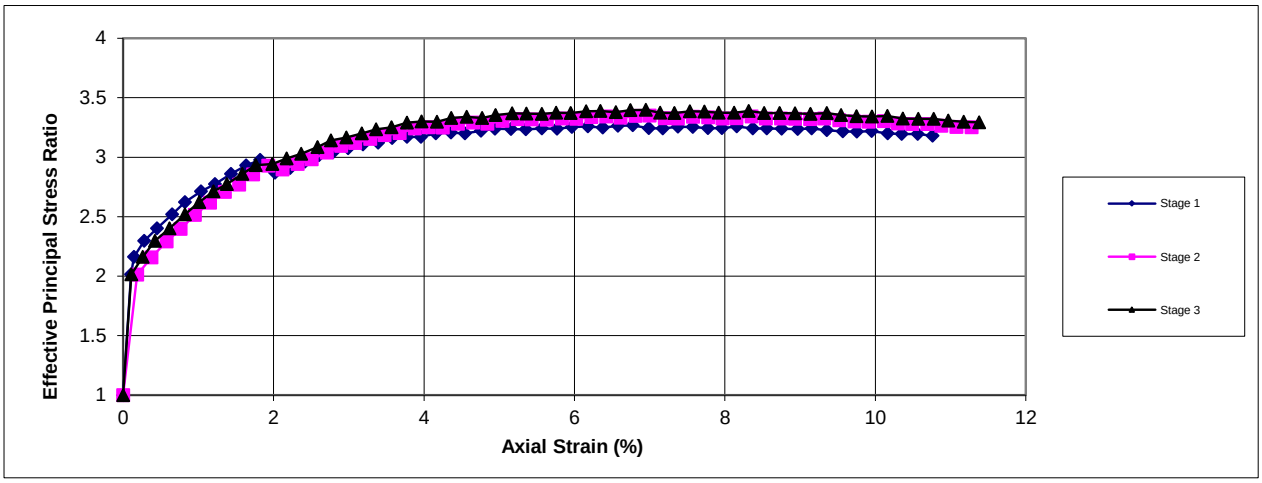
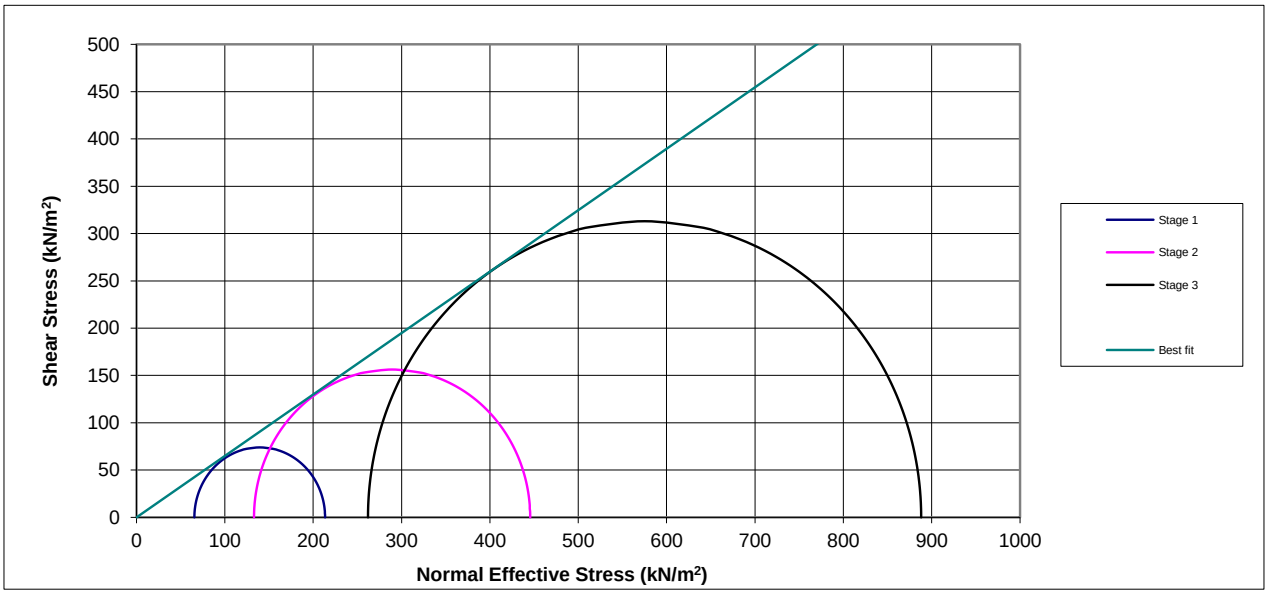
Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Shearing Stage





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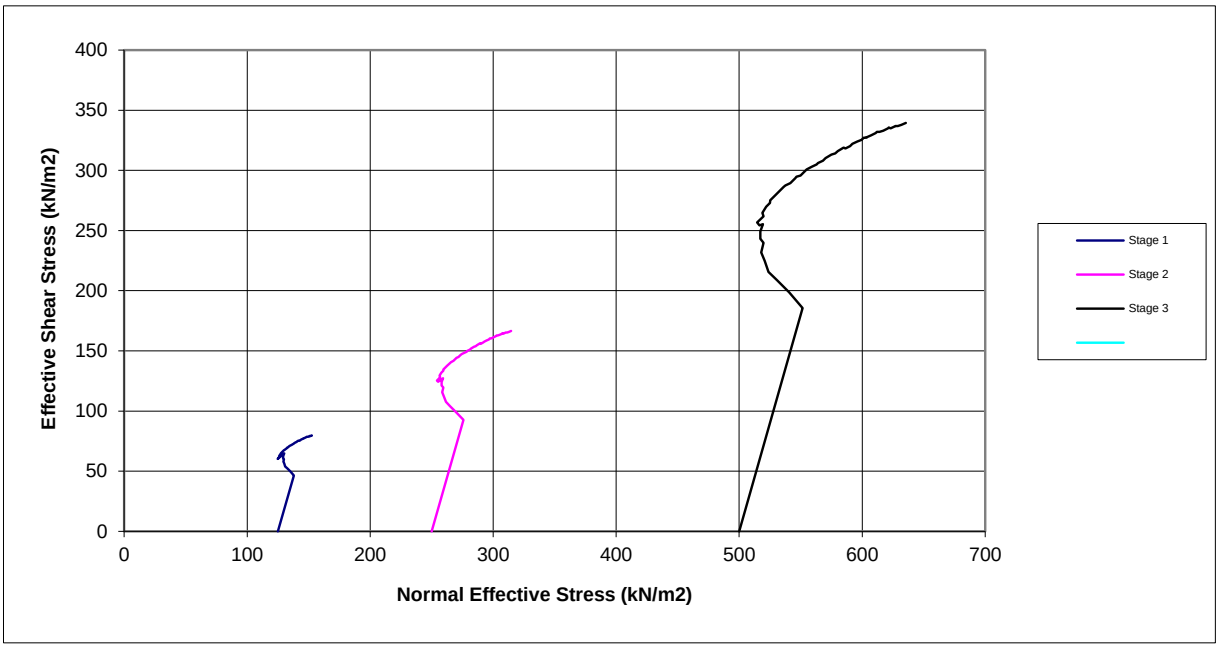
Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Shearing Stage



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Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	
Date		14/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey silty CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	74.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	83.92
Mass	g	156.80	157.00	157.20
Dry Mass	g	123.30	122.00	123.00
Density	Mg/m^3	1.82	1.82	1.87
Dry Density	Mg/m^3	1.43	1.42	1.47
Moisture Content	%	27	29	28
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	31	30	29
Density	Mg/m^3	2.40	2.53	2.83
Dry Density	Mg/m^3	1.84	1.95	2.20

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Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Test Setup

Date started	10/06/2018	10/06/2018	10/06/2018
Date Finished	13/06/2018	13/06/2018	13/06/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P12	P12	P12
Cell Number	C12	C12	C12

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	300.00	300.00	300.00
Final Pore Pressure	kPa	299.00	295.50	292.00
Final B Value		1.00	0.95	0.98

Consolidation

Effective Pressure	kPa	50.00	100.00	200.00
Cell Pressure	kPa	300.00	300.00	300.00
Back Pressure	kPa	250.00	200.00	100.00
Excess Pore Pressure	kPa	41.00	91.00	192.00
Pore Pressure at End	kPa	250.00	200.00	100.00
Consolidated Volume	cm^3	67.19	62.54	55.92
Consolidated Height	mm	70.42	69.05	65.77
Consolidated Area	mm^2	967.45	926.66	881.86
Vol. Compressibility	m^2/MN	0.88174	1.37193	3.33633
Consolidation Coef.	$m^2/yr.$	59.57108	59.57108	38.12549

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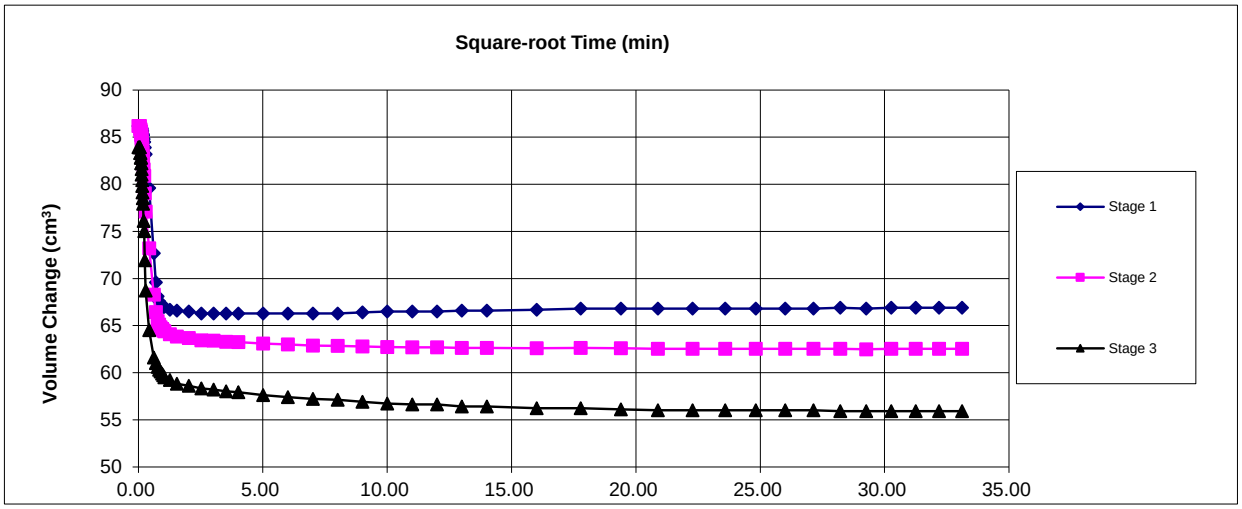
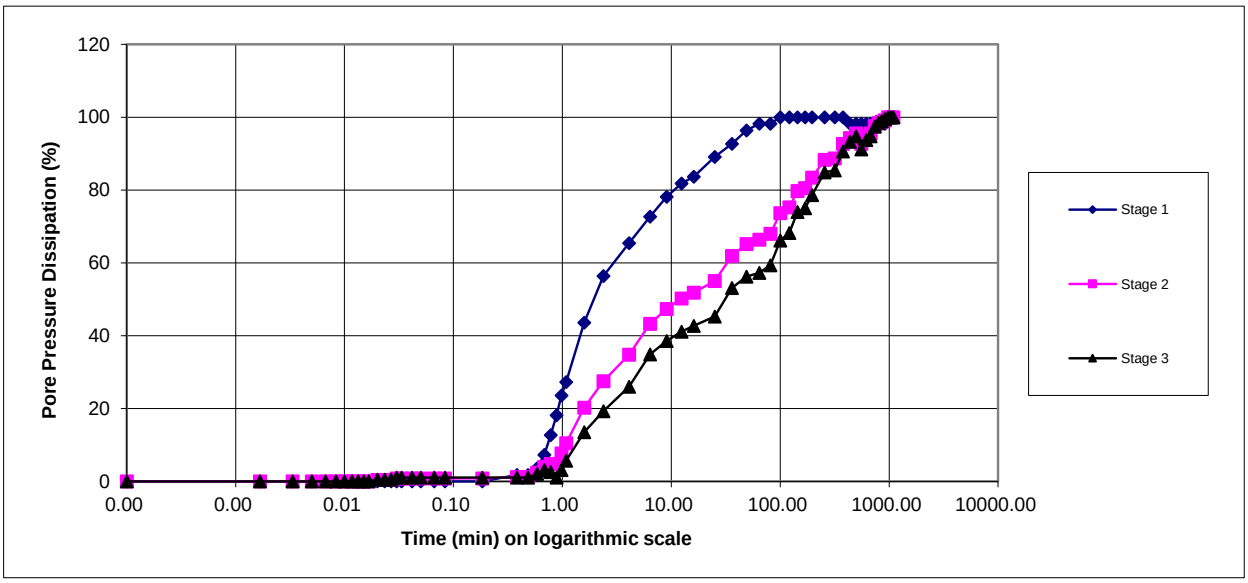
Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Consolidation Stage





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Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	300	300	300
Initial Pore Pressure	kPa	250	200	100
Rate of Strain	mm/min	3.0619	3.0024	1.8303
Max Deviator Stress				
Axial Strain		9.955	5.851	7.633
Axial Stress	kPa	215.002	283.47	433.82
Cor. Deviator stress	kPa	203.561	271.87	421.73
Effective Major Stress	kPa	249.561	365.37	618.73
Effective Minor Stress	kPa	47.000	93.50	197.00
Effective Stress Ratio		5.310	3.908	3.14
s'	kPa	148.281	229.43	407.86
t'	kPa	101.281	135.93	210.86
Max Effective Priciple Stress Ratio				
Axial Strain		4.715	6.285	9.412
Axial Stress	kPa	203.877	283.169	426.664
Cor. Deviator stress	kPa	192.509	271.480	414.287
Effective Major Stress	kPa	230.509	362.980	603.287
Effective Minor Stress	kPa	38.000	91.500	189.000
Effective Stress Ratio		6.066	3.967	3.192
s'	kPa	134.255	227.240	396.144
t'	kPa	96.255	135.740	207.144
Shear Resistance Angle	degs			25.0
Cohesion c'	kPa			44

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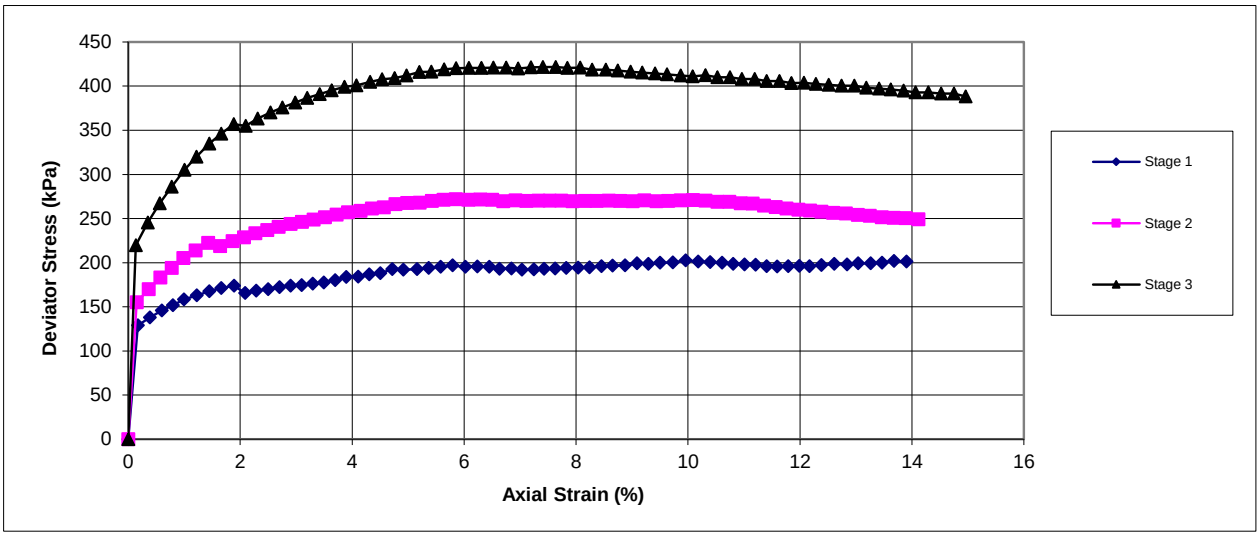
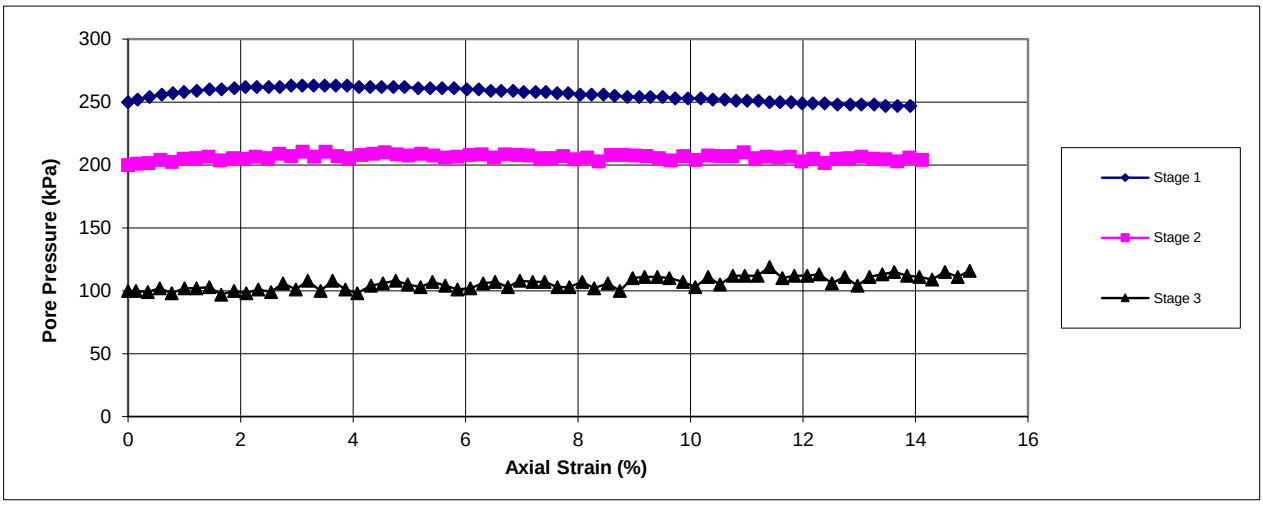
Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage





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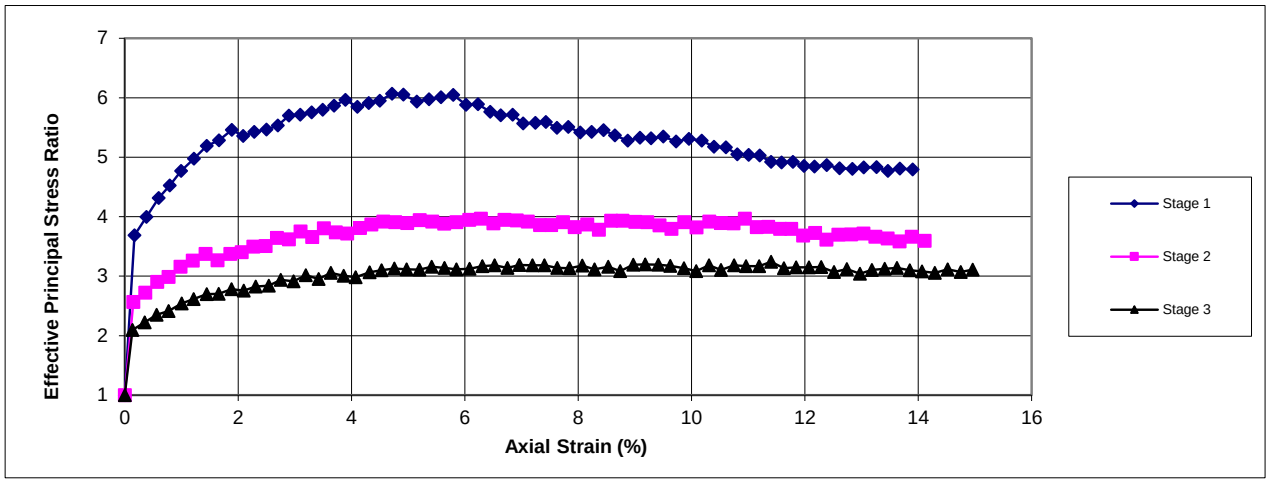
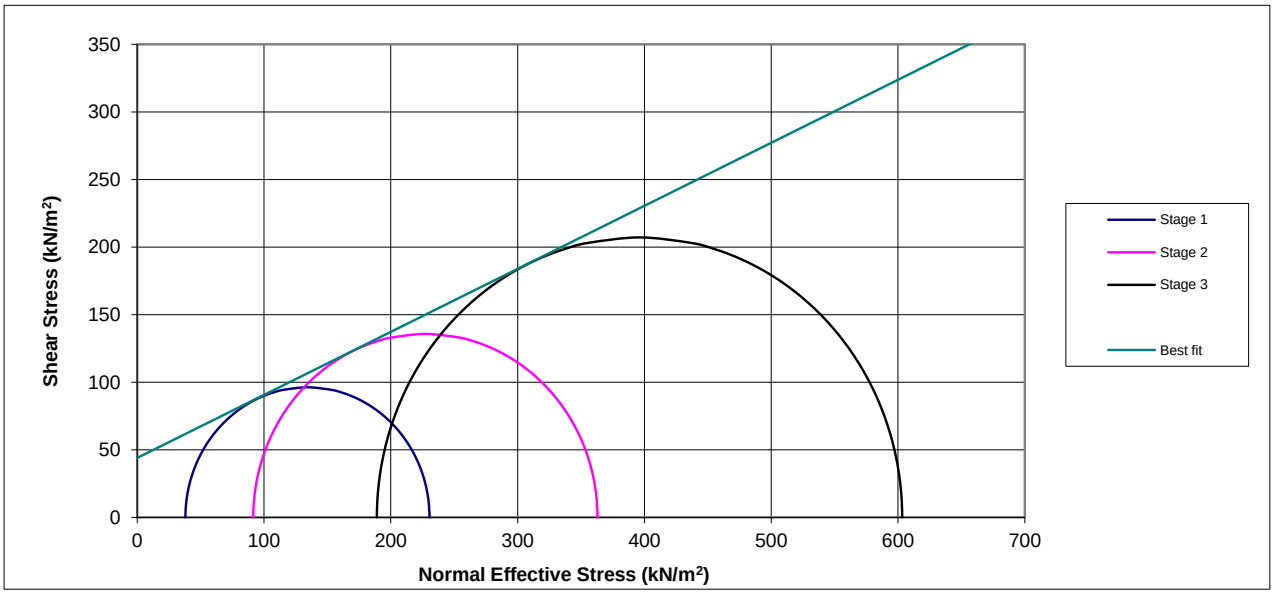
Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage





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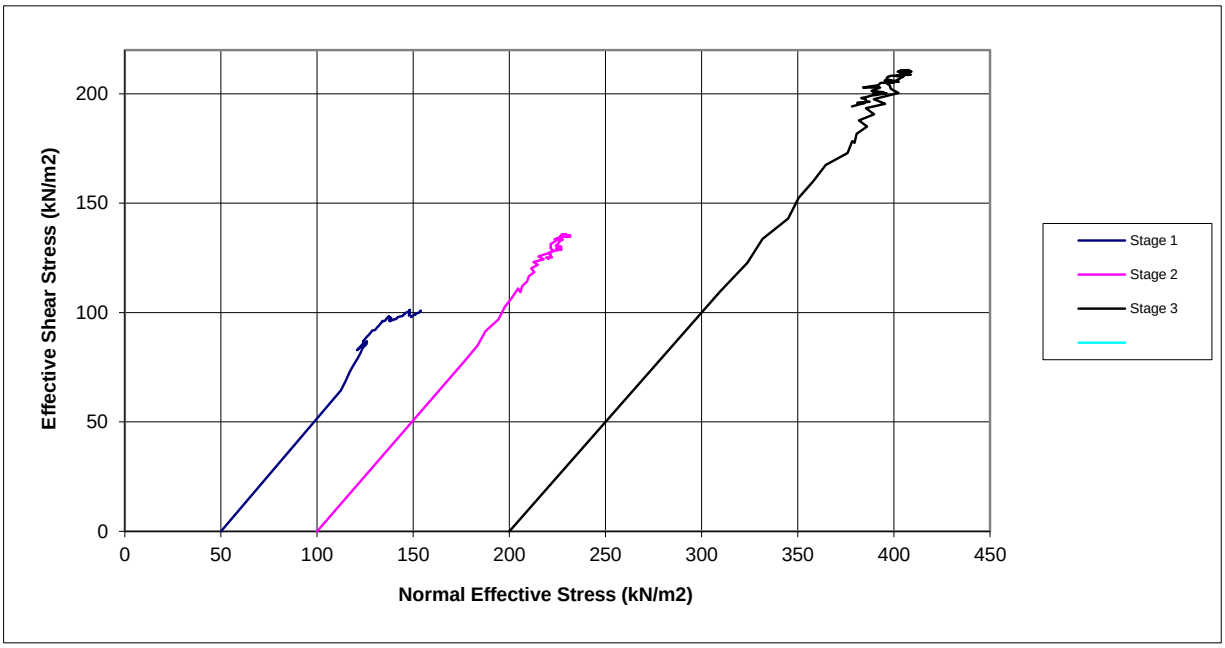
Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Ashfill

Initial Specimen Conditions

Height	mm	76.00	76.00	76.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	86.19
Mass	g	126.90	127.00	127.20
Dry Mass	g	84.30	85.00	85.00
Density	Mg/m^3	1.47	1.47	1.48
Dry Density	Mg/m^3	0.98	0.99	0.99
Moisture Content	%	51	49	50
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	49	49	49
Density	Mg/m^3	1.75	1.82	2.01
Dry Density	Mg/m^3	1.17	1.22	1.35

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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Test Setup

Date started	25/06/2018	25/06/2018	25/06/2018
Date Finished	01/07/2018	01/07/2018	01/07/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P5	P6	P7
Cell Number	C5	C6	C7

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	300.00	500.00	400.00
Final Pore Pressure	kPa	291.00	340.50	390.00
Final B Value		0.95	0.95	0.95

Consolidation

Effective Pressure	kPa	90.00	180.00	365.00
Cell Pressure	kPa	300.00	500.00	400.00
Back Pressure	kPa	210.00	320.00	35.00
Excess Pore Pressure	kPa	81.00	171.00	355.00
Pore Pressure at End	kPa	210.00	320.00	35.00
Consolidated Volume	cm^3	71.89	69.87	63.18
Consolidated Height	mm	71.80	71.20	69.24
Consolidated Area	mm^2	1008.68	990.96	932.27
Vol. Compressibility	m^2/MN	0.79003	0.59170	7.62742
Consolidation Coef.	$m^2/yr.$	0.29190	0.02043	0.24124

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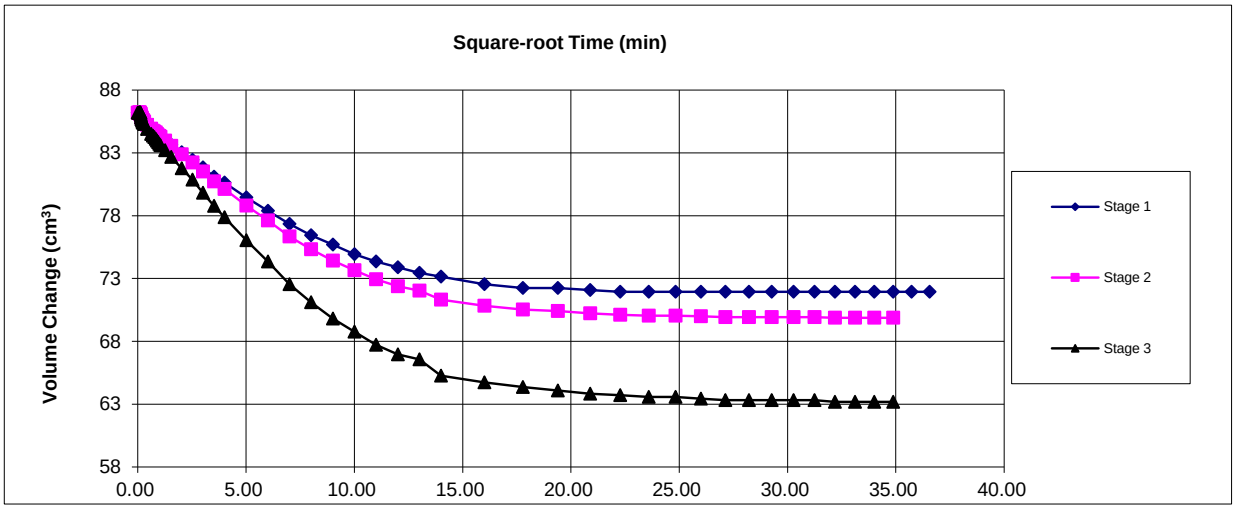
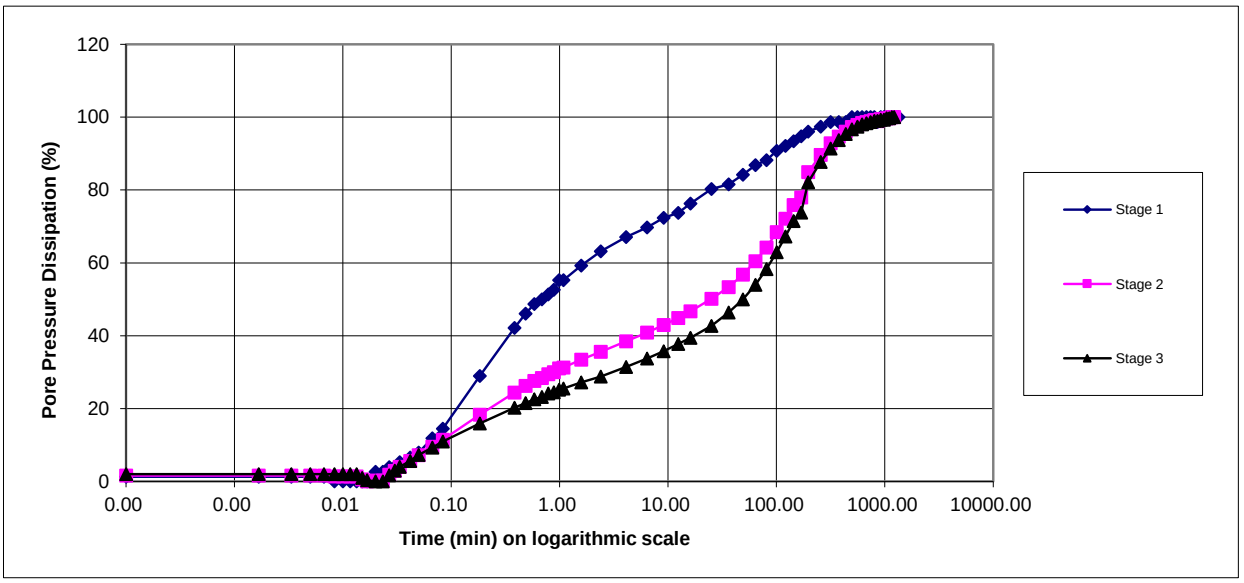
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Consolidation Stage





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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Shearing

Initial Cell Pressure	kPa	300	500	400
Initial Pore Pressure	kPa	210	320	35
Rate of Strain	mm/min	0.0153	0.0011	0.0122
Max Deviator Stress				
Axial Strain		10.265	10.210	11.800
Axial Stress	kPa	120.634	166.00	319.49
Cor. Deviator stress	kPa	109.130	153.50	306.73
Effective Major Stress	kPa	163.130	242.50	510.73
Effective Minor Stress	kPa	55.000	89.00	204.00
Effective Stress Ratio		2.966	2.725	2.50
s'	kPa	109.065	165.75	357.36
t'	kPa	54.065	76.75	153.36
Max Effective Priciple Stress Ratio				
Axial Strain		10.265	11.615	10.356
Axial Stress	kPa	120.634	166.254	317.317
Cor. Deviator stress	kPa	108.130	153.473	304.789
Effective Major Stress	kPa	163.130	241.973	510.789
Effective Minor Stress	kPa	55.000	88.500	206.000
Effective Stress Ratio		2.966	2.734	2.480
s'	kPa	109.065	165.236	358.394
t'	kPa	54.065	76.736	152.394
Shear Resistance Angle	degs			23.5
Cohesion c'	kPa			12

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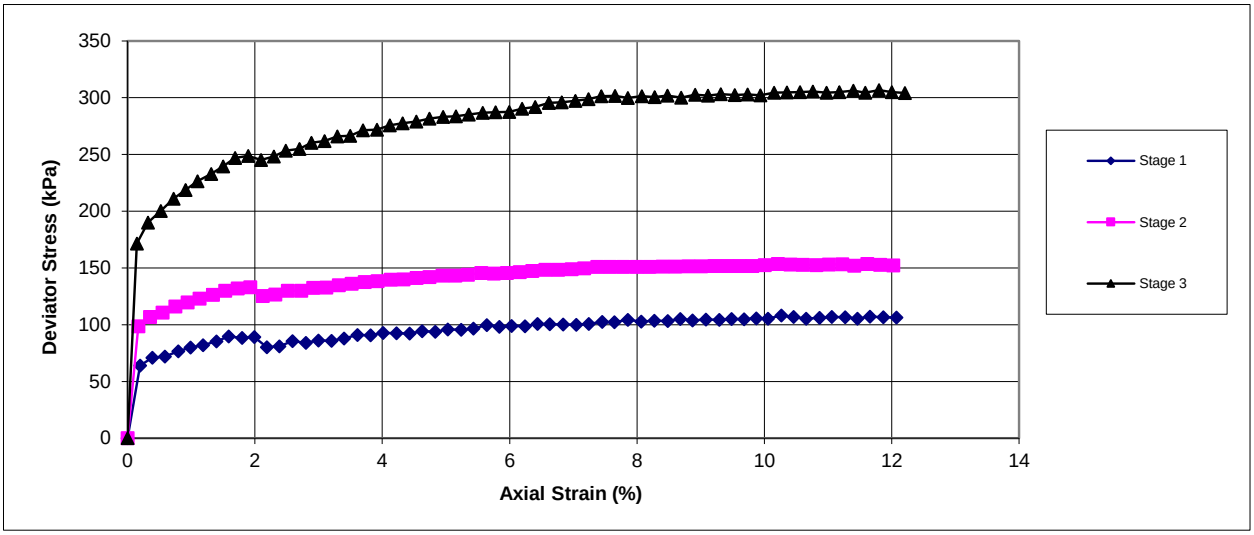
Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

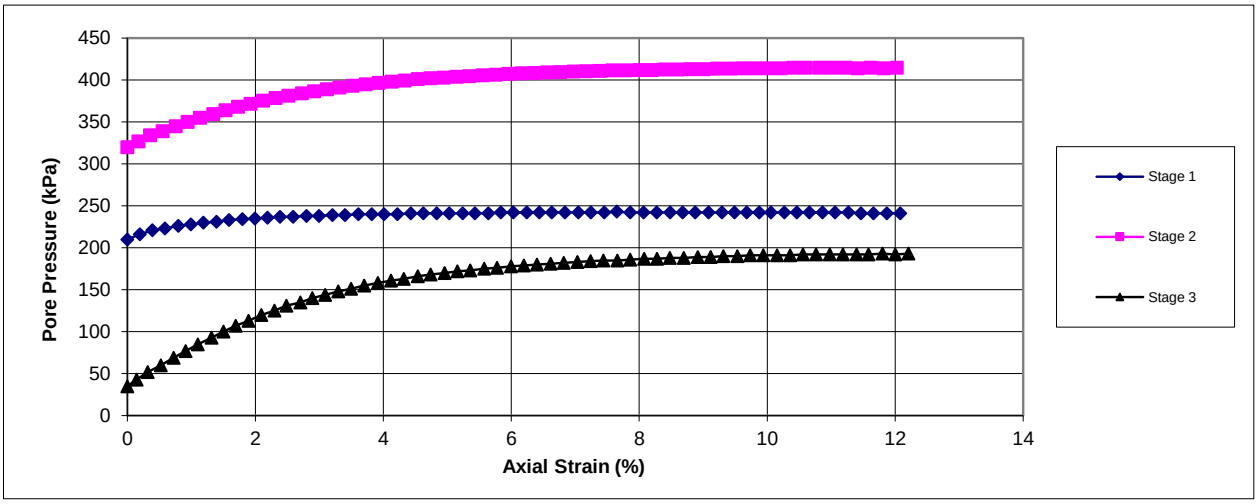
Stage 1

Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Shearing Stage





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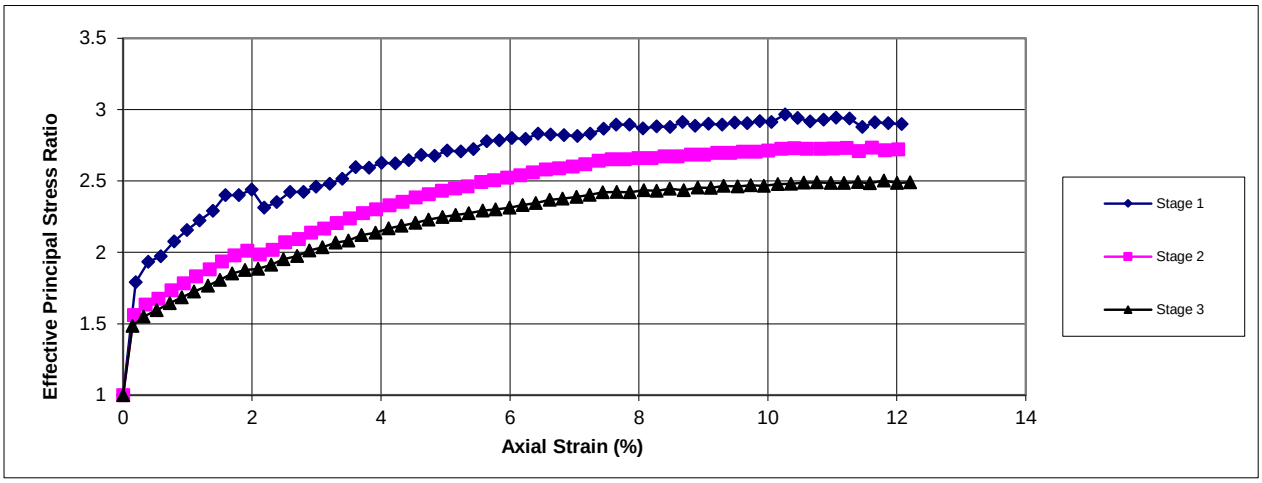
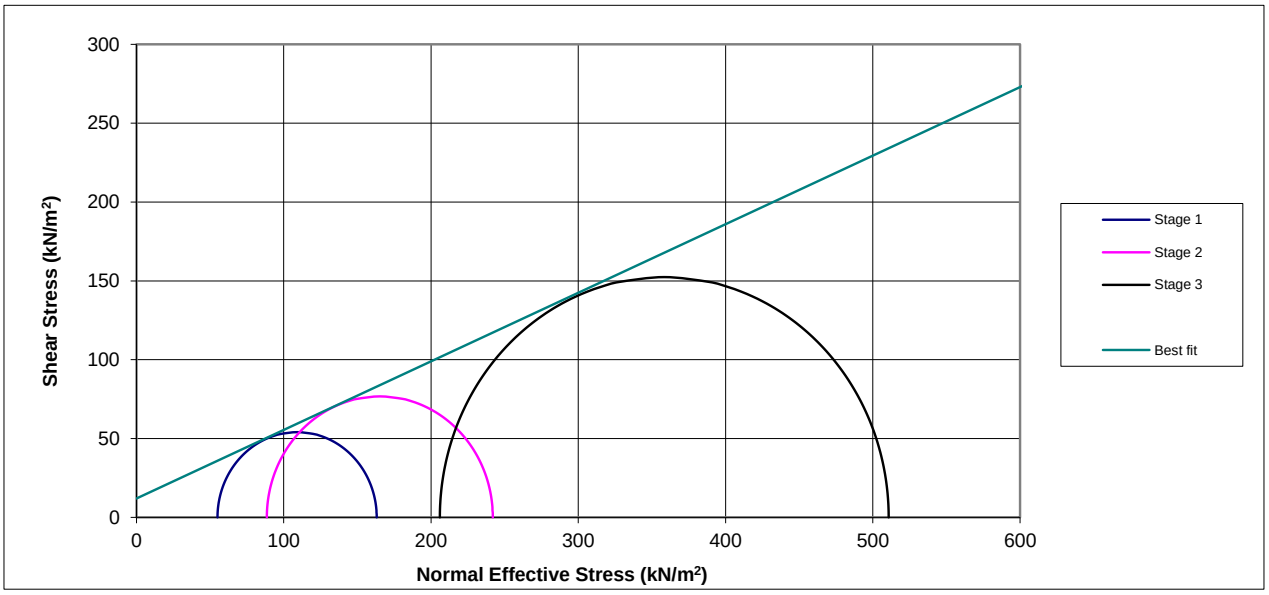
Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Shearing Stage





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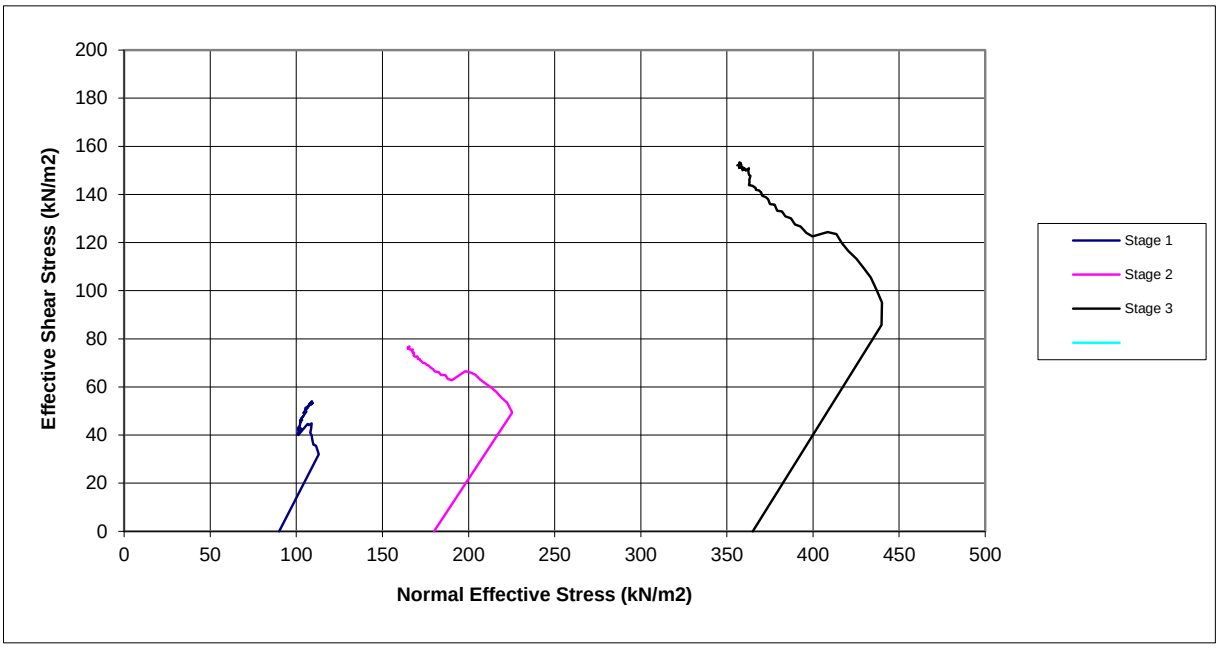
Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Shearing Stage



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Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

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Consolidated Undrained Triaxial Compression Test
BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	
Date		14/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey silty CLAY

Initial Specimen Conditions

Height	mm	76.00	76.00	74.00
Diameter	mm	38.00	38.00	38.00
Area	mm^2	1134.11	1134.11	1134.11
Volume	cm^3	86.19	86.19	83.92
Mass	g	157.60	158.20	160.20
Dry Mass	g	115.30	115.50	116.00
Density	Mg/m^3	1.83	1.84	1.91
Dry Density	Mg/m^3	1.34	1.34	1.38
Moisture Content	%	37	37	38
Specific Gravity	kN/m^3	2.65	2.65	2.65
(assumed/measured)		assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	39	38	38
Density	Mg/m^3	2.10	2.29	2.79
Dry Density	Mg/m^3	1.52	1.66	2.02

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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Test Setup

Date started	10/06/2018	10/06/2018	10/06/2018
Date Finished	13/06/2018	13/06/2018	13/06/2018
Top Drain Used	y	y	y
Base Drain Used	y	y	y
Side Drains Used	y	y	y
Pressure System Number	P12	P13	P11
Cell Number	C12	C13	C11

Saturation

Cell Pressure Incr.	kPa	100.00	100.00	100.00
Back Pressure Incr.	kPa	95.00	95.00	95.00
Differential Pressure	kPa	5.00	5.00	5.00
Final Cell Pressure	kPa	300.00	300.00	300.00
Final Pore Pressure	kPa	292.00	293.50	295.00
Final B Value		0.98	0.95	1.01

Consolidation

Effective Pressure	kPa	60.00	120.00	240.00
Cell Pressure	kPa	300.00	300.00	300.00
Back Pressure	kPa	240.00	180.00	60.00
Excess Pore Pressure	kPa	52.00	118.00	232.00
Pore Pressure at End	kPa	240.00	180.00	60.00
Consolidated Volume	cm^3	76.09	69.41	57.42
Consolidated Height	mm	73.03	71.07	66.21
Consolidated Area	mm^2	1045.52	986.92	895.38
Vol. Compressibility	m^2/MN	0.48825	1.08156	5.26267
Consolidation Coef.	$m^2/yr.$	38.12549	26.47603	14.89277

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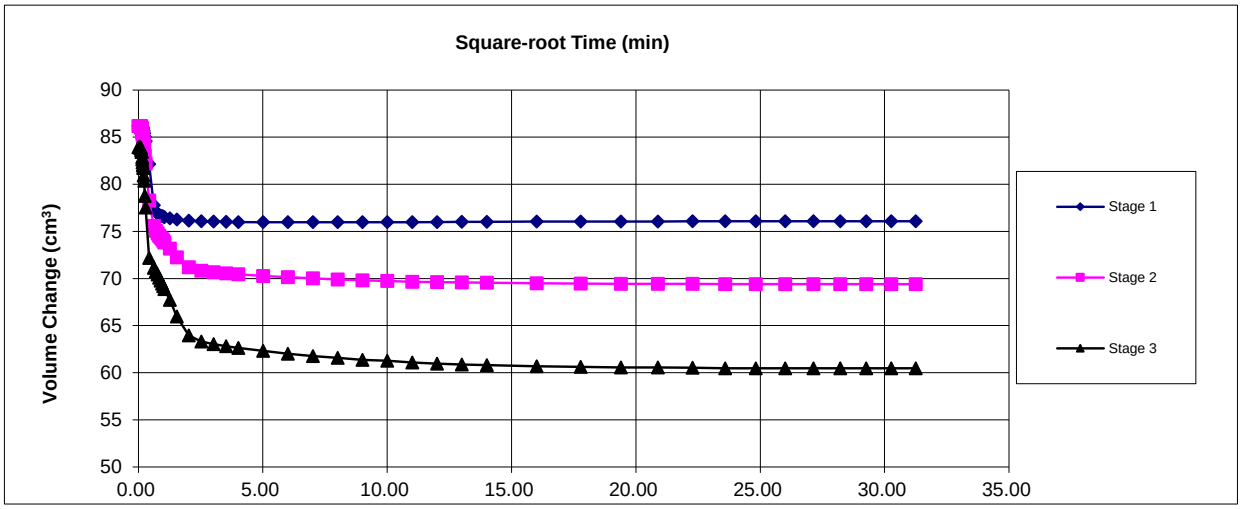
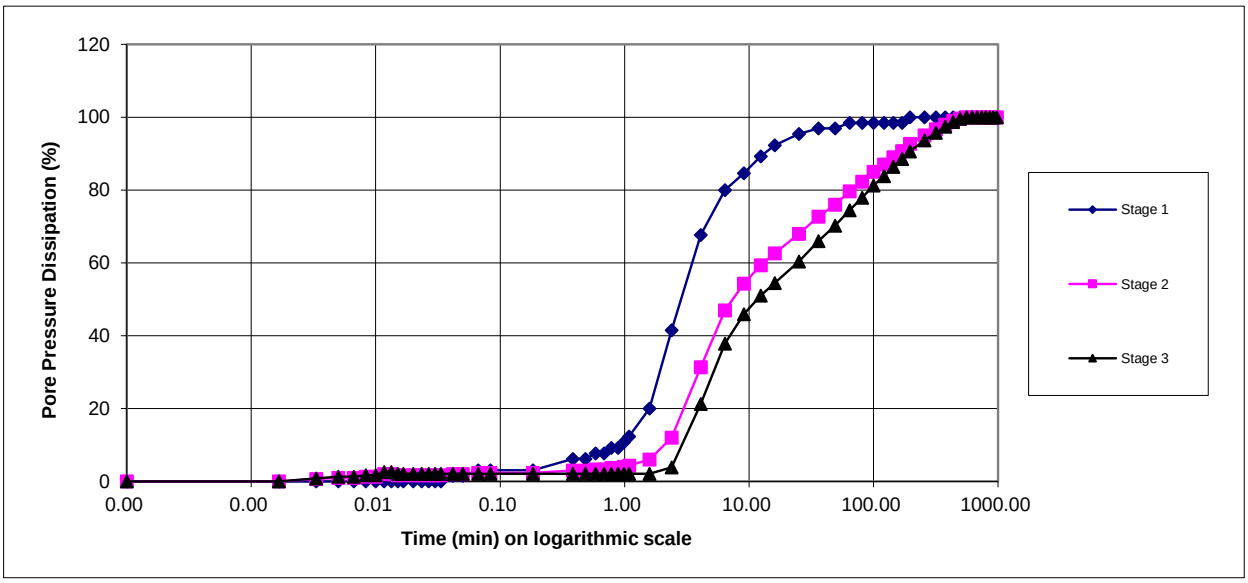
Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Consolidation Stage





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BS 1377 : Part 8 : 1990 : 38mm Set of Three

Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing

Initial Cell Pressure	kPa	300	300	300
Initial Pore Pressure	kPa	240	180	60
Rate of Strain	mm/min	2.0324	1.3734	0.7198
Max Deviator Stress				
Axial Strain		5.806	5.910	4.289
Axial Stress	kPa	157.663	198.54	264.03
Cor. Deviator stress	kPa	147.073	186.93	252.47
Effective Major Stress	kPa	198.073	300.43	487.47
Effective Minor Stress	kPa	52.000	113.50	235.00
Effective Stress Ratio		3.809	2.647	2.07
s'	kPa	125.036	206.96	361.24
t'	kPa	73.036	93.46	126.24
Max Effective Priciple Stress Ratio				
Axial Strain		4.970	5.066	4.289
Axial Stress	kPa	156.335	197.964	264.029
Cor. Deviator stress	kPa	144.915	186.525	252.474
Effective Major Stress	kPa	194.915	299.025	487.474
Effective Minor Stress	kPa	50.000	112.500	235.000
Effective Stress Ratio		3.898	2.658	2.074
s'	kPa	122.457	205.762	361.237
t'	kPa	72.457	93.262	126.237
Shear Resistance Angle	degs			13.0
Cohesion c'	kPa			47

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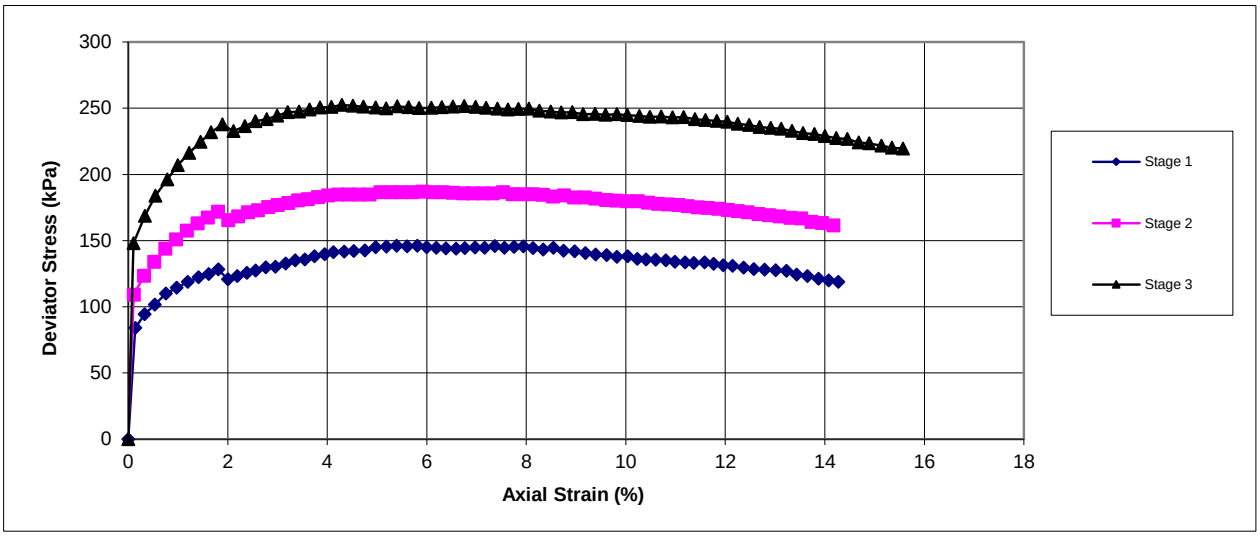
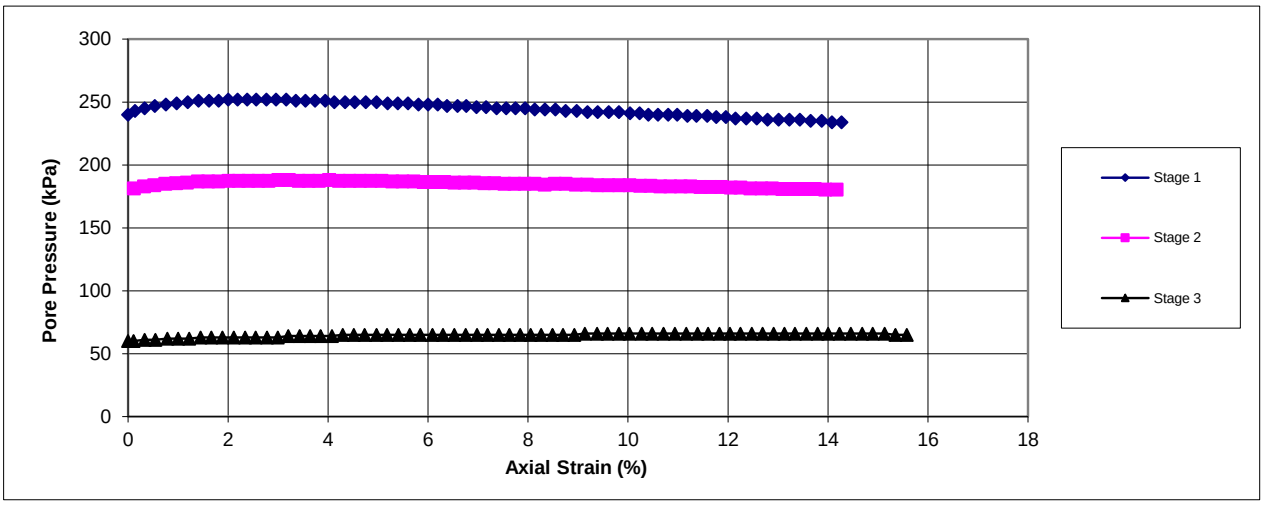
Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage





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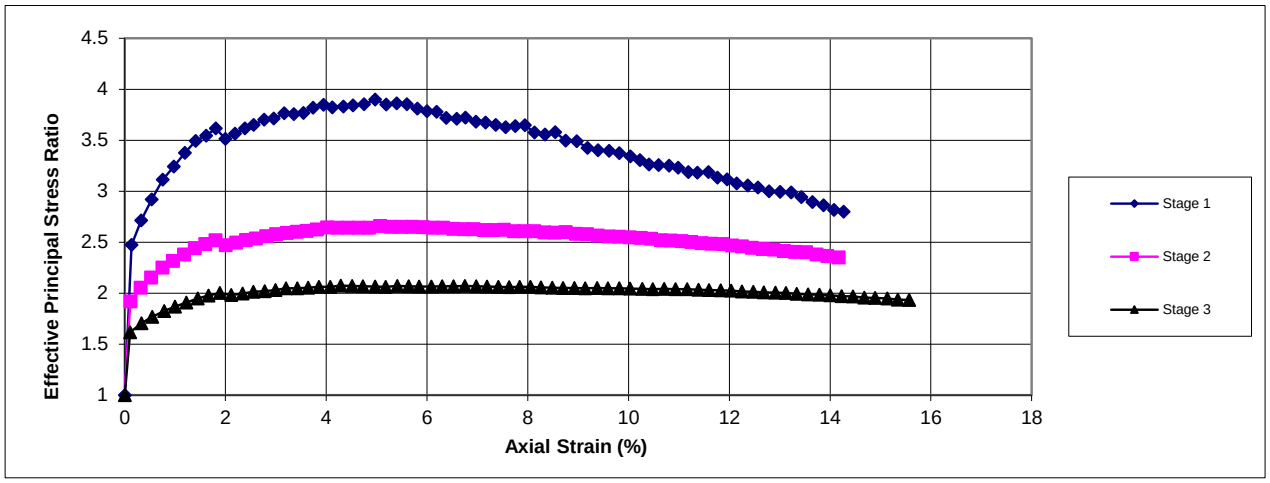
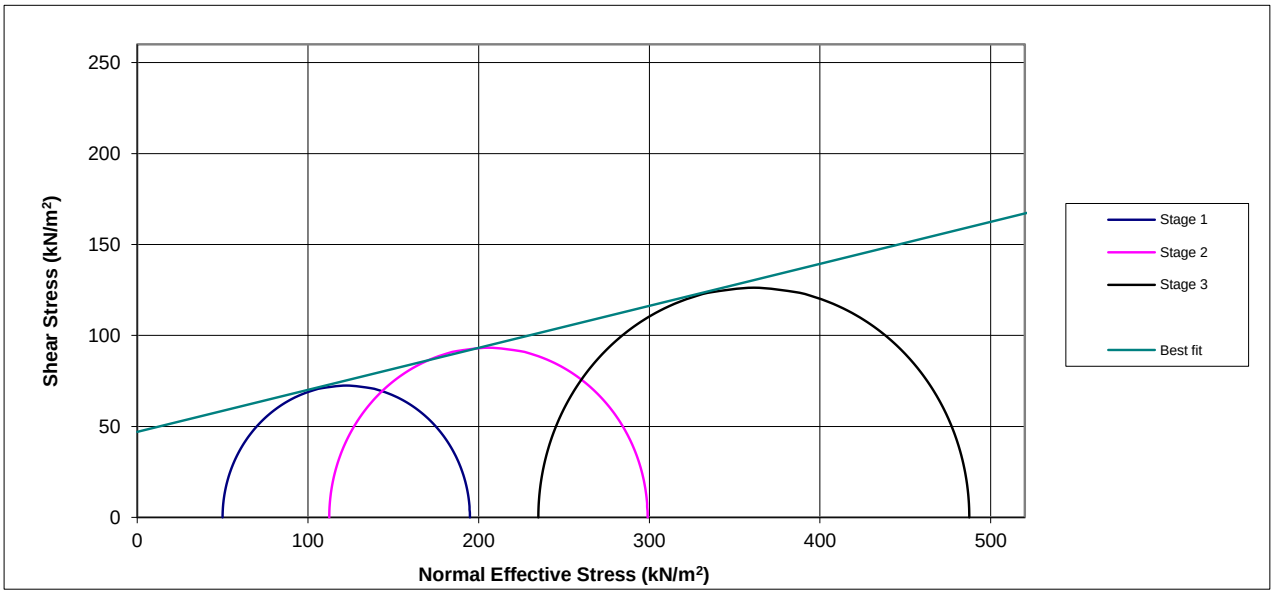
Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage





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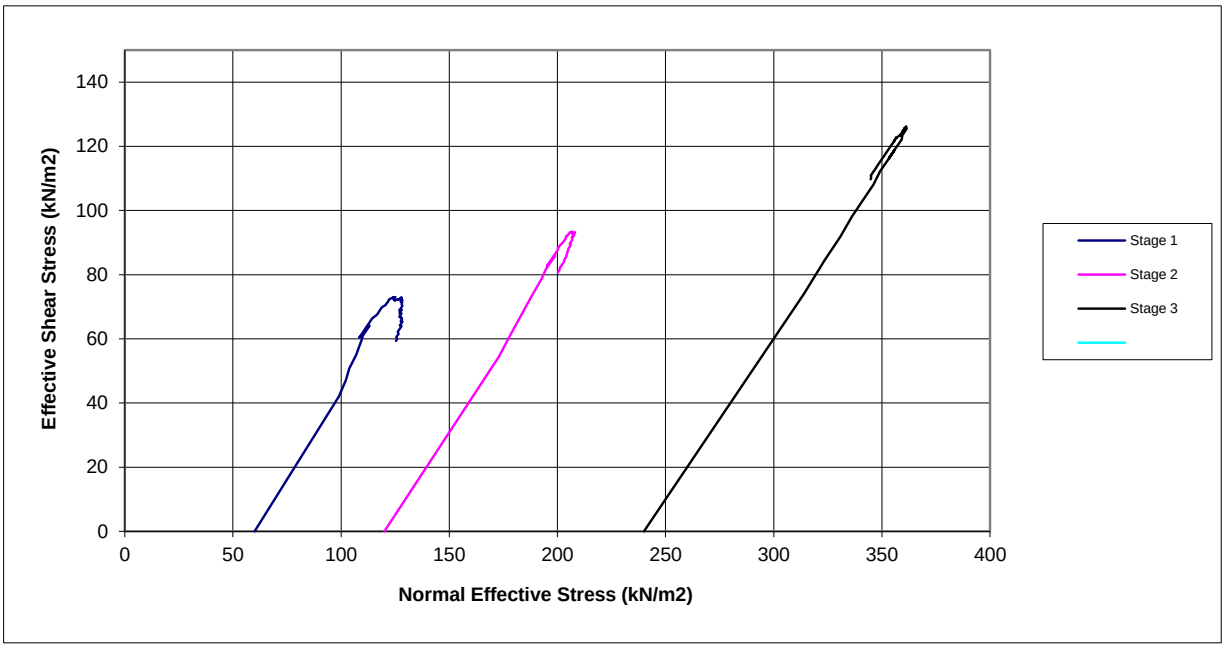
Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage



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Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

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Date

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Riverside

Contract No
39466

APPENDIX F
Geoenvironmental Laboratory Test Results

Report References (soils):	18-80943-1 Riverside EfW 3765
	18-81153-2 Riverside EfW 3765
	18-81926-1 Riverside EfW 3765
	18-81946-1 Riverside EfW 3765
	18-82198-1 Riverside EfW 3765
	18-83760-1 Riverside EfW 3765
	18-88953-1 Riverside EfW 3765
Report references (waters)	18-85315-1 Riverside EfW 3765
	18-88577-1 Riverside EfW 3765
	18-89740-2 Riverside EfW 3765

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i2 Analytical Ltd.
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Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 18-80943

Project / Site name:	Riverside EfW	**Samples received on:**	04/04/2018
Your job number:	3765	**Samples instructed on:**	04/04/2018
Your order number:	PO-002715	**Analysis completed by:**	10/04/2018
Report Issue Number:	1	**Report issued on:**	10/04/2018
Samples Analysed:	4 soil samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-80943

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				936131	936132	936133	936134	
Sample Reference				BH11	BH11	BH12	BH12	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.00	0.40	1.00	
Date Sampled				27/03/2018	27/03/2018	27/03/2018	27/03/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	23	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	9.8	23	26	26	
Total mass of sample received	kg	0.001	NONE	2.0	1.7	1.7	1.7	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.9	8.0	7.7	8.1	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	280	510	860	380	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.14	0.26	0.43	0.19	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	141	257	429	191	
Organic Matter	%	0.1	MCERTS	4.0	2.4	5.8	1.7	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.91	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	0.39	0.27	1.5	0.30	
Pyrene	mg/kg	0.05	MCERTS	0.37	0.22	1.2	0.23	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.16	< 0.05	0.48	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	0.17	< 0.05	0.57	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.71	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.56	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.31	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.34	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.09	< 0.80	6.85	< 0.80	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	14	21	16	
Boron (water soluble)	mg/kg	0.2	MCERTS	7.5	16	29	49	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.5	< 0.2	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	37	33	36	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	18	30	12	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	47	56	730	53	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	0.5	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	24	26	24	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	34	68	72	84	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	180	760	95	

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				936131	936132	936133	936134	
Sample Reference				BH11	BH11	BH12	BH12	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.00	0.40	1.00	
Date Sampled				27/03/2018	27/03/2018	27/03/2018	27/03/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	-	-	
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	2300	32	720	41	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	8.9	-	-	-	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	27	-	-	-	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	280	-	-	-	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	920	-	-	-	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	320	-	-	-	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	1200	-	-	-	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.1	-	-	-	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	24	-	-	-	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	760	-	-	-	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	2700	-	-	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	790	-	-	-	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	3500	-	-	-	

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				936131	936132	936133	936134	
Sample Reference				BH11	BH11	BH12	BH12	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.00	0.40	1.00	
Date Sampled				27/03/2018	27/03/2018	27/03/2018	27/03/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				936131	936132	936133	936134	
Sample Reference				BH11	BH11	BH12	BH12	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.00	0.40	1.00	
Date Sampled				27/03/2018	27/03/2018	27/03/2018	27/03/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.91	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Fluoranthene	mg/kg	0.05	MCERTS	0.39	0.27	1.5	0.30	
Pyrene	mg/kg	0.05	MCERTS	0.37	0.22	1.2	0.23	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.16	< 0.05	0.48	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	0.17	< 0.05	0.57	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.71	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.56	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.31	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.34	< 0.05	

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Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
936131	BH11	None Supplied	0.50	Brown gravelly sand with stones.
936132	BH11	None Supplied	1.00	Brown clay.
936133	BH12	None Supplied	0.40	Brown clay.
936134	BH12	None Supplied	1.00	Brown clay.

Analytical Report Number : 18-80943

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

Analytical Report Number : 18-80943

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH11		S	18-80943	936131	c	Total cyanide in soil	L080-PL	c
BH11		S	18-80943	936132	c	Total cyanide in soil	L080-PL	c
BH12		S	18-80943	936133	c	Total cyanide in soil	L080-PL	c
BH12		S	18-80943	936134	c	Total cyanide in soil	L080-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-81153

Replaces Analytical Report Number : 18-81153, issue no. 1

Project / Site name:	Riverside EfW	**Samples received on:**	04/04/2018
Your job number:	3765	**Samples instructed on:**	05/04/2018
Your order number:	PO-002715	**Analysis completed by:**	17/04/2018
Report Issue Number:	2	**Report issued on:**	17/04/2018
Samples Analysed:	8 soil samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 18-81153

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				937197	937198	937199	937200	937201
Sample Reference				BH01	BH01	BH08	BH08	BH02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	4.00	0.50	1.00	0.50
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	29	41	14	29	2.1
Total mass of sample received	kg	0.001	NONE	1.4	1.2	1.4	1.6	1.7
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.4	7.7	9.0	8.3	9.2
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2300	1000	900	370	27
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.1	0.52	0.45	0.19	0.014
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1140	518	448	186	13.6
Organic Matter	%	0.1	MCERTS	3.1	4.8	3.9	2.7	0.1
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	-	1.0	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	-	0.20	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	-	1.9	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	-	1.7	-	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	1.0	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	-	0.84	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.0	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	0.79	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	1.1	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	0.68	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.17	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.88	-	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	11.3	-	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	25	15	25	8.4
Boron (water soluble)	mg/kg	0.2	MCERTS	19	34	10	26	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.8	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	42	53	24	38	9.4
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	13	64	32	7.2
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	28	380	94	6.8
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	0.5	0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	31	18	27	9.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	1.9	< 1.0	1.8	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	320	66	250	140	14

Analytical Report Number: 18-81153

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				937197	937198	937199	937200	937201
Sample Reference				BH01	BH01	BH08	BH08	BH02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	4.00	0.50	1.00	0.50
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	130	< 10	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	2.4	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	16	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	32	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	230	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	280	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	280	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	560	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	2.2	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	6.8	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	26	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	360	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	760	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	400	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	1200	< 10	< 10

Analytical Report Number: 18-81153

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				937202	937203	937204		
Sample Reference				BH02	BH09	BH09		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				2.00	0.25	1.00		
Date Sampled				04/04/2018	04/04/2018	04/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	28	5.8	25		
Total mass of sample received	kg	0.001	NONE	1.2	1.7	1.3		
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.2	8.9	7.9		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1200	48	120		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.58	0.024	0.059		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	584	23.8	58.5		
Organic Matter	%	0.1	MCERTS	3.1	1.1	1.6		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Phenanthrene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	< 0.80	-		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	7.9	24		
Boron (water soluble)	mg/kg	0.2	MCERTS	75	2.0	37		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.6	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	51	14	51		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	7.1	16		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	32	44	23		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	8.1	30		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.0	< 1.0	< 1.0		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	170	81	83		

Analytical Report Number: 18-81153

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				937202	937203	937204		
Sample Reference				BH02	BH09	BH09		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				2.00	0.25	1.00		
Date Sampled				04/04/2018	04/04/2018	04/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	< 1.0	-		
Toluene	µg/kg	1	MCERTS	-	< 1.0	-		
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-		
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-		
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-		
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	< 10	-	< 10		
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	10	-		
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	83	-		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	10	-		
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	94	-		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	-		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	41	-		
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	320	-		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	42	-		
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	370	-		

Analytical Report Number : 18-81153

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
937197	BH01	None Supplied	2.00	Brown clay and sand with gravel.
937198	BH01	None Supplied	4.00	Brown clay with gravel.
937199	BH08	None Supplied	0.50	Brown loam and sand with gravel and brick.
937200	BH08	None Supplied	1.00	Brown clay with gravel.
937201	BH02	None Supplied	0.50	Light brown sand with gravel.
937202	BH02	None Supplied	2.00	Brown clay and sand with vegetation and gravel
937203	BH09	None Supplied	0.25	Brown sandy gravel. **
937204	BH09	None Supplied	1.00	Light grey clay.

** Non MCERTS matrix.

Analytical Report Number : 18-81153

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-81926

Project / Site name:	Riverside EfW	**Samples received on:**	09/04/2018
Your job number:	3765	**Samples instructed on:**	12/04/2018
Your order number:	PO-002715	**Analysis completed by:**	19/04/2018
Report Issue Number:	1	**Report issued on:**	19/04/2018
Samples Analysed:	4 soil samples		

Signed: [redacted]
Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	9.9	23	16	23	
Total mass of sample received	kg	0.001	NONE	2.0	1.3	2.0	2.0	
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Detected	Not-detected	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.015	-	
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.015	-	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.9	8.2	9.2	9.0	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.032	0.28	0.34	0.20	
Organic Matter	%	0.1	MCERTS	1.4	2.6	3.0	2.6	
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.36	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	-	-	1.1	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	-	-	1.6	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	-	-	5.5	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	-	-	1.1	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	-	-	6.5	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	-	-	5.7	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	3.2	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	-	-	2.8	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	3.7	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.8	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	3.1	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	2.1	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.36	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	2.3	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	41.2	< 0.80	

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	22	190	18	
Boron (water soluble)	mg/kg	0.2	MCERTS	3.9	70	4700	160	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	10	29	30	38	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	16	93	14	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	58	50	2100	26	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.5	0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.1	20	23	25	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.1	1.8	1.1	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	85	610	66	
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	240	76	-	-	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	310	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	820	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	490	< 8.0	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	150	< 8.4	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	1600	< 10	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	1800	< 10	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	1.7	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	32	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	87	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	120	< 10	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	280	< 8.4	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	240	< 10	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	520	< 10	

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Carbon Disulphide	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Dichloromethane	µg/kg	100	NONE	-	-	< 100	< 100	
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	
Pentachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
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Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	ND	ND	
VOC % Match	%	N/A	NONE	-	-	-	-	
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
Ethyl-t-butyl ether (ETBE)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
Methyl-t-butyl ether (MTBE)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
t-amyl ethyl ether (TAEE)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
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Lab Sample Number				941650	941651	941652	941653	
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Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	< 0.2	
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	< 0.2	
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.36	< 0.05	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	1.1	< 0.1	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	-	-	1.1	< 0.05	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	0.6	< 0.2	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	< 0.3	
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Fluorene	mg/kg	0.05	MCERTS	-	-	1.6	< 0.05	
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Phenanthrene	mg/kg	0.05	MCERTS	-	-	5.5	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	-	-	1.1	< 0.05	
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	
Fluoranthene	mg/kg	0.05	MCERTS	-	-	6.5	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	-	-	5.7	< 0.05	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	2.8	< 0.3	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	3.2	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	-	-	2.8	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	3.7	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.8	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	3.1	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	2.1	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.36	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	2.3	< 0.05	

Analytical Report Number: 18-81926

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.80	0.70	1.20	
Date Sampled				06/04/2018	06/04/2018	06/04/2018	06/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,6,7-trimethyl-	ND	
SVOC % Match	%	N/A	NONE	-	-	98	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Azulene, 4,6,8-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	98	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzo[e]pyrene	-	
SVOC % Match	%	N/A	NONE	-	-	98	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Heptadecane	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Heneicosane	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Tetracosane	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,4-dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	96	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 2-methyl-	-	
SVOC % Match	%	N/A	NONE	-	-	95	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Nonacosane	-	
SVOC % Match	%	N/A	NONE	-	-	95	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Hexacosane	-	
SVOC % Match	%	N/A	NONE	-	-	95	-	

Environmental Forensics

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	< 0.10	< 0.10	

Analytical Report Number: 18-81926
Project / Site name: Riverside EfW
Your Order No: PO-002715

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
941652	BH13	0.70	161	Loose Fibres & Sheeting/Board Debris	**Chrysotile**	0.015	**0.015**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 18-81926

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
941650	BH10	None Supplied	0.20	Brown clay and gravel.
941651	BH10	None Supplied	0.80	Brown clay and sand.
941652	BH13	None Supplied	0.70	Brown clay and gravel with glass and rubble.
941653	BH13	None Supplied	1.20	Brown clay.

Analytical Report Number : 18-81926

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Oxygenates in soil by HS-GC-MS	Determination of oxygenates in soil by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE

Analytical Report Number : 18-81926

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TO - Chlorophenols in soil	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-81946

Project / Site name:	Riverside EfW	**Samples received on:**	04/04/2018
Your job number:	3765	**Samples instructed on:**	12/04/2018
Your order number:	PO-002715	**Analysis completed by:**	18/04/2018
Report Issue Number:	1	**Report issued on:**	18/04/2018
Samples Analysed:	1 soil sample		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-81946

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				941718				
Sample Reference				BH01				
Sample Number				None Supplied				
Depth (m)				0.50				
Date Sampled				03/04/2018				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	6.6				
Total mass of sample received	kg	0.001	NONE	1.7				
General Inorganics								
Organic Matter	%	0.1	MCERTS	0.5				

Analytical Report Number : 18-81946

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
941718	BH01	None Supplied	0.50	Light brown sand with gravel.

Analytical Report Number : 18-81946

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-82198

Project / Site name:	Riverside EfW	**Samples received on:**	13/04/2018
Your job number:	3765	**Samples instructed on:**	13/04/2018
Your order number:	PO-002715	**Analysis completed by:**	20/04/2018
Report Issue Number:	1	**Report issued on:**	20/04/2018
Samples Analysed:	9 soil samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-82198

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				943185	943186	943187	943188	943189
Sample Reference				BH05	BH05	BH03	BH03	BH03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.00	0.60	1.00	2.40
Date Sampled				10/04/2018	10/04/2018	11/04/2018	11/04/2018	11/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	-	< 0.1
Moisture Content	%	N/A	NONE	14	27	23	-	22
Total mass of sample received	kg	0.001	NONE	1.4	1.2	1.1	-	0.89
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	Chrysotile	Chrysotile	Crocidolite
Asbestos in Soil	Type	N/A	ISO 17025	Detected	-	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	< 0.001	< 0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	< 0.001	< 0.001	< 0.001
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.5	8.2	9.3	-	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	-	< 1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	350	1000	4400	-	780
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.18	0.52	2.2	-	0.39
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	177	516	2180	-	389
Organic Matter	%	0.1	MCERTS	2.6	6.8	1.8	-	6.4
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.90
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.30
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.29
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.46
Phenanthrene	mg/kg	0.05	MCERTS	0.85	0.30	0.61	-	5.0
Anthracene	mg/kg	0.05	MCERTS	0.26	< 0.05	< 0.05	-	0.77
Fluoranthene	mg/kg	0.05	MCERTS	1.7	0.61	1.0	-	7.1
Pyrene	mg/kg	0.05	MCERTS	1.5	0.51	0.79	-	5.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	0.43	0.55	-	4.2
Chrysene	mg/kg	0.05	MCERTS	1.1	0.50	0.46	-	3.3
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	0.75	0.56	-	4.5
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.61	0.29	0.21	-	1.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.1	0.70	0.73	-	5.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.54	0.29	< 0.05	-	2.0
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	0.30
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.54	0.27	< 0.05	-	1.9
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	11.4	4.65	4.91	-	43.7
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	230	45	37	-	55
Boron (water soluble)	mg/kg	0.2	MCERTS	1200	390	600	-	320
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	1.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	39	36	-	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	63	42	24	-	48
Lead (aqua regia extractable)	mg/kg	1	MCERTS	220	110	71	-	980
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.7	0.4	-	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	35	27	-	40
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.6	2.1	-	1.9
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	870	420	110	-	1100

Analytical Report Number: 18-82198

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				943185	943186	943187	943188	943189
Sample Reference				BH05	BH05	BH03	BH03	BH03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.00	0.60	1.00	2.40
Date Sampled				10/04/2018	10/04/2018	11/04/2018	11/04/2018	11/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	-	80	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	12	< 2.0	-	-	5.2
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	57	< 8.0	-	-	17
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	130	17	-	-	97
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	39	< 8.4	-	-	32
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	200	17	-	-	120
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	240	17	-	-	150
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	4.2	< 2.0	-	-	8.4
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	57	< 10	-	-	86
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	160	20	-	-	340
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	54	< 8.4	-	-	110
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	220	28	-	-	430
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	270	28	-	-	540

Analytical Report Number: 18-82198

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				943190	943191	943192	943193	
Sample Reference				BH03	BH04	BH04	BH04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.80	0.30	0.70	1.50	
Date Sampled				11/04/2018	11/04/2018	11/04/2018	11/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	24	15	18	26	
Total mass of sample received	kg	0.001	NONE	0.82	1.2	0.99	1.2	
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile & Amosite	-	-	
Asbestos in Soil	Type	N/A	ISO 17025	-	Detected	Not-detected	-	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-	-	
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-	-	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.2	10.3	8.3	7.9	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	520	4000	4600	1300	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.26	2.0	2.3	0.66	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	258	2010	2300	664	
Organic Matter	%	0.1	MCERTS	5.6	2.3	2.3	2.4	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	1.0	-	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.35	-	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	0.30	2.9	-	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	0.26	2.8	-	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.26	2.3	-	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	0.20	1.4	-	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.35	1.8	-	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.13	0.97	-	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.40	3.1	-	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.89	-	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.81	-	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.90	18.2	-	< 0.80	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	23	31	17	18	
Boron (water soluble)	mg/kg	0.2	MCERTS	300	180	120	210	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	23	29	34	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	40	26	17	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	61	88	44	19	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	< 0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29	21	24	27	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.9	1.4	< 1.0	1.5	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	130	67	52	

Analytical Report Number: 18-82198

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				943190	943191	943192	943193	
Sample Reference				BH03	BH04	BH04	BH04	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.80	0.30	0.70	1.50	
Date Sampled				11/04/2018	11/04/2018	11/04/2018	11/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	-	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	-	< 10	< 10	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	7.7	-	-	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	18	-	-	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	22	100	-	-	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	70	-	-	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	22	130	-	-	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	22	200	-	-	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	4.0	-	-	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	29	-	-	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	18	130	-	-	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	9.7	140	-	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	23	170	-	-	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	33	310	-	-	

Analytical Report Number: 18-82198
Project / Site name: Riverside EfW
Your Order No: PO-002715

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
943185	BH05	0.30	156	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
943187	BH03	0.60	113	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
943188	BH03	1.00	118	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
943189	BH03	2.40	114	Loose Fibres	**Crocidolite**	< 0.001	**< 0.001**
943191	BH04	0.30	135	Loose Fibres	**Chrysotile & Amosite**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 18-82198

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
943185	BH05	None Supplied	0.30	Brown clay and sand with rubble and brick.
943186	BH05	None Supplied	1.00	Brown clay and sand.
943187	BH03	None Supplied	0.60	Light brown clay.
943188	BH03	None Supplied	1.00	-
943189	BH03	None Supplied	2.40	Brown clay and sand.
943190	BH03	None Supplied	2.80	Brown clay and sand.
943191	BH04	None Supplied	0.30	Brown clay and sand with gravel and vegetation.
943192	BH04	None Supplied	0.70	Brown clay with gravel.
943193	BH04	None Supplied	1.50	Brown clay.

Analytical Report Number : 18-82198

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE

Analytical Report Number : 18-82198

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-83760

Project / Site name:	Riverside EfW	**Samples received on:**	30/04/2018
Your job number:	3765	**Samples instructed on:**	30/04/2018
Your order number:	PO-002715	**Analysis completed by:**	04/05/2018
Report Issue Number:	1	**Report issued on:**	04/05/2018
Samples Analysed:	13 soil samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	0.93	27	24	10	9.7
Total mass of sample received	kg	0.001	NONE	1.4	1.4	1.9	2.0	0.51
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	Not-detected	Detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	11.2	8.2	10.6	9.0
Total Cyanide	mg/kg	1	MCERTS	-	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	540	1400	1600	3600
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.27	0.70	0.82	1.8
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	268	698	824	1800
Organic Matter	%	0.1	MCERTS	-	3.0	2.2	2.0	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.22	< 0.05	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	3.1	< 0.05	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	1.9	< 0.05	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	30	< 0.05	0.16	1.2	-
Anthracene	mg/kg	0.05	MCERTS	3.4	< 0.05	< 0.05	0.37	-
Fluoranthene	mg/kg	0.05	MCERTS	26	< 0.05	0.42	2.9	-
Pyrene	mg/kg	0.05	MCERTS	18	< 0.05	0.39	3.1	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.7	< 0.05	0.23	1.8	-
Chrysene	mg/kg	0.05	MCERTS	4.6	< 0.05	0.19	1.5	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.6	< 0.05	0.27	2.3	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.0	< 0.05	0.17	0.71	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.8	< 0.05	0.27	1.7	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.50	< 0.05	< 0.05	0.83	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.20	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	< 0.05	< 0.05	0.90	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	99.9	< 0.80	2.10	17.4	-
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	17	13	40	630
Boron (water soluble)	mg/kg	0.2	MCERTS	-	27	34	110	1600
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	33	25	23	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	18	39	35	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	40	54	88	130
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	26	24	17	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	85	68	130	230

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	1.6	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	9.7	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	27	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	13	120	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	110	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	13	160	-
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	13	270	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	10	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	22	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	< 10	66	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	< 10	260	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	350	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	< 10	360	-
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	< 10	700	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	NONE	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	NONE	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	-	-	-
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-
Carbon Disulphide	µg/kg	1	NONE	-	-	-	-	-
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	-	-	-
Dichloromethane	µg/kg	100	NONE	-	-	-	-	-
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-	-	-
Pentachlorobenzene	µg/kg	1	NONE	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/kg	0.1	NONE	-	-	-	-	-
Ethyl-t-butyl ether (ETBE)	mg/kg	0.1	NONE	-	-	-	-	-
Methyl-t-butyl ether (MTBE)	mg/kg	0.1	NONE	-	-	-	-	-
t-amyl ethyl ether (TAEE)	mg/kg	0.1	NONE	-	-	-	-	-
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	-	-	-
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.45	1.65	2.55	0.50	0.80
Date Sampled				25/04/2018	25/04/2018	25/04/2018	26/04/2018	26/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-

Environmental Forensics

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	-	-	-

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	25	13	23	10
Total mass of sample received	kg	0.001	NONE	1.9	1.6	1.7	1.7	1.5
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Detected	-	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.002	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.002	-	< 0.001
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.1	8.3	8.9	8.2	9.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	3600	650	3600	400	2200
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.8	0.33	1.8	0.20	1.1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1780	326	1810	202	1080
Organic Matter	%	0.1	MCERTS	1.6	2.6	5.9	2.1	2.2
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	< 1.0	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	0.23	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	0.32	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	0.34	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.5	-	4.4	-	0.71
Anthracene	mg/kg	0.05	MCERTS	0.30	-	1.5	-	0.28
Fluoranthene	mg/kg	0.05	MCERTS	2.3	-	8.6	-	1.9
Pyrene	mg/kg	0.05	MCERTS	1.9	-	7.7	-	1.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.0	-	4.4	-	1.1
Chrysene	mg/kg	0.05	MCERTS	0.91	-	3.8	-	0.99
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	-	7.0	-	2.6
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.66	-	1.7	-	0.70
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.99	-	4.8	-	1.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.47	-	2.7	-	1.7
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.12	-	0.63	-	0.41
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.54	-	3.1	-	2.0
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	12.0	-	51.2	-	16.0
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	310	37	100	14	60
Boron (water soluble)	mg/kg	0.2	MCERTS	1700	170	1200	150	150
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	47	21	47	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	37	17	110	15	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	360	27	300	24	300
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	2.3	0.4	< 0.3	< 0.3	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	32	45	31	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.0	< 1.0	2.1	1.4
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	340	120	2100	92	210

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Project / Site name: Riverside EfW
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Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	-	< 10	-	< 10	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	2.3	-	< 1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	10	-	2.2	-	2.7
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	14	-	36	-	10
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	92	-	200	-	100
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	53	-	86	-	77
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	120	-	240	-	120
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	170	-	320	-	200
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	7.9	-	4.7	-	2.3
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	20	-	32	-	8.2
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	42	-	200	-	40
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	100	-	560	-	310
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	54	-	180	-	290
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	170	-	800	-	360
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	230	-	970	-	650

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Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-

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Project / Site name: Riverside EfW
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Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	-
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
Carbon Disulphide	µg/kg	1	NONE	-	-	< 1.0	-	-
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Dichloromethane	µg/kg	100	NONE	-	-	< 100	-	-
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
Pentachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-

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Project / Site name: Riverside EfW
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Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	ND	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
Ethyl-t-butyl ether (ETBE)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
Methyl-t-butyl ether (MTBE)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
t-amyl ethyl ether (TAEE)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	< 0.10	-	-
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	< 0.10	-	-

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Project / Site name: Riverside EfW
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Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.23	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	0.32	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	0.34	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	4.4	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	1.5	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	8.6	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	7.7	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	4.4	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	3.8	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	7.0	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.7	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	4.8	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	2.7	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.63	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	3.1	-	-

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.30	0.80	1.50	0.60
Date Sampled				26/04/2018	26/04/2018	26/04/2018	26/04/2018	25/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzo[e]pyrene	-	-
SVOC % Match	%	N/A	NONE	-	-	98	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,6,7-trimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	97	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	3,4:9,10-Dibenzopyrene	-	-
SVOC % Match	%	N/A	NONE	-	-	97	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Phenanthrene, 4-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Pyrene, 1-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benz[j]aceanthrylene, 3-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzo[b]triphenylene	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 2,7-dimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 2,6-dimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benz[a]anthracene, 7-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-

Environmental Forensics

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	< 0.10	-	-

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	25	16	23		
Total mass of sample received	kg	0.001	NONE	1.4	1.6	1.2		
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-		
Asbestos in Soil	Type	N/A	ISO 17025	-	Detected	-		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.004	-		
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.004	-		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.3	8.3	7.6		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1400	190	190		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.71	0.097	0.094		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	713	96.8	94.1		
Organic Matter	%	0.1	MCERTS	3.0	2.0	2.0		
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	-		
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-		
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-		
Fluorene	mg/kg	0.05	MCERTS	-	-	-		
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-		
Anthracene	mg/kg	0.05	MCERTS	-	-	-		
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Pyrene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Chrysene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	27	21	16		
Boron (water soluble)	mg/kg	0.2	MCERTS	440	5.1	43		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	48	32	47		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	37	14		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	220	19		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	25	33		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.0	2.0		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	290	96		

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	< 1.0	-		
Toluene	µg/kg	1	MCERTS	-	< 1.0	-		
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-		
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-		
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-		
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	< 10	-	< 10		
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	5.9	-		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	62	-		
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	54	-		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	76	-		
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	130	-		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	5.8	-		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	15	-		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	43	-		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	180	-		
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	160	-		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	250	-		
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	400	-		

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-		
Chloroethane	µg/kg	1	NONE	-	-	-		
Bromomethane	µg/kg	1	ISO 17025	-	-	-		
Vinyl Chloride	µg/kg	1	NONE	-	-	-		
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-		
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-		
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-		
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-		
Trichloromethane	µg/kg	1	MCERTS	-	-	-		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-		
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-		
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-		
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-		
Benzene	µg/kg	1	MCERTS	-	-	-		
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-		
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-		
Trichloroethene	µg/kg	1	MCERTS	-	-	-		
Dibromomethane	µg/kg	1	MCERTS	-	-	-		
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-		
Toluene	µg/kg	1	MCERTS	-	-	-		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-		
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-		
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-		
Tetrachloroethene	µg/kg	1	NONE	-	-	-		
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-		
Chlorobenzene	µg/kg	1	MCERTS	-	-	-		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-		
Ethylbenzene	µg/kg	1	MCERTS	-	-	-		
p & m-Xylene	µg/kg	1	MCERTS	-	-	-		
Styrene	µg/kg	1	MCERTS	-	-	-		
Tribromomethane	µg/kg	1	NONE	-	-	-		
o-Xylene	µg/kg	1	MCERTS	-	-	-		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-		
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-		
Bromobenzene	µg/kg	1	MCERTS	-	-	-		
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-		
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-		
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-		
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-		
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-		
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-		
Butylbenzene	µg/kg	1	MCERTS	-	-	-		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-		
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-		

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	-		
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	-		
Carbon Disulphide	µg/kg	1	NONE	-	-	-		
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	-		
Dichloromethane	µg/kg	100	NONE	-	-	-		
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-		
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-		
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	-		
Pentachlorobenzene	µg/kg	1	NONE	-	-	-		

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Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-	-		
VOC % Match	%	N/A	NONE	-	-	-		
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/kg	0.1	NONE	-	-	-		
Ethyl-t-butyl ether (ETBE)	mg/kg	0.1	NONE	-	-	-		
Methyl-t-butyl ether (MTBE)	mg/kg	0.1	NONE	-	-	-		
t-amyl ethyl ether (TAEE)	mg/kg	0.1	NONE	-	-	-		
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	-		
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	-		

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Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-		
Phenol	mg/kg	0.2	ISO 17025	-	-	-		
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-		
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-		
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-		
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-		
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-		
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-		
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-		
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-		
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-		
4-Methylphenol	mg/kg	0.2	NONE	-	-	-		
Isophorone	mg/kg	0.2	MCERTS	-	-	-		
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-		
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-		
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-		
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-		
Naphthalene	mg/kg	0.05	MCERTS	-	-	-		
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-		
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-		
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-		
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-		
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-		
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-		
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-		
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-		
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-		
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-		
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-		
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-		
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-		
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-		
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-		
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-		
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-		
Fluorene	mg/kg	0.05	MCERTS	-	-	-		
Azobenzene	mg/kg	0.3	MCERTS	-	-	-		
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-		
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-		
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-		
Anthracene	mg/kg	0.05	MCERTS	-	-	-		
Carbazole	mg/kg	0.3	MCERTS	-	-	-		
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-		
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-		
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Pyrene	mg/kg	0.05	MCERTS	-	-	-		
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Chrysene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-		

Analytical Report Number: 18-83760

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				951948	951949	951950		
Sample Reference				TP05	TP06	TP06		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				1.30	0.30	0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		

Environmental Forensics

Chlorophenols								
Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	-		

Analytical Report Number: 18-83760
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Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
951941	TP02	0.50	185	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
951945	TP04	0.80	169	Loose Fibres	**Chrysotile**	0.002	**0.002**
951947	TP05	0.60	164	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
951949	TP06	0.30	159	Loose Fibrous Debris	**Chrysotile**	0.004	**0.004**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
951938	TP01	None Supplied	1.45	Black tar with gravel. **
951939	TP01	None Supplied	1.65	Brown clay and sand with brick.
951940	TP01	None Supplied	2.55	Grey sandy clay with rubble.
951941	TP02	None Supplied	0.50	Brown sandy loam with rubble and vegetation.
951942	TP02	None Supplied	0.80	Brown sandy clay with crystalline material.
951943	TP02	None Supplied	0.90	Brown sand with gravel.
951944	TP02	None Supplied	1.30	Brown clay and sand.
951945	TP04	None Supplied	0.80	Brown sand with gravel and clinker
951946	TP04	None Supplied	1.50	Brown clay.
951947	TP05	None Supplied	0.60	Light brown sand with gravel and rubble.
951948	TP05	None Supplied	1.30	Brown clay and loam with vegetation.
951949	TP06	None Supplied	0.30	Light brown sandy clay with gravel.
951950	TP06	None Supplied	0.70	Brown clay.

** Non MCERTS matrix.

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Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Oxygenates in soil by HS-GC-MS	Determination of oxygenates in soil by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE

Analytical Report Number : 18-83760

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TO - Chlorophenols in soil	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-88953

Project / Site name:	Riverside EfW	**Samples received on:**	12/06/2018
Your job number:	3765	**Samples instructed on:**	14/06/2018
Your order number:	PO-002715	**Analysis completed by:**	20/06/2018
Report Issue Number:	1	**Report issued on:**	20/06/2018
Samples Analysed:	4 soil samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	6.6	14	21	25	
Total mass of sample received	kg	0.001	NONE	1.6	1.5	1.5	1.4	
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile & Amosite	Chrysotile & Amosite	-	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Detected	Not-detected	
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.007	< 0.001	-	
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.007	< 0.001	-	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	11.6	9.6	9.3	7.7	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.22	2.2	2.2	0.56	
Organic Matter	%	0.1	MCERTS	1.6	2.3	2.9	2.8	
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	1.0	-	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.27	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.24	4.1	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.7	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	1.9	1.0	11	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	0.43	0.20	3.0	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	3.2	1.5	6.8	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	2.8	1.3	4.9	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.6	0.67	1.5	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	1.5	0.78	1.2	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.8	1.2	1.3	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.91	0.35	0.54	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.6	0.84	1.1	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.68	0.45	0.43	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.90	0.66	0.52	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	17.3	9.16	39.2	< 0.80	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	27	98	76	31	
Boron (water soluble)	mg/kg	0.2	MCERTS	37	120	270	170	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	1.0	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	24	19	52	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	56	53	56	25	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	100	180	150	100	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	18	17	36	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.9	< 1.0	1.8	2.5	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	230	180	3400	
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	440	210	780	< 10	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	2.3	-	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	7.5	-	28	-	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	20	-	64	-	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	100	-	170	-	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	30	-	84	-	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	130	-	270	-	
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	160	-	350	-	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	< 0.001	-	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	7.4	-	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.8	-	78	-	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	29	-	140	-	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	170	-	180	-	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	81	-	150	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	200	-	400	-	
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	280	-	560	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Chloroethane	µg/kg	1	NONE	-	-	< 1.0	-	
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0	-	
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0	-	
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0	-	
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0	-	
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	
1,2,3-Trichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	
1,3,5-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	
Carbon Disulphide	µg/kg	1	NONE	-	-	< 1.0	-	
Dichlorodifluoromethane	µg/kg	1	NONE	-	-	< 1.0	-	
Dichloromethane	µg/kg	100	NONE	-	-	< 100	-	
1,2,3,4-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	
1,2,3,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	
1,2,4,5-Tetrachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	
Pentachlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	

VOCs TICs

VOCs TICs Compound Name		N/A	NONE	-	-	ND	-	
VOC % Match	%	N/A	NONE	-	-	-	-	

Oxygenates by headspace GC-MS

t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	< 0.10	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	1.0	-	
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	0.27	-	
Acenaphthene	mg/kg	0.05	MCERTS	-	-	4.1	-	
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	2.1	-	
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Fluorene	mg/kg	0.05	MCERTS	-	-	2.7	-	
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Phenanthrene	mg/kg	0.05	MCERTS	-	-	11	-	
Anthracene	mg/kg	0.05	MCERTS	-	-	3.0	-	
Carbazole	mg/kg	0.3	MCERTS	-	-	0.7	-	
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	
Fluoranthene	mg/kg	0.05	MCERTS	-	-	6.8	-	
Pyrene	mg/kg	0.05	MCERTS	-	-	4.9	-	
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	1.5	-	
Chrysene	mg/kg	0.05	MCERTS	-	-	1.2	-	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	1.3	-	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	0.54	-	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	1.1	-	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	0.43	-	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.52	-	

Analytical Report Number: 18-88953

Project / Site name: Riverside EfW
Your Order No: PO-002715

Lab Sample Number				981344	981345	981346	981347	
Sample Reference				BH06	BH06	BH06	BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.50	2.00	3.00	
Date Sampled				11/06/2018	11/06/2018	11/06/2018	11/06/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,6,7-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	98	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,5-dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,4-dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,4,6-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 2,3,6-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Cyclopropa[l]phenanthrene,1a,9b-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Pyrene, 1-methyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Naphthalene, 1,6-dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	96	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Dibenzothiophene	-	
SVOC % Match	%	N/A	NONE	-	-	96	-	

Environmental Forensics

Chlorophenols

Pentachlorophenol (PCP)	mg/kg	0.1	NONE	-	-	< 0.10	-	

Analytical Report Number : 18-88953

Project / Site name: Riverside EfW

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
981344	BH06	None Supplied	0.50	Brown sand with rubble.
981345	BH06	None Supplied	1.50	Grey sandy clay with rubble.
981346	BH06	None Supplied	2.00	Grey clay and sand with rubble and vegetation.
981347	BH06	None Supplied	3.00	Brown clay.

Analytical Report Number : 18-88953

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
Oxygenates in soil by HS-GC-MS	Determination of oxygenates in soil by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Tentatively identified compounds (SVOC) in soil	Determination of semi-volatile organic compounds total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L064-PL	D	NONE

Analytical Report Number : 18-88953

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in soil	Determination of volatile organic compounds total ion count in soil by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073-PL	W	NONE
TO - Chlorophenols in soil	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-85315

Project / Site name:	Riverside EfW	**Samples received on:**	11/05/2018
Your job number:	3765	**Samples instructed on:**	15/05/2018
Your order number:	PO-002715	**Analysis completed by:**	22/05/2018
Report Issue Number:	1	**Report issued on:**	22/05/2018
Samples Analysed:	10 water samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.2	6.9	7.1	7.0	6.8
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	990	11000	17000	14000	14000
Sulphate as SO_4	µg/l	45	ISO 17025	125000	209000	760000	695000	460000
Sulphate as SO_4	mg/l	0.045	ISO 17025	125	209	760	695	460
Chloride	mg/l	0.15	ISO 17025	80	3200	5500	4900	4800
Total Phosphate as P	µg/l	20	ISO 17025	< 20	990	180	1500	48
Fluoride	µg/l	50	ISO 17025	570	260	540	460	220
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	1500	24000	16000	17000	21000
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	9.71	54.0	7.69	10.7	11.3
Nitrate as N	mg/l	0.01	ISO 17025	2.30	0.32	0.04	0.05	0.02
Nitrite as N	µg/l	1	ISO 17025	67	20	8.4	< 1.0	< 1.0
Alkalinity	mgCaCO3/l	3	ISO 17025	480	2400	460	500	150
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	22	110	110	77	86
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	2.4	0.3	< 0.3	< 0.3	< 0.3
Total Suspended Solids	mg/l	2	NONE	25	56	110	26	34
Dissolved Oxygen	mg/l	1	NONE	5.8	3.2	4.6	3.0	4.1
Ionic Balance	+/-	-100	NONE	-18	-8.0	-9.2	-6.5	1.1
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	7.6	80	15	17
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.74	33.4	1.04	0.49	0.50
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	98	430	240	230	420
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.3	0.6	0.5	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	2.3	3.3	0.6	1.5	1.5
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.3	< 0.2	< 0.2	< 0.2
Magnesium (dissolved)	mg/l	0.005	ISO 17025	21	270	330	310	290
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.8	4.1	1.1	< 0.5	< 0.5
Potassium (dissolved)	mg/l	0.025	ISO 17025	8.2	34	110	83	69
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.9	28	40	34	35
Sodium (dissolved)	mg/l	0.01	ISO 17025	76	1700	2500	2400	2400
Zinc (dissolved)	µg/l	0.5	ISO 17025	7.2	5.1	0.8	3.0	3.0

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TAME (Tertiary amyl methyl ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	< 100
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
SVOC % Match	%	N/A	NONE	-	-	-	-	-
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.9	7.2	7.7	7.8	7.8
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	14000	1000	1800	8500	12000
Sulphate as SO_4	µg/l	45	ISO 17025	181000	27400	30900	354000	628000
Sulphate as SO_4	mg/l	0.045	ISO 17025	181	27.4	30.9	354	628
Chloride	mg/l	0.15	ISO 17025	3700	74	400	2400	3600
Total Phosphate as P	µg/l	20	ISO 17025	27	36	340	910	710
Fluoride	µg/l	50	ISO 17025	2900	960	730	320	400
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	25000	1800	250	33	180
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	46.8	16.4	21.5	4.71	3.53
Nitrate as N	mg/l	0.01	ISO 17025	0.26	0.05	0.07	5.55	4.36
Nitrite as N	µg/l	1	ISO 17025	< 1.0	14	3.4	44	23
Alkalinity	mgCaCO3/l	3	ISO 17025	2300	640	620	200	180
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	210	48	48	23	37
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	< 0.3	< 0.3	< 0.3	5.6	4.4
Total Suspended Solids	mg/l	2	NONE	360	68	14	22	52
Dissolved Oxygen	mg/l	1	NONE	3.7	4.0	5.6	8.7	7.5
Ionic Balance	+/-	-100	NONE	-1.8	-19	-13	3.9	-1.3
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	9.3	< 1.0	< 1.0	6.1	13
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	2.22	5.70	5.25	1.47	1.14
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	470	100	110	120	140
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	0.2	0.5	0.5	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	2.6	0.9	3.7	5.1	3.7
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	< 0.2	0.2	1.9	0.6
Magnesium (dissolved)	mg/l	0.005	ISO 17025	240	28	37	170	250
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	3.3	1.4	3.3	1.9	1.3
Potassium (dissolved)	mg/l	0.025	ISO 17025	41	11	19	61	95
Selenium (dissolved)	µg/l	0.6	ISO 17025	34	3.1	5.7	21	29
Sodium (dissolved)	mg/l	0.01	ISO 17025	2400	68	220	1500	2000
Zinc (dissolved)	µg/l	0.5	ISO 17025	7.0	7.5	16	9.3	3.8

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TAME (Tertiary amyl methyl ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	< 100
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

VOCs TICs

VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Analytical Report Number: 18-85315

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				960228	960229	960230	960231	960232
Sample Reference				BH13	W DITCH	S DITCH	US	DS
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken				1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
SVOC % Match	%	N/A	NONE	-	-	-	-	-
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 18-85315

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Ionic Balance in water	Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L032	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE

Analytical Report Number : 18-85315

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
TAME (Tertiary amyl methyl ether)	In house method by HS-GC-MS	In house method	L036-PL	W	NONE
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TO - Chlorophenols in water	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total oxidised nitrogen in water	Calculation from nitrate and nitrite.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L078-PL	W	NONE
Total Phosphate as P in water	Determination of ortho phosphate in water by addition of ammonium molybdate, potassium antimonyl tartrate and ascorbic acid followed by colorimetry.Accredited matrices: SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton, analysis by discreet analyser.	L082-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02		W	18-85315	960223	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH02		W	18-85315	960223	c	Dissolved Oxygen in water	L086-PL	c
BH02		W	18-85315	960223	c	Electrical conductivity at 20oC of water	L031-PL	c
BH02		W	18-85315	960223	c	pH at 20oC in water (automated)	L099-PL	c
BH03		W	18-85315	960224	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH03		W	18-85315	960224	c	Dissolved Oxygen in water	L086-PL	c
BH03		W	18-85315	960224	c	Electrical conductivity at 20oC of water	L031-PL	c
BH03		W	18-85315	960224	c	pH at 20oC in water (automated)	L099-PL	c
BH05		W	18-85315	960225	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH05		W	18-85315	960225	c	Dissolved Oxygen in water	L086-PL	c
BH05		W	18-85315	960225	c	Electrical conductivity at 20oC of water	L031-PL	c
BH05		W	18-85315	960225	c	pH at 20oC in water (automated)	L099-PL	c
BH08		W	18-85315	960226	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH08		W	18-85315	960226	c	Dissolved Oxygen in water	L086-PL	c
BH08		W	18-85315	960226	c	Electrical conductivity at 20oC of water	L031-PL	c
BH08		W	18-85315	960226	c	pH at 20oC in water (automated)	L099-PL	c
BH12		W	18-85315	960227	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH12		W	18-85315	960227	c	Dissolved Oxygen in water	L086-PL	c
BH12		W	18-85315	960227	c	Electrical conductivity at 20oC of water	L031-PL	c
BH12		W	18-85315	960227	c	pH at 20oC in water (automated)	L099-PL	c
BH13		W	18-85315	960228	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH13		W	18-85315	960228	c	Dissolved Oxygen in water	L086-PL	c
BH13		W	18-85315	960228	c	Electrical conductivity at 20oC of water	L031-PL	c
BH13		W	18-85315	960228	c	pH at 20oC in water (automated)	L099-PL	c
DS		W	18-85315	960232	c	Ammoniacal Nitrogen as N in water	L082-PL	c
DS		W	18-85315	960232	c	Dissolved Oxygen in water	L086-PL	c
DS		W	18-85315	960232	c	Electrical conductivity at 20oC of water	L031-PL	c
DS		W	18-85315	960232	c	pH at 20oC in water (automated)	L099-PL	c
S DITCH		W	18-85315	960230	c	Ammoniacal Nitrogen as N in water	L082-PL	c
S DITCH		W	18-85315	960230	c	Dissolved Oxygen in water	L086-PL	c
S DITCH		W	18-85315	960230	c	Electrical conductivity at 20oC of water	L031-PL	c
S DITCH		W	18-85315	960230	c	pH at 20oC in water (automated)	L099-PL	c
US		W	18-85315	960231	c	Ammoniacal Nitrogen as N in water	L082-PL	c
US		W	18-85315	960231	c	Dissolved Oxygen in water	L086-PL	c
US		W	18-85315	960231	c	Electrical conductivity at 20oC of water	L031-PL	c
US		W	18-85315	960231	c	pH at 20oC in water (automated)	L099-PL	c
W DITCH		W	18-85315	960229	c	Ammoniacal Nitrogen as N in water	L082-PL	c
W DITCH		W	18-85315	960229	c	Dissolved Oxygen in water	L086-PL	c
W DITCH		W	18-85315	960229	c	Electrical conductivity at 20oC of water	L031-PL	c
W DITCH		W	18-85315	960229	c	pH at 20oC in water (automated)	L099-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

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Analytical Report Number : 18-88577

Replaces Analytical Report Number : 18-88577, issue no. 1

Project / Site name:	Riverside EfW	**Samples received on:**	08/06/2018
Your job number:	3765	**Samples instructed on:**	12/06/2018
Your order number:	PO-002715	**Analysis completed by:**	05/07/2018
Report Issue Number:	2	**Report issued on:**	06/07/2018
Samples Analysed:	6 water samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.0	7.1	7.0	6.9
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1000	11000	15000	14000	11000
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	-	-	-
Sulphate as SO_4	µg/l	45	ISO 17025	213000	294000	882000	763000	495000
Sulphate as SO_4	mg/l	0.045	ISO 17025	213	294	882	763	495
Chloride	mg/l	0.15	ISO 17025	120	3200	820	5400	3900
Total Phosphate as P	µg/l	20	ISO 17025	30	250	50	28	200
Fluoride	µg/l	50	ISO 17025	500	270	560	450	280
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	600	23000	16000	16000	18000
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	6.16	44.6	6.42	7.33	10.4
Nitrate as N	mg/l	0.01	ISO 17025	2.14	0.56	0.63	0.33	0.30
Nitrite as N	µg/l	1	ISO 17025	60	22	16	16	17
Alkalinity	mgCaCO3/l	3	ISO 17025	230	2300	530	540	710
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	20	200	170	140	120
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	2.2	0.6	0.6	0.4	0.3
Total Suspended Solids	mg/l	2	NONE	8.0	150	150	64	110
Dissolved Oxygen	mg/l	1	NONE	8.6	8.3	9.1	9.0	8.6
Ionic Balance	+/-	-100	NONE	1.1	-8.3	56	-4.4	-3.2
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	7.5	14	10	6.5
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.82	34.0	4.67	1.25	1.13
Boron (dissolved)	µg/l	10	ISO 17025	9400	9400	-	-	-
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	150	450	270	270	270
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	-	-	-
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.1	0.5	0.5	0.8
Copper (dissolved)	µg/l	0.5	ISO 17025	3.0	1.3	< 0.5	0.5	0.6
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.7	0.4	0.4	0.4
Magnesium (dissolved)	mg/l	0.005	ISO 17025	15	260	400	350	240
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.7	4.4	< 0.5	< 0.5	< 0.5
Potassium (dissolved)	mg/l	0.025	ISO 17025	11	35	110	95	63
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.4	17	29	25	21
Sodium (dissolved)	mg/l	0.01	ISO 17025	85	1700	3100	2700	2100
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.3	3.6	0.7	< 0.5	1.8
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	< 100
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Ethyl-t-butyl ether (ETBE)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Methyl-t-butyl ether (MTBE)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
t-amyl ethyl ether (TAEE)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
t-amyl methyl ether (TAME)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
t-butylalcohol (TBA)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

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Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				10/05/2018	11/05/2018	11/05/2018	10/05/2018	10/05/2018
Time Taken				1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
SVOC % Match	%	N/A	NONE	-	-	-	-	-
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.9				
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	13000				
Total Cyanide	µg/l	10	ISO 17025	-				
Sulphate as SO_4	µg/l	45	ISO 17025	64400				
Sulphate as SO_4	mg/l	0.045	ISO 17025	64.4				
Chloride	mg/l	0.15	ISO 17025	4500				
Total Phosphate as P	µg/l	20	ISO 17025	71				
Fluoride	µg/l	50	ISO 17025	2300				
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	24000				
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	72.7				
Nitrate as N	mg/l	0.01	ISO 17025	0.79				
Nitrite as N	µg/l	1	ISO 17025	27				
Alkalinity	mgCaCO3/l	3	ISO 17025	2500				
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	310				
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	0.8				
Total Suspended Solids	mg/l	2	NONE	520				
Dissolved Oxygen	mg/l	1	NONE	7.4				
Ionic Balance	+/-	-100	NONE	-12				
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	11				
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01				
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16				

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Project / Site name: Riverside EfW

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Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	4.16				
Boron (dissolved)	µg/l	10	ISO 17025	-				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.02				
Calcium (dissolved)	mg/l	0.012	ISO 17025	460				
Chromium (hexavalent)	µg/l	5	ISO 17025	-				
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5				
Copper (dissolved)	µg/l	0.5	ISO 17025	1.3				
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5				
Magnesium (dissolved)	mg/l	0.005	ISO 17025	260				
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05				
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.1				
Potassium (dissolved)	mg/l	0.025	ISO 17025	39				
Selenium (dissolved)	µg/l	0.6	ISO 17025	27				
Sodium (dissolved)	mg/l	0.01	ISO 17025	2200				
Zinc (dissolved)	µg/l	0.5	ISO 17025	5.3				
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10				

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Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0				
Chloroethane	µg/l	1	ISO 17025	< 1.0				
Bromomethane	µg/l	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/l	1	NONE	< 1.0				
Trichlorofluoromethane	µg/l	1	NONE	< 1.0				
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloromethane	µg/l	1	ISO 17025	< 1.0				
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
Benzene	µg/l	1	ISO 17025	< 1.0				
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloroethene	µg/l	1	ISO 17025	< 1.0				
Dibromomethane	µg/l	1	ISO 17025	< 1.0				
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0				
Chlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-Xylene	µg/l	1	ISO 17025	< 1.0				
Styrene	µg/l	1	ISO 17025	< 1.0				
Tribromomethane	µg/l	1	ISO 17025	< 1.0				
o-Xylene	µg/l	1	ISO 17025	< 1.0				
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0				
Bromobenzene	µg/l	1	ISO 17025	< 1.0				
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0				
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0				
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0				
Bromochloromethane	µg/l	1	ISO 17025	< 1.0				
Dichloromethane	µg/l	100	NONE	< 100				
Carbon disulphide	µg/l	1	NONE	< 1.0				
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0				
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND				
VOC % Match	%	10	NONE	-				
Oxygenates by headspace GC-MS								
Diisopropyle ether (DIPE)	mg/l	0.1	NONE	< 0.10				
Ethyl-t-butyl ether (ETBE)	mg/l	0.1	NONE	< 0.10				
Methyl-t-butyl ether (MTBE)	mg/l	0.1	NONE	< 0.10				
t-amyl ethyl ether (TAEE)	mg/l	0.1	NONE	< 0.10				
t-amyl methyl ether (TAME)	mg/l	0.1	NONE	< 0.10				
t-butylalcohol (TBA)	mg/l	0.1	NONE	< 0.10				

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05				
Phenol	µg/l	0.05	NONE	< 0.05				
2-Chlorophenol	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05				
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05				
2-Methylphenol	µg/l	0.05	NONE	< 0.05				
Hexachloroethane	µg/l	0.05	NONE	< 0.05				
Nitrobenzene	µg/l	0.05	NONE	< 0.05				
4-Methylphenol	µg/l	0.05	NONE	< 0.05				
Isophorone	µg/l	0.05	NONE	< 0.05				
2-Nitrophenol	µg/l	0.05	NONE	< 0.05				
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05				
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05				
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05				
4-Chloroaniline	µg/l	0.05	NONE	< 0.05				
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05				
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05				
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05				
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05				
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05				
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05				
Dimethylphthalate	µg/l	0.05	NONE	< 0.05				
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05				
Dibenzofuran	µg/l	0.05	NONE	< 0.05				
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05				
Diethyl phthalate	µg/l	0.05	NONE	< 0.05				
4-Nitroaniline	µg/l	0.05	NONE	< 0.05				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Azobenzene	µg/l	0.05	NONE	< 0.05				
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05				
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Carbazole	µg/l	0.05	NONE	< 0.05				
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05				
Anthraquinone	µg/l	0.05	NONE	< 0.05				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01				

Analytical Report Number: 18-88577

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/05/2018				
Time Taken				1745				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND				
SVOC % Match	%	N/A	NONE	-				
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05				

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 18-88577

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Ionic Balance in water	Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L032	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 18-88577

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Oxygenates in water by HS-GC-MS	Determination of oxygenates in water by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TO - Chlorophenols in water	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total oxidised nitrogen in water	Calculation from nitrate and nitrite.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L078-PL	W	NONE
Total Phosphate as P in water	Determination of ortho phosphate in water by addition of ammonium molybdate, potassium antimonyl tartrate and ascorbic acid followed by colorimetry.Accredited matrices: SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton, analysis by discreet analyser.	L082-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02		W	18-88577	979021	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH02		W	18-88577	979021	c	Hexavalent chromium in water	L080-PL	c
BH02		W	18-88577	979021	c	Alkalinity in Water	L082-PL	c
BH02		W	18-88577	979021	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH02		W	18-88577	979021	c	Boron in water	L039-PL	c
BH02		W	18-88577	979021	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH02		W	18-88577	979021	c	Chloride in water	L082-PL	c
BH02		W	18-88577	979021	c	Dissolved Organic Carbon in water	L037-PL	c
BH02		W	18-88577	979021	c	Dissolved Oxygen in water	L086-PL	c
BH02		W	18-88577	979021	c	Electrical conductivity at 20oC of water	L031-PL	c
BH02		W	18-88577	979021	c	Fluoride in water	L033B-PL	c
BH02		W	18-88577	979021	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH02		W	18-88577	979021	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH02		W	18-88577	979021	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH02		W	18-88577	979021	c	Nitrate as N in water	L078-PL	c
BH02		W	18-88577	979021	c	Nitrite as N in water	L082-PL	c
BH02		W	18-88577	979021	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH02		W	18-88577	979021	c	Semi-volatile organic compounds in water	L102B-PL	c
BH02		W	18-88577	979021	c	Settleable Solids in water	L004-PL	c
BH02		W	18-88577	979021	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH02		W	18-88577	979021	c	Sulphate in water	L039-PL	c
BH02		W	18-88577	979021	c	Suspended solids in water	L004-PL	c
BH02		W	18-88577	979021	c	TO - Chlorophenols in water		c
BH02		W	18-88577	979021	c	TPH in (Water)	L070-PL	c
BH02		W	18-88577	979021	c	TPHCWG (Waters)	L070-PL	c
BH02		W	18-88577	979021	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH02		W	18-88577	979021	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH02		W	18-88577	979021	c	Total Phosphate as P in water	L082-PL	c
BH02		W	18-88577	979021	c	Total Phosphate in water	L082-PL	c
BH02		W	18-88577	979021	c	Total cyanide in water	L080-PL	c
BH02		W	18-88577	979021	c	Total oxidised nitrogen in water	L078-PL	c
BH02		W	18-88577	979021	c	Volatile organic compounds in water	L073B-PL	c
BH02		W	18-88577	979021	c	Volatile organic compounds in water extended	L073B-PL	c
BH02		W	18-88577	979021	c	pH at 20oC in water (automated)	L099-PL	c
BH03		W	18-88577	979022	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH03		W	18-88577	979022	c	Hexavalent chromium in water	L080-PL	c
BH03		W	18-88577	979022	c	Alkalinity in Water	L082-PL	c
BH03		W	18-88577	979022	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH03		W	18-88577	979022	c	Boron in water	L039-PL	c
BH03		W	18-88577	979022	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH03		W	18-88577	979022	c	Chloride in water	L082-PL	c
BH03		W	18-88577	979022	c	Dissolved Organic Carbon in water	L037-PL	c
BH03		W	18-88577	979022	c	Dissolved Oxygen in water	L086-PL	c
BH03		W	18-88577	979022	c	Electrical conductivity at 20oC of water	L031-PL	c
BH03		W	18-88577	979022	c	Fluoride in water	L033B-PL	c
BH03		W	18-88577	979022	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH03		W	18-88577	979022	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH03		W	18-88577	979022	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH03		W	18-88577	979022	c	Nitrate as N in water	L078-PL	c
BH03		W	18-88577	979022	c	Nitrite as N in water	L082-PL	c
BH03		W	18-88577	979022	c	Oxygenates in water by HS-GC-MS	L052B-PL	c

BH03		W	18-88577	979022	c	Semi-volatile organic compounds in water	L102B-PL	c
BH03		W	18-88577	979022	c	Settleable Solids in water	L004-PL	c
BH03		W	18-88577	979022	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH03		W	18-88577	979022	c	Sulphate in water	L039-PL	c
BH03		W	18-88577	979022	c	Suspended solids in water	L004-PL	c
BH03		W	18-88577	979022	c	TO - Chlorophenols in water		c
BH03		W	18-88577	979022	c	TPH in (Water)	L070-PL	c
BH03		W	18-88577	979022	c	TPHCWG (Waters)	L070-PL	c
BH03		W	18-88577	979022	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH03		W	18-88577	979022	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH03		W	18-88577	979022	c	Total Phosphate as P in water	L082-PL	c
BH03		W	18-88577	979022	c	Total Phosphate in water	L082-PL	c
BH03		W	18-88577	979022	c	Total cyanide in water	L080-PL	c
BH03		W	18-88577	979022	c	Total oxidised nitrogen in water	L078-PL	c
BH03		W	18-88577	979022	c	Volatile organic compounds in water	L073B-PL	c
BH03		W	18-88577	979022	c	Volatile organic compounds in water extended	L073B-PL	c
BH03		W	18-88577	979022	c	pH at 20oC in water (automated)	L099-PL	c
BH05		W	18-88577	979023	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH05		W	18-88577	979023	c	Alkalinity in Water	L082-PL	c
BH05		W	18-88577	979023	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH05		W	18-88577	979023	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH05		W	18-88577	979023	c	Chloride in water	L082-PL	c
BH05		W	18-88577	979023	c	Dissolved Organic Carbon in water	L037-PL	c
BH05		W	18-88577	979023	c	Dissolved Oxygen in water	L086-PL	c
BH05		W	18-88577	979023	c	Electrical conductivity at 20oC of water	L031-PL	c
BH05		W	18-88577	979023	c	Fluoride in water	L033B-PL	c
BH05		W	18-88577	979023	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH05		W	18-88577	979023	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH05		W	18-88577	979023	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH05		W	18-88577	979023	c	Nitrate as N in water	L078-PL	c
BH05		W	18-88577	979023	c	Nitrite as N in water	L082-PL	c
BH05		W	18-88577	979023	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH05		W	18-88577	979023	c	Semi-volatile organic compounds in water	L102B-PL	c
BH05		W	18-88577	979023	c	Settleable Solids in water	L004-PL	c
BH05		W	18-88577	979023	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH05		W	18-88577	979023	c	Sulphate in water	L039-PL	c
BH05		W	18-88577	979023	c	Suspended solids in water	L004-PL	c
BH05		W	18-88577	979023	c	TO - Chlorophenols in water		c
BH05		W	18-88577	979023	c	TPH in (Water)	L070-PL	c
BH05		W	18-88577	979023	c	TPHCWG (Waters)	L070-PL	c
BH05		W	18-88577	979023	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH05		W	18-88577	979023	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH05		W	18-88577	979023	c	Total Phosphate as P in water	L082-PL	c
BH05		W	18-88577	979023	c	Total Phosphate in water	L082-PL	c
BH05		W	18-88577	979023	c	Total oxidised nitrogen in water	L078-PL	c
BH05		W	18-88577	979023	c	Volatile organic compounds in water	L073B-PL	c
BH05		W	18-88577	979023	c	Volatile organic compounds in water extended	L073B-PL	c
BH05		W	18-88577	979023	c	pH at 20oC in water (automated)	L099-PL	c
BH08		W	18-88577	979024	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH08		W	18-88577	979024	c	Alkalinity in Water	L082-PL	c
BH08		W	18-88577	979024	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH08		W	18-88577	979024	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH08		W	18-88577	979024	c	Chloride in water	L082-PL	c
BH08		W	18-88577	979024	c	Dissolved Organic Carbon in water	L037-PL	c

BH08		W	18-88577	979024	c	Dissolved Oxygen in water	L086-PL	c
BH08		W	18-88577	979024	c	Electrical conductivity at 20oC of water	L031-PL	c
BH08		W	18-88577	979024	c	Fluoride in water	L033B-PL	c
BH08		W	18-88577	979024	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH08		W	18-88577	979024	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH08		W	18-88577	979024	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH08		W	18-88577	979024	c	Nitrate as N in water	L078-PL	c
BH08		W	18-88577	979024	c	Nitrite as N in water	L082-PL	c
BH08		W	18-88577	979024	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH08		W	18-88577	979024	c	Semi-volatile organic compounds in water	L102B-PL	c
BH08		W	18-88577	979024	c	Settleable Solids in water	L004-PL	c
BH08		W	18-88577	979024	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH08		W	18-88577	979024	c	Sulphate in water	L039-PL	c
BH08		W	18-88577	979024	c	Suspended solids in water	L004-PL	c
BH08		W	18-88577	979024	c	TO - Chlorophenols in water		c
BH08		W	18-88577	979024	c	TPH in (Water)	L070-PL	c
BH08		W	18-88577	979024	c	TPHCWG (Waters)	L070-PL	c
BH08		W	18-88577	979024	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH08		W	18-88577	979024	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH08		W	18-88577	979024	c	Total Phosphate as P in water	L082-PL	c
BH08		W	18-88577	979024	c	Total Phosphate in water	L082-PL	c
BH08		W	18-88577	979024	c	Total oxidised nitrogen in water	L078-PL	c
BH08		W	18-88577	979024	c	Volatile organic compounds in water	L073B-PL	c
BH08		W	18-88577	979024	c	Volatile organic compounds in water extended	L073B-PL	c
BH08		W	18-88577	979024	c	pH at 20oC in water (automated)	L099-PL	c
BH12		W	18-88577	979025	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH12		W	18-88577	979025	c	Alkalinity in Water	L082-PL	c
BH12		W	18-88577	979025	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH12		W	18-88577	979025	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH12		W	18-88577	979025	c	Chloride in water	L082-PL	c
BH12		W	18-88577	979025	c	Dissolved Organic Carbon in water	L037-PL	c
BH12		W	18-88577	979025	c	Dissolved Oxygen in water	L086-PL	c
BH12		W	18-88577	979025	c	Electrical conductivity at 20oC of water	L031-PL	c
BH12		W	18-88577	979025	c	Fluoride in water	L033B-PL	c
BH12		W	18-88577	979025	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH12		W	18-88577	979025	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH12		W	18-88577	979025	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH12		W	18-88577	979025	c	Nitrate as N in water	L078-PL	c
BH12		W	18-88577	979025	c	Nitrite as N in water	L082-PL	c
BH12		W	18-88577	979025	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH12		W	18-88577	979025	c	Semi-volatile organic compounds in water	L102B-PL	c
BH12		W	18-88577	979025	c	Settleable Solids in water	L004-PL	c
BH12		W	18-88577	979025	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH12		W	18-88577	979025	c	Sulphate in water	L039-PL	c
BH12		W	18-88577	979025	c	Suspended solids in water	L004-PL	c
BH12		W	18-88577	979025	c	TO - Chlorophenols in water		c
BH12		W	18-88577	979025	c	TPH in (Water)	L070-PL	c
BH12		W	18-88577	979025	c	TPHCWG (Waters)	L070-PL	c
BH12		W	18-88577	979025	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH12		W	18-88577	979025	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH12		W	18-88577	979025	c	Total Phosphate as P in water	L082-PL	c
BH12		W	18-88577	979025	c	Total Phosphate in water	L082-PL	c
BH12		W	18-88577	979025	c	Total oxidised nitrogen in water	L078-PL	c
BH12		W	18-88577	979025	c	Volatile organic compounds in water	L073B-PL	c

BH12		W	18-88577	979025	c	Volatile organic compounds in water extended	L073B-PL	c
BH12		W	18-88577	979025	c	pH at 20oC in water (automated)	L099-PL	c
BH13		W	18-88577	979026	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH13		W	18-88577	979026	c	Alkalinity in Water	L082-PL	c
BH13		W	18-88577	979026	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH13		W	18-88577	979026	c	Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH13		W	18-88577	979026	c	Chloride in water	L082-PL	c
BH13		W	18-88577	979026	c	Dissolved Organic Carbon in water	L037-PL	c
BH13		W	18-88577	979026	c	Dissolved Oxygen in water	L086-PL	c
BH13		W	18-88577	979026	c	Electrical conductivity at 20oC of water	L031-PL	c
BH13		W	18-88577	979026	c	Fluoride in water	L033B-PL	c
BH13		W	18-88577	979026	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH13		W	18-88577	979026	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH13		W	18-88577	979026	c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH13		W	18-88577	979026	c	Nitrate as N in water	L078-PL	c
BH13		W	18-88577	979026	c	Nitrite as N in water	L082-PL	c
BH13		W	18-88577	979026	c	Oxygenates in water by HS-GC-MS	L052B-PL	c
BH13		W	18-88577	979026	c	Semi-volatile organic compounds in water	L102B-PL	c
BH13		W	18-88577	979026	c	Settleable Solids in water	L004-PL	c
BH13		W	18-88577	979026	c	Speciated EPA-16 PAHs in water	L102B-PL	c
BH13		W	18-88577	979026	c	Sulphate in water	L039-PL	c
BH13		W	18-88577	979026	c	Suspended solids in water	L004-PL	c
BH13		W	18-88577	979026	c	TO - Chlorophenols in water		c
BH13		W	18-88577	979026	c	TPH in (Water)	L070-PL	c
BH13		W	18-88577	979026	c	TPHCWG (Waters)	L070-PL	c
BH13		W	18-88577	979026	c	Tentatively identified compounds (SVOC) in water	L070-PL	c
BH13		W	18-88577	979026	c	Tentatively identified compounds (VOC) in water	L073B-PL	c
BH13		W	18-88577	979026	c	Total Phosphate as P in water	L082-PL	c
BH13		W	18-88577	979026	c	Total Phosphate in water	L082-PL	c
BH13		W	18-88577	979026	c	Total oxidised nitrogen in water	L078-PL	c
BH13		W	18-88577	979026	c	Volatile organic compounds in water	L073B-PL	c
BH13		W	18-88577	979026	c	Volatile organic compounds in water extended	L073B-PL	c
BH13		W	18-88577	979026	c	pH at 20oC in water (automated)	L099-PL	c

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Analytical Report Number : 18-89740

Replaces Analytical Report Number : 18-89740, issue no. 1

Project / Site name:	Riverside EfW	**Samples received on:**	20/06/2018
Your job number:	3765	**Samples instructed on:**	21/06/2018
Your order number:	PO-002715	**Analysis completed by:**	05/07/2018
Report Issue Number:	2	**Report issued on:**	06/07/2018
Samples Analysed:	4 water samples		

Signed: [redacted]

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.8	7.7	8.0	8.0	
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	890	2200	10000	13000	
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Sulphate as SO_4	µg/l	45	ISO 17025	35200	99600	738000	872000	
Sulphate as SO_4	mg/l	0.045	ISO 17025	35.2	99.6	738	872	
Chloride	mg/l	0.15	ISO 17025	48	490	3700	4400	
Total Phosphate as P	µg/l	20	ISO 17025	140	310	990	1000	
Fluoride	µg/l	50	ISO 17025	770	310	350	420	
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	690	150	67	24	
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	17.7	13.9	6.84	6.06	
Nitrate as N	mg/l	0.01	ISO 17025	0.16	0.14	6.28	5.39	
Nitrite as N	µg/l	1	ISO 17025	34	18	21	14	
Alkalinity	mgCaCO3/l	3	ISO 17025	330	120	160	150	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	35	33	130	46	
Total Oxidised Nitrogen (TON)	mg/l	0.3	NONE	< 0.3	< 0.3	6.3	5.4	
Total Suspended Solids	mg/l	2	NONE	26	26	140	50	
Dissolved Oxygen	mg/l	1	NONE	9.6	9.5	9.5	9.5	
Ionic Balance	+/-	-100	NONE	9.2	18	-2.2	-0.5	
Total Phenols								
Total Phenols (monohydric)	µg/l	1	ISO 17025	3.1	1.4	30	45	
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	9.10	3.57	1.86	1.61	
Boron (dissolved)	µg/l	10	ISO 17025	3200	1100	690	860	
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	
Calcium (dissolved)	mg/l	0.012	ISO 17025	110	86	110	150	
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	0.5	0.2	0.4	
Copper (dissolved)	µg/l	0.5	ISO 17025	4.1	3.4	2.9	2.4	
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5	2.4	0.8	1.2	
Magnesium (dissolved)	mg/l	0.005	ISO 17025	21	39	190	310	
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.5	2.6	1.6	1.3	
Potassium (dissolved)	mg/l	0.025	ISO 17025	11	17	68	100	
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.4	3.2	19	22	
Sodium (dissolved)	mg/l	0.01	ISO 17025	65	430	2200	2500	
Zinc (dissolved)	µg/l	0.5	ISO 17025	3.2	8.1	3.0	2.6	
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10	< 10	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2,3-Trichloropropane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trichlorobenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	µg/l	100	NONE	< 100	< 100	< 100	< 100	
Carbon disulphide	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Dichlorodifluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	
VOC % Match	%	10	NONE	-	-	-	-	
Oxygenates by headspace GC-MS								
t-amyl methyl ether (TAME)	mg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	

Analytical Report Number: 18-89740

Project / Site name: Riverside EfW

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Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	
SVOC % Match	%	N/A	NONE	-	-	-	-	

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Project / Site name: Riverside EfW

Your Order No: PO-002715

Lab Sample Number				986253	986254	986255	986256	
Sample Reference				W DITCH	S DITCH	US	DS	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				18/06/2018	18/06/2018	18/06/2018	18/06/2018	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Environmental Forensics								
Chlorophenols								
Pentachlorophenol (PCP)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 18-89740

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Fluoride in water	Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Ionic Balance in water	Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L032	W	NONE
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite as N in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025

Analytical Report Number : 18-89740

Project / Site name: Riverside EfW

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Oxygenates in water by HS-GC-MS	Determination of oxygenates in water by headspace GC-MS.	In house method	L052B-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TO - Chlorophenols in water	Determination of chlorophenols by GC-MS.	In-house method		W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total oxidised nitrogen in water	Calculation from nitrate and nitrite.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L078-PL	W	NONE
Total Phosphate as P in water	Determination of ortho phosphate in water by addition of ammonium molybdate, potassium antimonyl tartrate and ascorbic acid followed by colorimetry.Accredited matrices: SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton, analysis by discreet analyser.	L082-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Volatile organic compounds in water extended	Determination of volatile organic compounds in water by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref
DS		W	18-89740	986256	c	Dissolved Oxygen in water	L086-PL
S DITCH		W	18-89740	986254	c	Dissolved Oxygen in water	L086-PL
US		W	18-89740	986255	c	Dissolved Oxygen in water	L086-PL
W DITCH		W	18-89740	986253	c	Dissolved Oxygen in water	L086-PL

Test Deviation code
c
c
c
c

APPENDIX G
Calibration Certificates

SPT hammers

Gas monitor

Photo-Ionisation Device

SPT Calibration Report

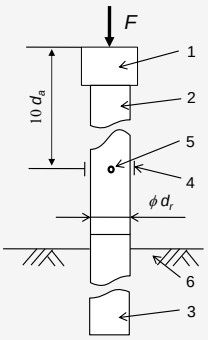
www.equipegroup.com

Hammer Energy Measurement Report

Type of Hammer		AUTO HAMMER
Client		S M ASSOCIATES
Test No		EQU1876
Test Depth (m)		20.64
Mass of the hamn	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm^2
Modulus	E_a =	206843 MPa



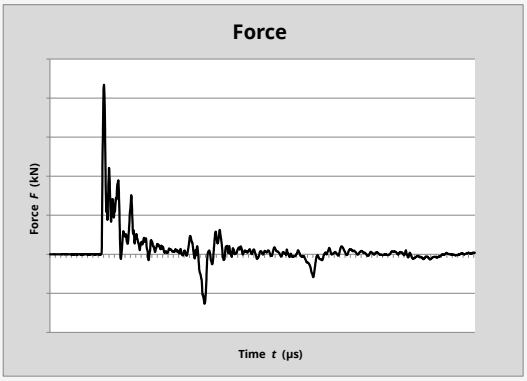
Key

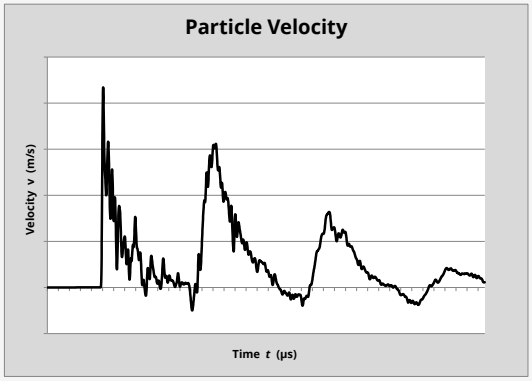
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

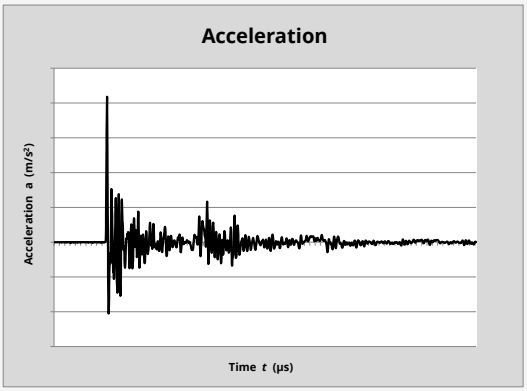
F Force
d_r Diameter of rod

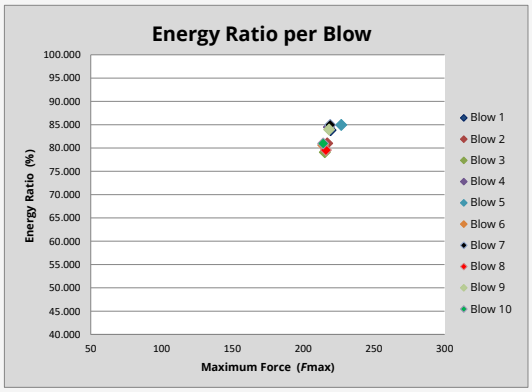
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
21 June 2017	21 June 2018	RHM1703006









Observations:
1.

E_{meas} =	**0.388**	kN-m
E_{theor} =	**0.473**	kN-m

Energy Ratio = $\frac{E_{meas}}{E_{theor}}$ (E_r) **82.04%**

Equipe SPT Analyzer Operators: JML

Prepared by:	[redacted]	**Checked by:**	[redacted]	**Date:**	23/06/2017

ARCHWAY ENGINEERING (UK) LIMITED

AINLEYS INDUSTRIAL ESTATE, ELLAND, WEST YORKSHIRE HX5 9JP
TEL: 01422 373101 FAX: 01422 374947
Email: info@archway-engineering.com

REPORT OF A THOROUGH EXAMINATION OF LIFTING EQUIPMENT

Name and Address for whom the examination was made:	Address of the premises at which the examination was made:
D.M.W DRILLING LTD 7 GLENBECK CLOSE HORWICH BL6 6SG	Archway Engineering (UK) Ltd Ainleys Industrial Estate, Elland, West Yorkshire HX5 9JP
Report Number: AR1909 Sales order Ref: 57861 Date of Report: 07.09.2017	Latest date by which the next thorough examination should be carried out: 06.03.2018

Quantity	ID number	Description	Test weight	SWL	Date of test
1	AR1909	BAILING HOOK	548KG	250KG	07.09.2017

Was this equipment:					Was the examination carried out:				
Supplied new:	Yes	X	No		Before being issued for the first time	Yes	X	No	
Supplied reconditioned:	Yes		No	X	Within an interval of 6 months	Yes		No	X
Examined only:	Yes		No	X	Within an interval of 12 months	Yes		No	X
Examined and tested:	Yes	X	No		As part of an examination scheme	Yes		No	X
Examined, repaired and tested	Yes		No	X	After an exceptional circumstance	Yes		No	X

Identification of any part found to have a defect which is or could become a danger to persons and a description of the defect. (If no defects found state "NONE")

NONE

Is the above defect a defect which is of immediate danger to persons	Yes		No	X
If the defect is not an immediate danger to persons state required rectification date:				

Particulars of any repair, renewal or alteration required to remedy the defect identified above:

IS THE EQUIPMENT SAFE TO OPERATE	Yes	X	No	

Name of person making this report:	Name of person authenticating this report:
S. HOWARTH	Signature [redacted]

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998
The EC Declaration of conformity is available if the equipment is new and manufactured and supplied by Archway Engineering (UK) Limited

ARCHWAY ENGINEERING (UK) LIMITED

AINLEYS INDUSTRIAL ESTATE, ELLAND, WEST YORKSHIRE HX5 9JP
TEL: 01422 373101 FAX: 01422 374947
Email: info@archway-engineering.com

REPORT OF A THOROUGH EXAMINATION OF LIFTING EQUIPMENT

Name and Address for whom the examination was made:	Address of the premises at which the examination was made:
D.M.W DRILLING LTD 7 GLENBECK CLOSE HORWICH BL6 6SG	Archway Engineering (UK) Ltd Ainleys Industrial Estate, Elland, West Yorkshire HX5 9JP
Report Number: AR1924 Sales order Ref: 57861 Date of Report: 07.09.2017	Latest date by which the next thorough examination should be carried out: 06.03.2018

Quantity	ID number	Description	Test weight	SWL	Date of test
1	AR1924	SAFETY SWIVEL HOOK	6532KG	3200KG	07.09.2017

Was this equipment:					Was the examination carried out:				
Supplied new:	Yes	X	No		Before being issued for the first time	Yes	X	No	
Supplied reconditioned:	Yes		No	X	Within an interval of 6 months	Yes		No	X
Examined only:	Yes		No	X	Within an interval of 12 months	Yes		No	X
Examined and tested:	Yes	X	No		As part of an examination scheme	Yes		No	X
Examined, repaired and tested	Yes		No	X	After an exceptional circumstance	Yes		No	X

Identification of any part found to have a defect which is or could become a danger to persons and a description of the defect. (If no defects found state "NONE")

NONE

Is the above defect a defect which is of immediate danger to persons	Yes		No	X
If the defect is not an immediate danger to persons state required rectification date:				

Particulars of any repair, renewal or alteration required to remedy the defect identified above:

IS THE EQUIPMENT SAFE TO OPERATE	Yes	X	No	

Name of person making this report:	Name of person authenticating this report:
S. HOWARTH	Signature [redacted]

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998
The EC Declaration of conformity is available if the equipment is new and manufactured and supplied by Archway Engineering (UK) Limited

JOHN TEIRE & COMPANY LTD

180 RIMROSE ROAD BOOTLE MERSEYSIDE. L20 4QS
TEL: 0151-944-1027 FAX: 0151 922-6739

REPORT OF THOROUGH EXAMINATION OF LIFTING EQUIPMENT

THIS REPORT COMPLIES WITH THE REQUIREMENTS OF THE LIFTING OPERATIONS AND LIFTING EQUIPMENT REGULATIONS 1998

EQUIPMENT OWNER: DMW DRILLING		EXAM REPORT NO: 108361
DATE OF EXAM: 17/10/2017	DATE OF REPORT 17/10/2017	DATE OF LAST EXAM: 31/10/2016
LATEST DATE FOR NEXT EXAM: 12 MONTHS FROM ABOVE		ORDER NO:

I.D. NOS	DESCRIPTION	SWL (TONNES)	DETAIL OF ANY DEFECT WHICH IS OR MAY BECOME A DANGER TO PERSONS
DMW1	1 OFF TRIPOD DRILLING RIG	1.5 TONNES	NONE

Particulars of any repair, renewal or alteration required to remedy the defect identified above: N/A	Was the examination carried out 1 Prior to new delivery NO 2. Within an interval of 6 months NO 3 within an interval of 12 months YES
Is defect an immediate danger to persons: N/A	If "NO" date by which it could be a danger: N/A
Details of any test completed as part of examination: .1.5 TONNES LOAD APPLIED, BRAKE TEST AND HELD	
Name of inspector making this report: DANIEL COUGHLIN	Is this equipment safe to operate: YES
Name of person authenticating report: MICHAEL WINTER	Signed: [redacted]

ARCHWAY ENGINEERING (UK) LIMITED

AINLEYS INDUSTRIAL ESTATE, ELLAND, WEST YORKSHIRE HX5 9JP
TEL: 01422 373101 FAX: 01422 374947
Email: info@archway-engineering.com

REPORT OF A THOROUGH EXAMINATION OF LIFTING EQUIPMENT

Name and Address for whom the examination was made:	Address of the premises at which the examination was made:
D.M.W DRILLING LTD 7 GLENBECK CLOSE HORWICH BL6 6SG	Archway Engineering (UK) Ltd Ainleys Industrial Estate, Elland, West Yorkshire HX5 9JP
Report Number: AR1888 Sales order Ref: 57861 Date of Report: 07.09.2017	Latest date by which the next thorough examination should be carried out: 06.03.2018

Quantity	ID number	Description	Test weight	SWL	Date of test
1	AR1888	SPT ROD SWIVEL	4157KG	2000KG	07.09.2017

Was this equipment:					Was the examination carried out:				
Supplied new:	Yes	X	No		Before being issued for the first time	Yes	X	No	
Supplied reconditioned:	Yes		No	X	Within an interval of 6 months	Yes		No	X
Examined only:	Yes		No	X	Within an interval of 12 months	Yes		No	X
Examined and tested:	Yes	X	No		As part of an examination scheme	Yes		No	X
Examined, repaired and tested	Yes		No	X	After an exceptional circumstance	Yes		No	X

Identification of any part found to have a defect which is or could become a danger to persons and a description of the defect. (If no defects found state "NONE")

NONE

Is the above defect a defect which is of immediate danger to persons	Yes		No	X
If the defect is not an immediate danger to persons state required rectification date:				

Particulars of any repair, renewal or alteration required to remedy the defect identified above:

IS THE EQUIPMENT SAFE TO OPERATE	Yes	X	No	

Name of person making this report:	Name of person authenticating this report:
S. HOWARTH	Signature: [redacted]

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998
The EC Declaration of conformity is available if the equipment is new and manufactured and supplied by Archway Engineering (UK) Limited

REPORT OF A THOROUGH EXAMINATION OF LIFTING EQUIPMENT

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998 and/or Provision and Use of Work Equipment Regulations 1998.

Report #
ER/0027

Date of Thorough Examination: 09-Mar-17 Date of Report: 09-Mar-17

Name and address of employer for whom the thorough examination was made:	Address of premises at which the examination was made:
DMW Drilling 7 Glenbeck Close Horwich BL6 6SG	Euro Repair Uk Unit 80 Boughton Industrial Estate Boughton Newark Notts NG22 9LD

Description and identification of the equipment:	Safe Working Load:	Date of manufacture if known:	Date of Last Examination:
Dando 150 S/N DMW 1	1500kg	Not Known	Not K nown
Self closing swivel S/N AR1354	4000kg	Not Known	Not Known
D Shackle S/N AP5	2000kg	Not Known	Not Known
16mm Rope S/N DMW R1	3000kg	Not Known	Not Known

Is this the first examination after instillation or after assembly at a new site or location?					Was the examination carried out:				
	YES	x	NO		Within an interval of 6 months?	YES		NO	
If the answer to the question above is YES,					Within an interval of 12 months?	YES	x	NO	
Is the equipment istalled correctly?	YES	x	NO		In accordance of an examination scheme?	YES	x	NO	
					After the occurance of exeptional circumstances?	YES		NO	

Identification of any part found to have a defect which is or could become a danger to persons and a description of the defect:				
Is the above a defect which is of immediate danger to persons:	YES		NO	
Is the above defect which is not yet but could become a danger to persons?	YES by:		NO	

Particulars of any repair, renewal or alteration required to remedy the defect identified above:				
Particulars of any tests carried out as part of the examination: (if none state NONE) NONE				
IS THIS EQUIPMENT SAFE TO OPERATE?	YES	X	NO	

Name of the person making this report:	Name of the person authenticating this report:	Latest date by which next thorough examination must be carried out:
J Walker **Aproved inspector licence #108834**	J Walker [redacted]	**08-Mar-18**

ARCHWAY ENGINEERING (UK) LIMITED

AINLEYS INDUSTRIAL ESTATE, ELLAND, WEST YORKSHIRE HX5 9JP
TEL: 01422 373101 FAX: 01422 374947
Email: info@archway-engineering.com

REPORT OF A THOROUGH EXAMINATION OF LIFTING EQUIPMENT

Name and Address for whom the examination was made:	Address of the premises at which the examination was made:
D.M.W DRILLING LTD 7 GLENBECK CLOSE HORWICH BL6 6SG	Archway Engineering (UK) Ltd Ainleys Industrial Estate, Elland, West Yorkshire HX5 9JP
Report Number: AR1598 Sales order Ref: 58442 Date of Report: 17.10.2017	Latest date by which the next thorough examination should be carried out: 16.04.2018

Quantity	ID number	Description	Test weight	SWL	Date of test
1	AR1598	SWIVEL SINKER BAR	4420KG	2000KG	17.10.2017

Was this equipment:					Was the examination carried out:				
Supplied new:	Yes		No	X	Before being issued for the first time	Yes		No	X
Supplied reconditioned:	Yes		No	X	Within an interval of 6 months	Yes	X	No	
Examined only:	Yes		No	X	Within an interval of 12 months	Yes		No	X
Examined and tested:	Yes	X	No		As part of an examination scheme	Yes		No	X
Examined, repaired and tested	Yes		No	X	After an exceptional circumstance	Yes		No	X

Identification of any part found to have a defect which is or could become a danger to persons and a description of the defect. (If no defects found state "NONE")

NONE

Is the above defect a defect which is of immediate danger to persons	Yes		No	X
If the defect is not an immediate danger to persons state required rectification date:				

Particulars of any repair, renewal or alteration required to remedy the defect identified above:

IS THE EQUIPMENT SAFE TO OPERATE	Yes	X	No	

Name of person making this report:	Name of person authenticating this report:
M.GARDNER	Signature: [redacted]

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998
The EC Declaration of conformity is available if the equipment is new and manufactured and supplied by Archway Engineering (UK) Limited

ARCHWAY ENGINEERING (UK) LIMITED

AINLEYS INDUSTRIAL ESTATE, ELLAND, WEST YORKSHIRE HX5 9JP
TEL: 01422 373101 FAX: 01422 374947
Email: info@archway-engineering.com

REPORT OF A THOROUGH EXAMINATION OF LIFTING EQUIPMENT

Name and Address for whom the examination was made:	Address of the premises at which the examination was made:
D.M.W DRILLING LTD 7 GLENBECK CLOSE HORWICH BL6 6SG	Archway Engineering (UK) Ltd Ainleys Industrial Estate, Elland, West Yorkshire HX5 9JP
Report Number: AR825 Sales order Ref: 58442 Date of Report: 17.10.2017	Latest date by which the next thorough examination should be carried out: 16.04.2018

Quantity	ID number	Description	Test weight	SWL	Date of test
1	AR825	AUTO TRIPHAMMER OUTER SLEEVE	810KG	300KG	17.10.2017

Was this equipment:					Was the examination carried out:				
Supplied new:	Yes		No	X	Before being issued for the first time	Yes		No	X
Supplied reconditioned:	Yes		No	X	Within an interval of 6 months	Yes	X	No	
Examined only:	Yes		No	X	Within an interval of 12 months	Yes		No	X
Examined and tested:	Yes	X	No		As part of an examination scheme	Yes		No	X
Examined, repaired and tested	Yes		No	X	After an exceptional circumstance	Yes		No	X

Identification of any part found to have a defect which is or could become a danger to persons and a description of the defect. (If no defects found state "NONE")

NONE

Is the above defect a defect which is of immediate danger to persons	Yes		No	X
If the defect is not an immediate danger to persons state required rectification date:				

Particulars of any repair, renewal or alteration required to remedy the defect identified above:

IS THE EQUIPMENT SAFE TO OPERATE	Yes	X	No	

Name of person making this report:	Name of person authenticating this report:
M.GARDNER	Signature: [redacted]

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1998
The EC Declaration of conformity is available if the equipment is new and manufactured and supplied by Archway Engineering (UK) Limited

ARCHWAY ENGINEERING
ALLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

Test Date: 17/10/2017
Report Date: 17/10/2017
File Name: AR825.spt
Test Operator: SH

Instrumented Rod Data

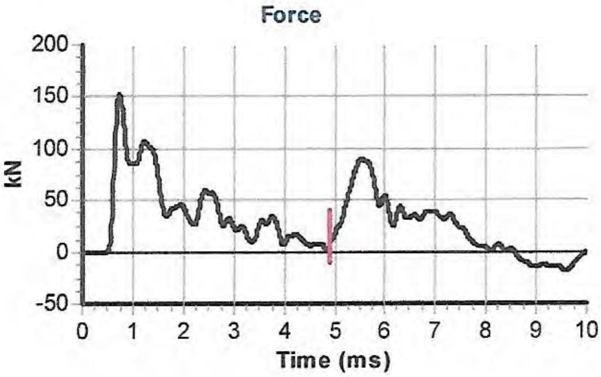
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	7080
Accelerometer No.2:	11609

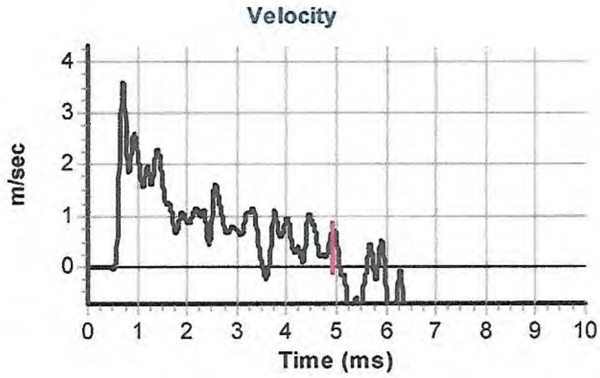
SPT Hammer Information

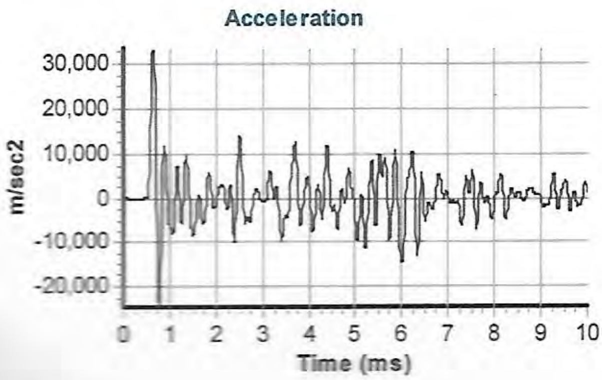
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

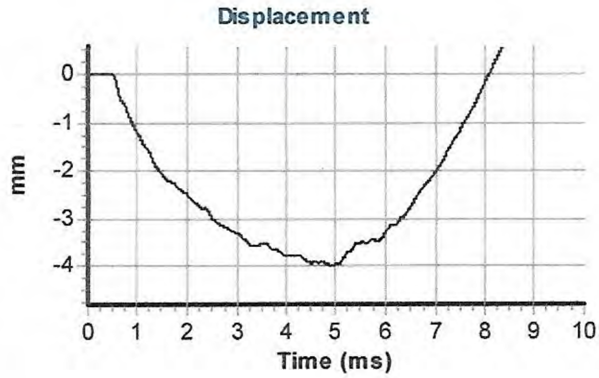
Comments / Location

CALIBRATION









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	336
Energy Ratio E_r (%):	71

[redacted]

Signed: M.GARDNER
Title: FITTER

The recommended calibration interval is 12 months

SPT Calibration Report

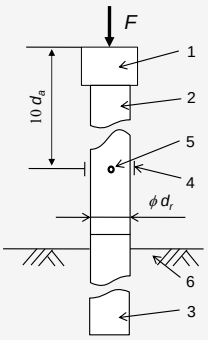
www.equipegroup.com

Hammer Energy Measurement Report

Type of Hammer		ARCHWAY
Client		SI DRILLING
Test No		EQU1986
Test Depth (m)		8.70
Mass of the hamn	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



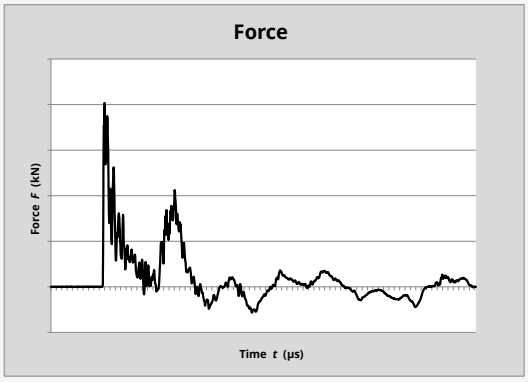
Key

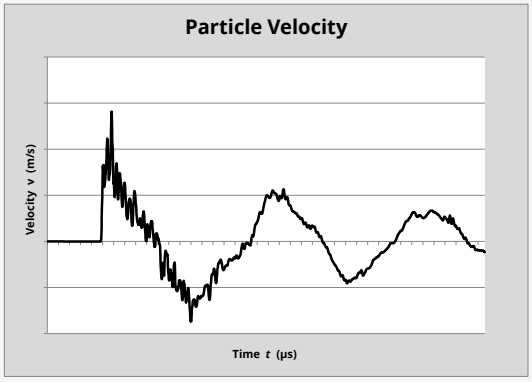
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

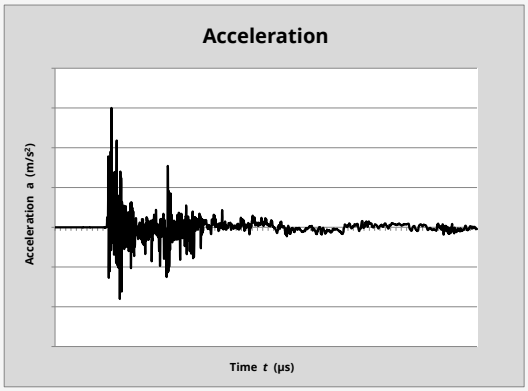
F Force
d_r Diameter of rod

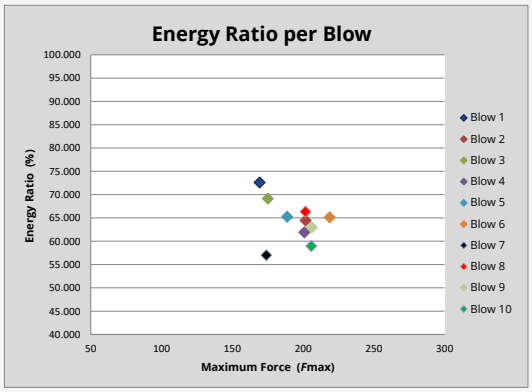
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
29/12/2017	29/12/2018	SI03









Observations:
1.

E_{meas} =	**0.303**	kN-m
E_{theor} =	**0.473**	kN-m

Energy Ratio = $\frac{E_{meas}}{E_{theor}}$ (E_r) **64.15%**

Equipe SPT Analyzer Operators: KS

Prepared by:	04/01/2018	**Checked by:**	04/01/2018	**Date:**	04/01/2018

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Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

SPT Calibration Report

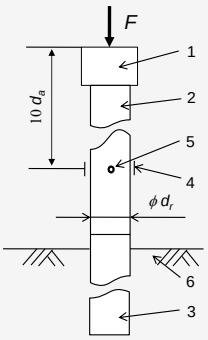
www.equipegroup.com

Hammer Energy Measurement Report

Type of Hammer		SPT HAMMER
Client		SI DRILLING
Test No		EQU1987
Test Depth (m)		8.70
Mass of the hamn	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



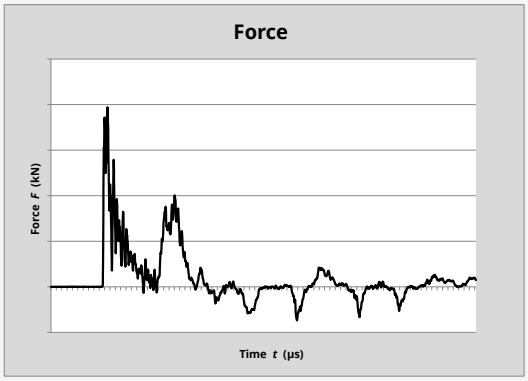
Key

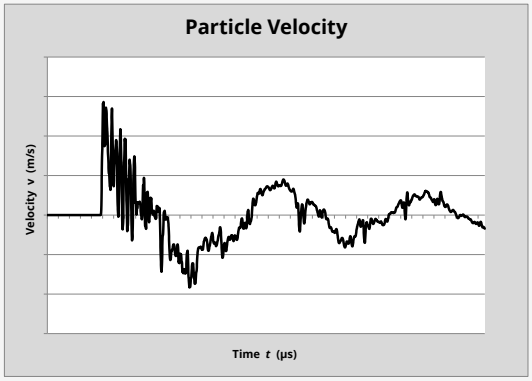
1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

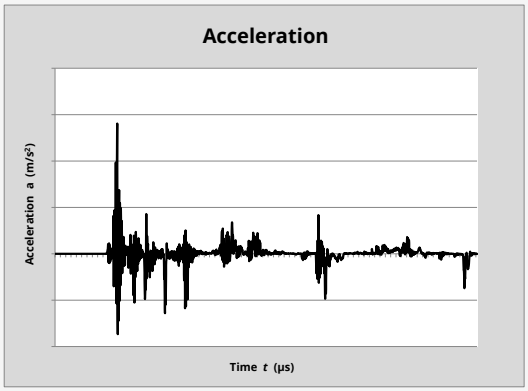
F Force
d_r Diameter of rod

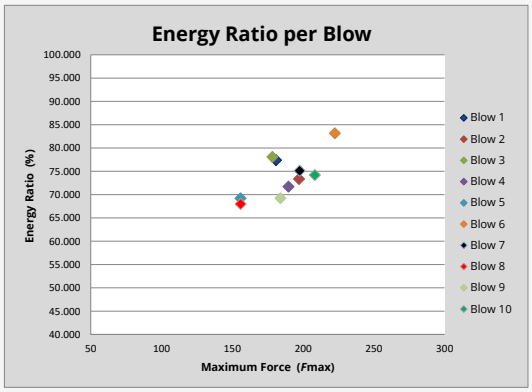
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

DATE OF TEST	VALID UNTIL	HAMMER ID
29/12/2017	29/12/2018	SI08









Observations:
1.

E_{meas} =	**0.348**	kN-m
E_{theor} =	**0.473**	kN-m

Energy Ratio = $\frac{E_{meas}}{E_{theor}}$ (E_r) **73.67%**

Equipe SPT Analyzer Operators: KS

Prepared by:	05/01/2018	**Checked by:**	05/01/2018	**Date:**	05/01/2018

 Equipe Group, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref:	AR1926
Test Date:	07/09/2017
Report Date:	07/09/2017
File Name:	AR1926.spt
Test Operator:	SH

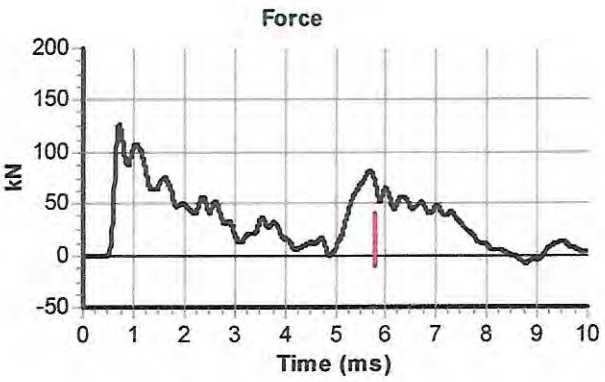
Instrumented Rod Data

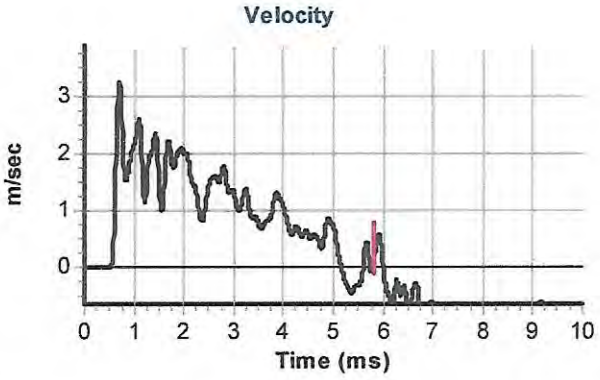
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	7080
Accelerometer No.2:	11609

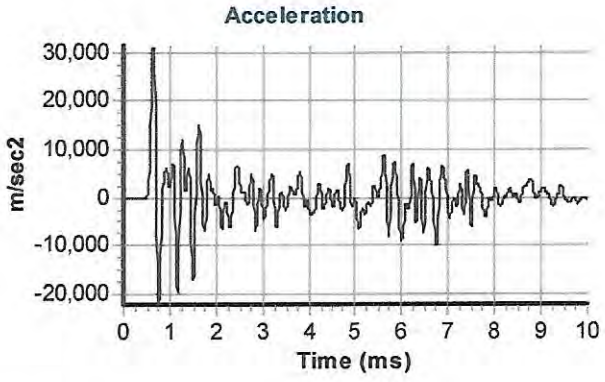
SPT Hammer Information

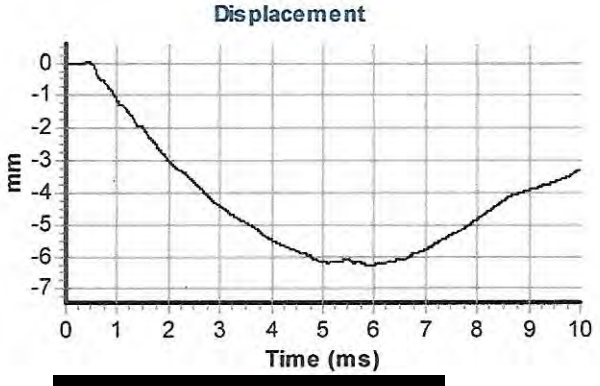
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

Comments / Location









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	351

Energy Ratio E_r (%): **74**

[redacted]

Signed: S. HOWARTH

Title: FITTER

The recommended calibration interval is 12 months

TEST DATE AND CONDITIONS		
Date	02/07/18	
Atmospheric Pressure	1000	mB
Ambient Temperature	21.7	°C
Environics Serial No.	5089	

GAS DATA LTD
Unit 4, Fairfield Court
Seven Stars Estate
Wheler Rd
Coventry
CV3 4LJ
Tel 02476303311 Fax 02476307711

GFM435 Final Inspection & Calibration Check Certificate

Customer	Terraconsult (South) Ltd
Certificate Number	120287
Order Number	319756

Serial Number	11378
Software Version	G435-00.0024/0004

Recalibration DUE Date
02/07/19

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	500	*Accept > 200 cc/min*	Pump Flow @ -200mB	250	*Accept > 200 cc/min*
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
	CH_4		CO_2		O_2	
	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %	Instrument Gas Readings %	True Gas Value %
Sensor	60	60	40	40	20.9	20.9
	Accept ±3.0		*Accept ±3.0*		*Accept ±0.5*	
	5	5	5	5	6	6
	Accept ±0.3		*Accept ±0.3*		*Accept ±0.3*	
Zero Reading 100% N2	0	0	0	0	0	0
	Accept ±0.0		*Accept ±0.0*		*Accept ±0.1*	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings *(ppm)*			
Gas Type	Range *(ppm)*		Zero Reading		Instrument Gas Reading	
H2S	5000	*1500*	0	*Accept ±0.0*	1500	*Accept ±5.0*
CO	2000	*1000*	0	*Accept ±0.0*	1001	*Accept ±5.0*
Hexane	*2.0%*	2.0%	0	*Accept ±0.0*	1.99	*Accept ±10.0*

Cross Gas Effects									
Applied Gas *(ppm)*		Instrument Readings *(ppm)*							
Gas Type	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:	HEX		
H2S	*1500*	1500		0		0			
CO	*1000*	40		1001		0			
Hexane	*2.0%*	0		0		1.99			

Pressure Checks				
Atmospheric Pressure [AP] *(mB)*				
Current Atmospheric Pressure (mB)		Instrument Atmospheric Pressure Reading (mB)		
AP Open Ports		1000	*Accept ±2.0*	
AP Port (Internal)	*+800 mB*	799	*Accept ±5.0*	
	+1200mb	1200	*Accept ±5.0*	

Flow Checks					
Borehole Flow			Differential Pressure		
Applied Reading *(l/h)*	Instrument Reading *(l/h)*		Applied Pressure *(Pa)*	Instrument Reading *(Pa)*	
-30	-30.3	*Accept ±3.0*	-363	-375	*Accept ±50*
-3	-3	*Accept ±1.0*	-16	-15	*Accept ±6.0*
0	0	*Accept ±0.0*	0	0	*Accept ±0.5*
3	3	*Accept ±0.5*	16	16	*Accept ±3.0*
30	30.3	*Accept ±3.0*	384	392	*Accept ±50*
60	60.4	*Accept ±6.0*	1187	1197	*Accept ±130*
90	90.6	*Accept ±9.0*	2380	>>>>>	*Accept ±250*

Temperature Checks		
Calibration Temperature Applied Temperature ^{0}C	Instrument Temperature Reading ^{0}C	
-10	-10	*Accept ±2.0*
0	0	*Accept ±1.0*
30	30	*Accept ±1.0*
60	60	*Accept ±1.0*
100	100	*Accept ±1.0*

Technician:	Date Tested:
Jack Rutland	*03/07/18*

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated. The results displayed on the instrument at each stage are recorded above.

Be sure. Be safe

SERVICE / INSPECTION SHEET

JOB NUMBER: 62536
INSTRUMENT: Phocheck Tiger

SERIAL NUMBER: T-107423
DATE RECEIVED: 02/01/2018

FIRMWARE: V.8.80

Instrument House
91-92 Shrivenham Hundred Business Park
Watchfield
Oxfordshire
SN6 8TY
Fax: 01793 784466
service@shawcity.co.uk

CUSTOMER: TerraConsult Limited

ITEMS RECEIVED	CONDITION	RTN?
Instrument	yes	
Rubber Boot	yes	
Battery Charger	yes	
Charging Cradle	yes	
Operation Manual		
Quick Start Guide		
Spares Kit	yes	
Comms Cable		
Probe FLEXI		
Peli Case	yes	
Tubing		
Regulator		
Software (Memory Stick)		
	SIGNED:	

TESTS	AS REC'D	AFTER REPAIR
Charging Test	Ok	Ok
Battery Test	Ok	Ok
Lamp Test	failed	Ok
Air Flow Test	Ok	Ok
Switch Test	Ok	Ok
Moisture Sensitivity	Ok	Ok
Sensor Test	failed	Ok
Alarm Test	Ok	Ok
PC Comms Test	Ok	Ok
Datalog Test	Ok	Ok
Display Test	Ok	Ok
Physical Inspection	Ok	Ok
PAT Test	Ok	Ok
Firmware Upgrade	Expired	Ok
Software Upgrade (usb)	Ok	Ok
Function Test	Ok	Ok

Charger supplied by customer has a split in the wire.
New charger added to the peli.
Sensor stack has been replaced.
Filter replaced due to contamination.
Sensor seal has been replaced.
Lamp has been removed and cleaned with aluminium oxide.
Firmware has been upgraded to the latest available version.
Instrument has been cleaned, serviced and calibrated.
Operationally tested to manufacturer's standards.

TECHNICIAN: Matt Jordison [redacted] DATE: 11.01.18

Be sure. Be safe

CERTIFICATE OF CALIBRATION
Phocheck Tiger

CALIBRATION CERTIFICATE NO:

ISSUED BY: SHAWCITY LIMITED
DATE: 11.01.18

APPROVED SIGNATORY: [redacted]

NAME: Matt Jordison

CUSTOMER: TerraConsult Limited
INSTRUMENT: Phocheck Tiger
SERIAL NUMBER: T-107423

CALIBRATION METHOD: CM03
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO157807-2	100 ppm	100 ppm
Isobutylene	WO130990-1	1000 ppm	1000 ppm

COMMENTS:
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is ±2 %
The results indicate that the instrument conforms to the applicable parts of the published specification.

Tel: 01793 780622
www.shawcity.co.uk
Instrument House, 91-92 Shrivenham Hundred Business Park
Watchfield, Oxfordshire, SN6 8TY
Fax: 01793 784466
service@shawcity.co.uk

APPENDIX H
Drawings

Site location plan	3765D001-1
Exploratory hole location plan	3765D002-1
Surface water monitoring points	3765D003-1

Site Location Plan

TerraConsult

Address:
Norman Road North, Belvedere, DA17 6JY

Notes:

AGS		Project:	Riverside EfW	Drawing No:
Issue:	DRAFT	Project No:	3765	**3765D001-1**
Scale:	1:25000	Client:	Hitachi Zosen Inova AG	

Exploratory Hole Location Plan

TerraConsult

Legend Key

- Locations By Type - CP
- Locations By Type - CP +RC
- Locations By Type - TP

AGS		Project:	Riverside EfW	Drawing No:
Issue:	DRAFT	Project No:	3765	**3765D002-1**
Scale:	1:1500	Client:	Hitachi Zosen Inova AG	

Surface Water Sample Locations

TerraConsult

Legend Key

US - up stream
DS - down stream
WD - west ditch
SD - south ditch

AGS		Project:	Riverside EfW	Drawing No:
Issue:	DRAFT	Project No:	3765	3765D003-1
Scale:	1:2500	Client:	Hitachi Zosen Inova AG	







TerraConsult

Leaders in
waste management
environmental &
ground engineering
consultancy

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Website: www.terraconsult.co.uk

smas worksafe contractor www.smasltd.com

bsi. ISO 9001 Quality Management

FS 573193

bsi. ISO 14001 Environmental Management

EMS 573194

smas worksafe consultant www.smasltd.com

TerraConsult

Appendix 4 Summary of Soil Geoenvironmental Laboratory Results

RIVERSIDE ENERGY PARK

TABLE SUMMARISING SOIL RESULTS AND HIGHLIGHTING EXCEEDANCES ABOVE HUMAN HEALTH ASSESSMENT CRITERIA

SOM 1%

			Assessment Criteria		Strata	MG	ALV	ALV	ALV	ALV	MG	MG	MG	ALV	MG	MG
						BH01	BH01	BH01	BH02	BH02	BH03	BH03	BH03	BH03	BH04	BH04
Analyte	**Units**	**LOD**	**Commercial**	**Commercial**	**Commercial**	**0.5**	**2.0**	**4.0**	**0.5**	**2**	**0.6**	**1**	**2.4**	**2.8**	**0.3**	**0.46**
Stones BG 2.6/3.0	%	-	-	-	-											
Moisture content at 30 C	%	-	-	-	-											
Arsenic*	mg/kg	1	640	640	640		16	25	8.4	18	37		55	23	31	
Cadmium	mg/kg	0.2	190	190	190		0.2	0.2	0.2	0.2	0.2		1.2	0.2	0.2	
Chromium Trivalent			8600	8600	8600											
Chromium Hexavalent*	mg/kg	4	33	33	33		4	4	4	4	4		4	4	4	
Copper	mg/kg	1	68000	68000	68000		16	13	7.2	15	24		48	27	40	
Lead*	mg/kg	1	2300	2300	2300		110	28	6.8	32	71		980	61	88	
Mercury	mg/kg	0.3	1100	1100	1100		0.3	0.4	0.3	0.4	0.4		0.7	0.6	0.3	
Nickel	mg/kg	1	980	980	980		30	31	9.7	32	27		40	29	21	
Selenium	mg/kg	1	12000	12000	12000		1.1	1.9	1	1	2.1		1.9	1.9	1.4	
Zinc	mg/kg	1	730000	730000	730000		320	66	14	170	110		1100	110	130	
Beryllium			12	12	12											
Boron	mg/kg	0.2	240000	240000	240000		19	34	1.4	75	600		320	300	180	
Vanadium			9000	9000	9000											
Cyanide (Total)	mg/kg	1	-	-	-		1	1	1	1	1		1	1	1	
Organic matter			-	-	-											
Phenol, Total			440	440	440											
Sulphate (Total) as SO4	mg/kg	2.5	-	-	-		2300	1000	27	1200	4400		780	520	4000	
pH	pH Units		-	-	-		8.4	7.7	9.2	8.2	9.3		8.2	8.2	10.3	
>C5 to C6 Aliphatic	mg/kg	0	3200	3200	3200				0.001				0.001	0.001	0.001	
>C6 to C8 Aliphatic	mg/kg	0	7800	7800	7800				0.001				0.001	0.001	0.001	
>C8 to C10 Aliphatic	mg/kg	0	2000	2000	2000				0.001				0.001	0.001	0.001	
>C10 to C12 Aliphatic	mg/kg	1	9700	9700	9700				1				1	1	1	
>C12 to C16 Aliphatic	mg/kg	2	59000	59000	59000				2				5.2	2	7.7	
>C16 to C21 Aliphatic	mg/kg	8	-	-	-				8				17	8	18	
>C21 to C35 Aliphatic	mg/kg	8	-	-	-				8				97	22	100	
>C16 to C35 Aliphatic	mg/kg	16	1600000	1600000	1600000				16					8		
>C35 to C44 Aliphatic	mg/kg	8.4	1600000	1600000	1600000				8.4				32	8.4	70	
Total Aliphatic C5-C35	mg/kg	10	-	-	-				10				120	22	130	
>C5 to C7 Aromatic	mg/kg	0	26000	26000	26000				0.001				0.001	0.001	0.001	
>C7 to C8 Aromatic	mg/kg	0	56000	56000	56000				0.001				0.001	0.001	0.001	
>C8 to C10 Aromatic	mg/kg	0	3500	3500	3500				0.001				0.001	0.001	0.001	
>C10 to C12 Aromatic	mg/kg	1	16000	16000	16000				1				1	1	1	
>C12 to C16 Aromatic	mg/kg	2	36000	36000	36000				2				8.4	2	4	
>C16 to C21 Aromatic	mg/kg	10	28000	28000	28000				10				86	10	29	
>C21 to C35 Aromatic	mg/kg	10	28000	28000	28000				10				340	18	130	
>C35 to C44 Aromatic	mg/kg	8.4	28000	28000	28000				8.4				110	9.7	140	
Total Aromatic C5-C35			-	-	-				0.003				544.403	27.703	303.003	
TPH Ali/Aro			-	-	-				10.003				664.403	49.703	433.003	
EPH (C10-C40)			-	-	-											
Hazard Index - Commercial			-	-	-				0.0013				0.0197	0.0016	0.0111	
Hazard Index - Commercial			-	-	-				0.0013				0.0197	0.0016	0.0111	
Hazard Index - Commercial			-	-	-				0.0013				0.0197	0.0016	0.0111	
Benzene*	ug/kg	1	27000	27000	27000				1				1	1	1	
Ethylbenzene	ug/kg	1	5700000	5700000	5700000				1				1	1	1	
Toluene	ug/kg	1	56000000	56000000	56000000				1				1	1	1	
Xylene			6600	6600	6600											
MTBE	ug/kg	1	#VALUE!	#VALUE!	#VALUE!				1				1	1	1	
naphthalene	mg/kg	0.05	190	190	190				0.05		0.05		0.9	0.05	0.05	
acenaphthylene	mg/kg	0.05	83000	83000	83000				0.05		0.05		0.3	0.05	0.05	
acenaphthene	mg/kg	0.05	84000	84000	84000				0.05		0.05		0.29	0.05	0.05	
fluorene	mg/kg	0.05	63000	63000	63000				0.05		0.05		0.46	0.05	0.05	
phenanthrene	mg/kg	0.05	22000	22000	22000				0.05		0.61		5	0.05	1	
anthracene	mg/kg	0.05	520000	520000	520000				0.05		0.05		0.77	0.05	0.35	
fluoranthene	mg/kg	0.05	23000	23000	23000				0.05		1		7.1	0.3	2.9	
pyrene	mg/kg	0.05	54000	54000	54000				0.05		0.79		5.5	0.26	2.8	
benzo(a)anthracene	mg/kg	0.05	170	170	170				0.05		0.55		4.2	0.26	2.3	
chrysene	mg/kg	0.05	350	350	350				0.05		0.46		3.3	0.2	1.4	
benzo(b)fluoranthene	mg/kg	0.05	44	44	44				0.05		0.56		4.5	0.35	1.8	
benzo(k)fluoranthene	mg/kg	0.05	1200	1200	1200				0.05		0.21		1.6	0.13	0.97	
benzo(a)pyrene*	mg/kg	0.05	35	35	35				0.05		0.73		5.7	0.4	3.1	
indeno(1,2,3-c,d)pyrene	mg/kg	0.05	500	500	500				0.05		0.05		2	0.05	0.89	
dibenzo(ah)anthracene	mg/kg	0.05	3.5	3.5	3.5				0.05		0.05		0.3	0.05	0.05	
benzo(g,h,i)perylene	mg/kg	0.05	3900	3900	3900				0.05		0.05		1.9	0.05	0.81	
Total PAH			-	-	-				0.8		4.91		43.7	1.9	18.2	
Coal Tar (Bap as surrogate)	mg/kg	0.05	15	15	15				0.05		0.73		5.7	0.4	3.1	
PCB (as Aroclors)			-	-	-											
1,2 Dichloroethane			270	270	270											
1,1,1 Trichloroethane (TCA)			660	660	660											
1,1,1,2 Tetrachloroethane			110	110	110											
1,1,2,2 Tetrachloroethane			270	270	270											
Tetrachloroethene (PCE)			19	19	19											
Carbon Tetrachloride			2.9	2.9	2.9											
Trichloroethene (TCE)			1.2	1.2	1.2											
Trichloromethane (Chloroform)			99	99	99											
Vinyl Chloride (Chloroethene)			0.059	0.059	0.059											
Molybdenum			-	-	-											
Fluoride			-	-	-											
Asbestos			-	-	-											

Strata	MG	ALV	MG	ALV	MG	MG	MG	ALV	MG	ALV	MG
	BH04	BH04	BH05	BH05	BH06	BH06	BH06	BH06	BH08	BH08	BH09
Analyte	**0.7**	**1.5**	**0.3**	**1**	**0.5**	**1.5**	**2**	**3**	**0.5**	**1**	**0.25**
Stones BG 2.6/3.0											
Moisture content at 30 C											
Arsenic*	17	18	230	45	27	98	76	31	15	25	7.9
Cadmium	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1	0.8	0.2	0.6
Chromium Trivalent											
Chromium Hexavalent*	4	4	4	4	4	4	4	4	4	4	4
Copper	26	17	63	42	56	53	56	25	64	32	7.1
Lead*	44	19	220	110	100	180	150	100	380	94	44
Mercury	0.3	0.3	0.3	0.7	0.3	0.3	0.3	0.3	0.5	0.3	0.3
Nickel	24	27	24	35	19	18	17	36	18	27	8.1
Selenium	1	1.5	1	1.6	1.9	1	1.8	2.5	1	1.8	1
Zinc	67	52	870	420	140	230	180	3400	250	140	81
Beryllium											
Boron	120	210	1200	390	37	120	270	170	10	26	2
Vanadium											
Cyanide (Total)	1	1	1	1	1	1	1	1	1	1	1
Organic matter											
Phenol, Total											
Sulphate (Total) as SO4	4600	1300	350	1000					900	370	48
pH	8.3	7.9	9.5	8.2	11.6	9.6	9.3	7.7	9	8.3	8.9
>C5 to C6 Aliphatic			0.001	0.001	0.001		0.001		0.001	0.001	0.001
>C6 to C8 Aliphatic			0.001	0.001	0.001		0.001		0.001	0.001	0.001
>C8 to C10 Aliphatic			0.001	0.001	0.001		0.001		0.001	0.001	0.001
>C10 to C12 Aliphatic			1	1	1		2.3		2.4	1	1
>C12 to C16 Aliphatic			12	2	7.5		28		16	2	2
>C16 to C21 Aliphatic			57	8	20		64		32	8	8
>C21 to C35 Aliphatic			130	17	100		170		230	8	10
>C16 to C35 Aliphatic				8						16	8
>C35 to C44 Aliphatic			39	8.4	30		84		280	8.4	83
Total Aliphatic C5-C35			200	17	130		270		280	10	10
>C5 to C7 Aromatic			0.001	0.001	0.001		0.001		0.001	0.001	0.001
>C7 to C8 Aromatic			0.001	0.001	0.001		0.001		0.001	0.001	0.001
>C8 to C10 Aromatic			0.001	0.001	0.001		0.001		0.001	0.001	0.001
>C10 to C12 Aromatic			1	1	1		7.4		2.2	1	1
>C12 to C16 Aromatic			4.2	2	3.8		78		6.8	2	2
>C16 to C21 Aromatic			57	10	29		140		26	10	10
>C21 to C35 Aromatic			160	20	170		180		360	10	41
>C35 to C44 Aromatic			54	8.4	81		150		760	8.4	320
Total Aromatic C5-C35			275.203	20.003	283.803		555.403		1155.003	0.003	361.003
TPH Ali/Aro			475.203	37.003	413.803		825.403		1435.003	10.003	371.003
EPH (C10-C40)											
Hazard Index - Commercial			0.0102	0.0016	0.0104		0.0202		0.0419	0.0013	0.0136
Hazard Index - Commercial			0.0102	0.0016	0.0104		0.0202		0.0419	0.0013	0.0136
Hazard Index - Commercial			0.0102	0.0016	0.0104		0.0202		0.0419	0.0013	0.0136
Benzene*			1	1	1		1		1	1	1
Ethylbenzene			1	1	1		1		1	1	1
Toluene			1	1	1		1		1	1	1
Xylene							1				
MTBE			1	1	1		1		1	1	1
naphthalene		0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05		0.05
acenaphthylene		0.05	0.05	0.05	0.05	0.05	0.27	0.05	0.05		0.05
acenaphthene		0.05	0.05	0.05	0.05	0.24	4.1	0.05	0.05		0.05
fluorene		0.05	0.05	0.05	0.05	0.05	2.7	0.05	0.05		0.05
phenanthrene		0.05	0.85	0.3	1.9	1	11	0.05	1		0.05
anthracene		0.05	0.26	0.05	0.43	0.2	3	0.05	0.2		0.05
fluoranthene		0.05	1.7	0.61	3.2	1.5	6.8	0.05	1.9		0.05
pyrene		0.05	1.5	0.51	2.8	1.3	4.9	0.05	1.7		0.05
benzo(a)anthracene		0.05	1.1	0.43	1.6	0.67	1.5	0.05	1		0.05
chrysene		0.05	1.1	0.5	1.5	0.78	1.2	0.05	0.84		0.05
benzo(b)fluoranthene		0.05	1.2	0.75	1.8	1.2	1.3	0.05	1		0.05
benzo(k)fluoranthene		0.05	0.61	0.29	0.91	0.35	0.54	0.05	0.79		0.05
benzo(a)pyrene*		0.05	2.1	0.7	1.6	0.84	1.1	0.05	1.1		0.05
indeno(1,2,3-c,d)pyrene		0.05	0.54	0.29	0.68	0.45	0.43	0.05	0.68		0.05
dibenzo(ah)anthracene		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.17		0.05
benzo(g,h,i)perylene		0.05	0.54	0.27	0.9	0.66	0.52	0.05	0.88		0.05
Total PAH		0.8	11.4	4.65	17.3	9.16	39.2	0.8	11.3		0.8
Coal Tar (Bap as surrogate)		0.05	2.1	0.7	1.6	0.84	1.1	0.05	1.1		0.05
PCB (as Aroclors)											
1,2 Dichloroethane							1				
1,1,1 Trichloroethane (TCA)							1				
1,1,1,2 Tetrachloroethane							1				
1,1,2,2 Tetrachloroethane							1				
Tetrachloroethene (PCE)							1				
Carbon Tetrachloride											
Trichloroethene (TCE)							1				
Trichloromethane (Chloroform)							1				
Vinyl Chloride (Chloroethene)							1				
Molybdenum											
Fluoride											
Asbestos											

* Category 4 Screening Value @ 6% SOM

RIVERSIDE ENERGY PARK
TABLE SUMMARISING SOIL RESULTS AND HIGHLIGHTING EXCEEDANCES ABOVE HUMAN HEALTH ASSESSMENT CRITERIA

SOM 1%			Assessment Criteria			Strata	ALV	MG	ALV	MG	ALV	MG	ALV	MG	ALV	MG	MG	MG	MG	MG	ALV	MG	ALV	MG	ALV	ALV	ALV
							BH09	BH10	BH10	BH11	BH11	BH12	BH12	BH13	BH13	TP01	TP01	TP01	TP02	TP02	TP02	TP02	TP04	TP04	TP05	TP05	TP06	TP06
Analyte	**Units**	**LOD**	**Commercial**	**Commercial**	**Commercial**		**1**	**0.2**	**0.8**	**0.5**	**1**	**0.4**	**1**	**0.7**	**1.2**	**1.45**	**1.65**	**2.55**	**0.5**	**0.8**	**0.9**	**1.3**	**0.8**	**1.5**	**0.6**	**1.3**	**0.3**	**0.7**
Stones BG 2.6/3.0	%	-	-	-	-																							
Moisture content at 30 C	%	-	-	-	-																							
Arsenic*	mg/kg	1	640	640	640		24	12	22	12	14	21	16	190	18		17	13	40	630	310	37	100	14	60	27	21	16
Cadmium	mg/kg	0.2	190	190	190		0.2	0.8	0.2	0.2	0.2	0.5	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Chromium Trivalent			8600	8600	8600																							
Chromium Hexavalent*	mg/kg	4	33	33	33		4	4	4					4	4		4	4	4	4	4	4	4	4	4	4	4	4
Copper	mg/kg	1	68000	68000	68000		16	11	16	18	18	30	12	93	14		18	39	35	38	37	17	110	15	36	16	37	14
Lead*	mg/kg	1	2300	2300	2300		23	58	50	47	56	730	53	2100	26		40	54	88	130	360	27	300	24	300	29	220	19
Mercury	mg/kg	0.3	1100	1100	1100		0.3	0.3	0.3	0.3	0.4	0.5	0.3	0.5	0.3		0.3	0.3	0.3	0.4	2.3	0.4	0.3	0.3	0.5	0.3	0.4	0.3
Nickel	mg/kg	1	980	980	980		30	8.1	20	13	24	26	24	23	25		26	24	17	14	15	32	45	31	20	31	25	33
Selenium	mg/kg	1	12000	12000	12000		1	1	1.1	1	1	1	1	1.8	1.1		1	1	1	1	1	2	1	2.1	1.4	1	2	2
Zinc	mg/kg	1	730000	730000	730000		83	120	85	73	180	760	95	610	66		85	68	130	230	340	120	2100	92	210	130	290	96
Beryllium			12	12	12																							
Boron	mg/kg	0.2	240000	240000	240000		37	3.9	70	7.5	16	29	49	4700	160		27	34	110	1600	1700	170	1200	150	150	440	5.1	43
Vanadium			9000	9000	9000					34	68	72	84															
Cyanide (Total)	mg/kg	1	-	-	-		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Organic matter			-	-	-																							
Phenol, Total			440	440	440																							
Sulphate (Total) as SO4	mg/kg	2.5	-	-	-		120			280	510	860	380				540	1400	1600	3600	3600	650	3600	400	2200	1400	190	190
pH	pH Units		-	-	-		7.9	8.9	8.2	8.9	8	7.7	8.1	9.2	9		11.2	8.2	10.6	9	9.1	8.3	8.9	8.2	9.4	8.3	8.3	7.6
>C5 to C6 Aliphatic	mg/kg	0	3200	3200	3200					0.001				0.001	0.001			0.001	0.001		0.001		0.001		0.001		0.001	
>C6 to C8 Aliphatic	mg/kg	0	7800	7800	7800					0.001				0.001	0.001			0.001	0.001		0.001		0.001		0.001		0.001	
>C8 to C10 Aliphatic	mg/kg	0	2000	2000	2000					0.001				0.001	0.001			0.001	0.001		0.001		0.001		0.001		0.001	
>C10 to C12 Aliphatic	mg/kg	1	9700	9700	9700					1				1	1			1	1.6		2.3		1		1		1	
>C12 to C16 Aliphatic	mg/kg	2	59000	59000	59000					8.9				310	2			2	9.7		10		2.2		2.7		5.9	
>C16 to C21 Aliphatic	mg/kg	8	-	-	-					27				820	8			8	27		14		36		10		8	
>C21 to C35 Aliphatic	mg/kg	8	-	-	-					280				490	8			13	120		92		200		100		62	
>C16 to C35 Aliphatic	mg/kg	16	1600000	1600000	1600000										16			8									8	
>C35 to C44 Aliphatic	mg/kg	8.4	1600000	1600000	1600000					920				150	8.4			8.4	110		53		86		77		54	
Total Aliphatic C5-C35	mg/kg	10	-	-	-					320				1600	10			13	160		120		240		120		76	
>C5 to C7 Aromatic	mg/kg	0	26000	26000	26000					0.001				0.001	0.001			0.001	0.001		0.001		0.001		0.001		0.001	
>C7 to C8 Aromatic	mg/kg	0	56000	56000	56000					0.001				0.001	0.001			0.001	0.001		0.001		0.001		0.001		0.001	
>C8 to C10 Aromatic	mg/kg	0	3500	3500	3500					0.001				0.001	0.001			0.001	0.001		0.001		0.001		0.001		0.001	
>C10 to C12 Aromatic	mg/kg	1	16000	16000	16000					1				1.7	1			1	10		7.9		4.7		2.3		5.8	
>C12 to C16 Aromatic	mg/kg	2	36000	36000	36000					3.1				32	2			2	22		20		32		8.2		15	
>C16 to C21 Aromatic	mg/kg	10	28000	28000	28000					24				87	10			10	66		42		200		40		43	
>C21 to C35 Aromatic	mg/kg	10	28000	28000	28000					760				120	10			10	260		100		560		310		180	
>C35 to C44 Aromatic	mg/kg	8.4	28000	28000	28000					2700				280	8.4			8.4	350		54		180		290		160	
Total Aromatic C5-C35			-	-	-					3487.103				520.703	0.003			0.003	708.003		223.903		976.703		650.503		403.803	
TPH Ali/Aro			-	-	-					3807.103				2120.703	10.003			13.003	868.003		343.903		1216.703		770.503		479.803	
EPH (C10-C40)			-	-	-																							
Hazard Index - Commercial			-	-	-					0.1254				0.0238	0.0013			0.0013	0.0258		0.0085		0.0349		0.0234		0.0147	
Hazard Index - Commercial			-	-	-					0.1254				0.0238	0.0013			0.0013	0.0258		0.0085		0.0349		0.0234		0.0147	
Hazard Index - Commercial			-	-	-					0.1254				0.0238	0.0013			0.0013	0.0258		0.0085		0.0349		0.0234		0.0147	
Benzene*	ug/kg	1	27000	27000	27000					1	1	1	1	1	1			1	1		1		1		1		1	
Ethylbenzene	ug/kg	1	5700000	5700000	5700000					1	1	1	1	1	1			1	1		1		1		1		1	
Toluene	ug/kg	1	56000000	56000000	56000000					1	1	1	1	1	1			1	1		1		1		1		1	
Xylene			6600	6600	6600					1	1	1	1	1	1								1					
MTBE	ug/kg	1	#VALUE!	#VALUE!	#VALUE!					1	1	1	1	1	1			1	1		1		1		1		1	
naphthalene	mg/kg	0.05	190	190	190					0.1	0.1	0.1	0.1	0.36	0.1	0.05	0.05	0.05	0.05		0.05		0.23		0.05			
acenaphthylene	mg/kg	0.05	83000	83000	83000					0.05	0.05	0.05	0.05	0.05	0.05	0.22	0.05	0.05	0.05		0.05		0.05		0.05			
acenaphthene	mg/kg	0.05	84000	84000	84000					0.05	0.05	0.05	0.05	1.1	0.05	3.1	0.05	0.05	0.05		0.05		0.32		0.05			
fluorene	mg/kg	0.05	63000	63000	63000					0.05	0.05	0.05	0.05	1.6	0.05	1.9	0.05	0.05	0.05		0.05		0.34		0.05			
phenanthrene	mg/kg	0.05	22000	22000	22000					0.05	0.05	0.91	0.05	5.5	0.05	30	0.05	0.16	1.2		1.5		4.4		0.71			
anthracene	mg/kg	0.05	520000	520000	520000					0.05	0.05	0.05	0.05	1.1	0.05	3.4	0.05	0.05	0.37		0.3		1.5		0.28			
fluoranthene	mg/kg	0.05	23000	23000	23000					0.39	0.27	1.5	0.3	6.5	0.05	26	0.05	0.42	2.9		2.3		8.6		1.9			
pyrene	mg/kg	0.05	54000	54000	54000					0.37	0.22	1.2	0.23	5.7	0.05	18	0.05	0.39	3.1		1.9		7.7		1.8			
benzo(a)anthracene	mg/kg	0.05	170	170	170					0.16	0.05	0.48	0.05	3.2	0.05	5.7	0.05	0.23	1.8		1		4.4		1.1			
chrysene	mg/kg	0.05	350	350	350					0.17	0.05	0.57	0.05	2.8	0.05	4.6	0.05	0.19	1.5		0.91		3.8		0.99			
benzo(b)fluoranthene	mg/kg	0.05	44	44	44					0.05	0.05	0.71	0.05	3.7	0.05	3.6	0.05	0.27	2.3		1.2		7		2.6			
benzo(k)fluoranthene	mg/kg	0.05	1200	1200	1200					0.05	0.05	0.29	0.05	1.8	0.05	1	0.05	0.17	0.71		0.66		1.7		0.7			
benzo(a)pyrene*	mg/kg	0.05	35	35	35					0.05	0.05	0.56	0.05	3.1	0.05	1.8	0.05	0.27	1.7		0.99		4.8		1.8			
indeno(1,2,3-c,d)pyrene	mg/kg	0.05	500	500	500					0.05	0.05	0.31	0.05	2.1	0.05	0.5	0.05	0.05	0.83		0.47		2.7		1.7			
dibenzo(ah)anthracene	mg/kg	0.05	3.5	3.5	3.5					0.05	0.05	0.05	0.05	0.36	0.05	0.05	0.05	0.05	0.2		0.12		0.63		0.41			
benzo(g,h,i)perylene	mg/kg	0.05	3900	3900	3900					0.05	0.05	0.34	0.05	2.3	0.05	0.51	0.05	0.05	0.9		0.54		3.1		2			
Total PAH			-	-	-					1.09	0.8	6.85	0.8	41.2	0.8	99.9	0.8	2.1	17.4		12		51.2		16			
Coal Tar (Bap as surrogate)	mg/kg	0.05	15	15	15					0.05	0.05	0.56	0.05	3.1	0.05	1.8	0.05	0.27	1.7		0.99		4.8		1.8			
PCB (as Aroclors)			-	-	-																							
1,2 Dichloroethane			270	270	270					1	1	1	1	1	1								1					
1,1,1 Trichloroethane (TCA)			660	660	660					1	1	1	1	1	1								1					
1,1,1,2 Tetrachloroethane			110	110	110					1	1	1	1	1	1								1					
1,1,2,2 Tetrachloroethane			270	270	270					1	1	1	1	1	1								1					
Tetrachloroethene (PCE)			19	19	19					1	1	1	1	1	1								1					
Carbon Tetrachloride			2.9	2.9	2.9																							
Trichloroethene (TCE)			1.2	1.2	1.2					1	1	1	1	1	1								1					
Trichloromethane (Chloroform)			99	99	99					1	1	1	1	1	1								1					
Vinyl Chloride (Chloroethene)			0.059	0.059	0.059					1	1	1	1	1	1								1					
Molybdenum			-	-	-																							
Fluoride			-	-	-																							
Asbestos			-	-	-																							

* Category 4 Screening Value @ 6% SOM

Appendix 5 Summary of Water Geoenvironmental Laboratory Results

RIVERSIDE ENERGY PARK
TABLE SUMMARISING WATER RESULTS AND HIGHLIGHTING EXCEEDANCES ABOVE WATER ASSESSMENT CRITERIA

Analyte	Units	Assessment Criteria	BH02	BH02	BH02	BH03	BH03	BH03	BH05	BH05	BH05	BH08	BH08	BH08	BH12	BH12	BH12	BH13	BH13	BH13	DS	DS	S DITCH	S DITCH	S DITCH	US	US
		Fresh Water	11/05/2018	07/06/2018	12/07/2018	11/05/2018	07/06/2018	12/07/2018	11/05/2018	07/06/2018	12/07/2018	11/05/2018	07/06/2018	12/07/2018	11/05/2018	07/06/2018	12/07/2018	11/05/2018	07/06/2018	12/07/2018	11/05/2018	18/06/2018	11/05/2018	18/06/2018	12/07/2018	11/05/2018	18/06/2018
Alkalinity as $CaCO_3$	mg/l	-	480	230	240	2400	2300	2000	460	530	660	500	540	550	150	710	830	2300	2500	3500	180	150	620	120	560	200	160
Arsenic	µg/l	20	0.74	0.82	0.75	33.4	34	9.41	1.04	4.67	5.86	0.49	1.25	0.66	0.5	1.13	2.34	2.22	4.16	15.8	1.14	1.61	5.25	3.57	4.16	1.47	1.86
Boron	µg/l	-			8500			23000			6400			12000			19000			89000		860		1100	1200		690
Cadmium	µg/l	0.08	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02
Chromuim (Total)	µg/l	-	0.2	0.2	1.1	1.3	1.1	1.9	0.6	0.5	4	0.5	0.5	3.6	0.3	0.8	3.9	0.3	0.5	5.1	0.3	0.4	0.5	0.5	1.1	0.5	0.2
Chromium Trivalent	µg/l	4.7																									
Chromium Hexavalant	µg/l	3.4																									
Copper	µg/l	1	2.3	3	3.3	3.3	1.3	0.5	0.6	0.5	1.2	1.5	0.5	0.5	1.5	0.6	0.5	2.6	1.3	1	3.7	2.4	3.7	3.4	2.1	5.1	2.9
Iron	µg/l	1																									
Lead	µg/l	1.2	0.2	0.2	0.4	0.3	0.7	0.2	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	0.4	0.5	0.5	0.6	1.2	0.2	2.4	1	1.9	0.8
Mercury	µg/l	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Manganese	µg/l	12.3																									
Nickel	µg/l	4	2.8	1.7	2.2	4.1	4.4	3.4	1.1	0.5	3	0.5	0.5	2.1	0.5	0.5	2	3.3	4.1	24	1.3	1.3	3.3	2.6	3.8	1.9	1.6
Selenium	µg/l	-	2.9	2.4	1.6	28	17	24	40	29	30	34	25	26	35	21	22	34	27	33	29	22	5.7	3.2	6	21	19
Zinc	µg/l	10.9	7.2	4.3	7.3	5.1	3.6	3.5	0.8	0.7	2.3	3	0.5	2	3	1.8	3.7	7	5.3	12	3.8	2.6	16	8.1	6.5	9.3	3
Ammoniacal Nitrogen as NH_4	mg/l	-	1500	600	170	24000	23000	16000	16000	16000	17000	17000	16000	17000	21000	18000	18000	25000	24000	9400	180	24	250	150	410	33	67
Ammoniacal Nitrogen as NH_3	mg/l	-																									
Chloride	µg/l	-	80	120	75	3200	3200	2200	5500	820	5000	4900	5400	4100	4800	3900	2800	3700	4500	1700	3600	4400	400	490	730	2400	3700
Chlorine	µg/l	2																									
Cyanide	µg/l	1			10			10			10			10			10			10		10		10	10		10
Nitrate as NO_3	mg/l	-	2.3	2.14	2.67	0.32	0.56	0.29	0.04	0.63	0.33	0.05	0.33	0.17	0.02	0.3	0.22	0.26	0.79	0.11	4.36	5.39	0.07	0.14	0.23	5.55	6.28
Nitrite as NO_2	mg/l	-																									
Phenol	µg/l	7.7	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Pentachlorophenol	µg/l	0.4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05	0.05
PCBs	µg/l	-																									
Sodium	µg/l	-	76	85	56	1700	1700	1400	2500	3100	2500	2400	2700	2300	2400	2100	1600	2400	2200	1900	2000	2500	220	430	380	1500	2200
Sulphate	mg/l	-	125000	213000	200000	209000	294000	599000	760000	882000	980000	695000	763000	821000	460000	495000	480000	181000	64400	43800	628000	872000	30900	99600	111000	354000	738000
pH	pH Units	-	7.2	7.3	7.5	6.9	7	6.9	7.1	7.1	7.4	7	7	7	6.8	6.9	7	6.9	6.9	7.3	7.8	8	7.7	7.7	7.6	7.8	8
C10-13 Chloroalkanes	µg/l	-																									
Dichloromethane	µg/l	-																									
1,2 Dichloroethane	µg/l	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Trichloroethene (PCE)	µg/l	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,1,1 Trichloroethane	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,1,2 Trichloroethane	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Trichloromethane (Chloroform)	µg/l	2.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,2,4 Trichlorobenzene	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tetrachloroethene	µg/l	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tetrachloromethane	µg/l	12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,1,1,2 Tetrachloroethane	µg/l	140	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Vinyl Chloride (Chloroethene)	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,2,4 Trichlorobenzene (TCB)	µg/l	0.4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C5 to C6 Aliphatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C6 to C8 Aliphatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C8 to C10 Aliphatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C10 to C12 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C12 to C16 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C16 to C21 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C21 to C35 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C35 to C44 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Aliphatic C5-35	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C5 to C7 Aromatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C7 to C8 Aromatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C8 to C10 Aromatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C10 to C12 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C12 to C16 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C16 to C21 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C21 TO C35 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C35 to C44 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Aromatic C5-C35	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
TPH Ali/Aro	µg/l	-																									
Benzene	µg/l	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ethylbenzene	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Toluene	µg/l	74	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Xylene	µg/l	30																									
MTBE	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
naphthalene	µg/l	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
acenaphthylene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
acenaphthene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
fluorene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
phenanthrene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
anthracene	µg/l	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
fluoranthene	µg/l	0.0063	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
pyrene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(a)anthracene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
chrysene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(b)fluoranthene	µg/l	0.017	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(k)fluoranthene	µg/l	0.017	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(a)pyrene	µg/l	0.0017	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(g,h,i)perylene	µg/l	0.0082	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
dibenzo(ah)anthracene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
indeno(1,2,3-c,d)pyrene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total PAH	µg/l	-	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16

RIVERSIDE ENERGY PARK
TABLE SUMMARISING WATER RESULTS AND HIGHLIGHTING EXCEEDANCES ABOVE WATER ASSESSMENT CRITERIA

Analyte	Units	Assessment Criteria Fresh Water	W DITCH 11/05/2018	W DITCH 18/06/2018	W DITCH 12/07/2018
Alkalinity as $CaCO_3$	mg/l	-	640	330	780
Arsenic	µg/l	20	5.7	9.1	8.36
Boron	µg/l	-		3200	6000
Cadmium	µg/l	0.08	0.02	0.02	0.02
Chromuim (Total)	µg/l	-	0.2	0.3	1.4
Chromium Trivalent	µg/l	4.7			
Chromium Hexavalant	µg/l	3.4			
Copper	µg/l	1	0.9	4.1	0.6
Iron	µg/l	1			
Lead	µg/l	1.2	0.2	0.5	0.3
Mercury	µg/l	0.07	0.05	0.05	0.05
Manganese	µg/l	12.3			
Nickel	µg/l	4	1.4	1.5	1.6
Selenium	µg/l	-	3.1	1.4	2
Zinc	µg/l	10.9	7.5	3.2	4.8
Ammoniacal Nitrogen as NH_4	mg/l	-	1800	690	510
Ammoniacal Nitrogen as NH_3	mg/l	-			
Chloride	µg/l	-	74	48	68
Chlorine	µg/l	2			
Cyanide	µg/l	1		10	10
Nitrate as NO_3	mg/l	-	0.05	0.16	0.16
Nitrite as NO_2	mg/l	-			
Phenol	µg/l	7.7	0.05	0.05	0.05
Pentachlorophenol	µg/l	0.4	0.05	0.05	0.05
PCBs	µg/l	-			
Sodium	µg/l	-	68	65	72
Sulphate	mg/l	-	27400	35200	3440
pH	pH Units	-	7.2	7.8	7.5
C10-13 Chloroalkanes	µg/l	-			
Dichloromethane	µg/l	-			
1,2 Dichloroethane	µg/l	10	1	1	1
Trichloroethene (PCE)	µg/l	10	1	1	1
1,1,1 Trichloroethane	µg/l	-	1	1	1
1,1,2 Trichloroethane	µg/l	-	1	1	1
Trichloromethane (Chloroform)	µg/l	2.5	1	1	1
1,2,4 Trichlorobenzene	µg/l	-	1	1	1
Tetrachloroethene	µg/l	10	1	1	1
Tetrachloromethane	µg/l	12	1	1	1
1,1,1,2 Tetrachloroethane	µg/l	140	1	1	1
Vinyl Chloride (Chloroethene)	µg/l	-	1	1	1
1,2,4 Trichlorobenzene (TCB)	µg/l	0.4	1	1	1
>C5 to C6 Aliphatic	µg/l	-	1	1	1
>C6 to C8 Aliphatic	µg/l	-	1	1	1
>C8 to C10 Aliphatic	µg/l	-	1	1	1
>C10 to C12 Aliphatic	µg/l	-	10	10	10
>C12 to C16 Aliphatic	µg/l	-	10	10	10
>C16 to C21 Aliphatic	µg/l	-	10	10	10
>C21 to C35 Aliphatic	µg/l	-	10	10	10
>C35 to C44 Aliphatic	µg/l	-	10	10	10
Total Aliphatic C5-35	µg/l	-	10	10	10
>C5 to C7 Aromatic	µg/l	-	1	1	1
>C7 to C8 Aromatic	µg/l	-	1	1	1
>C8 to C10 Aromatic	µg/l	-	1	1	1
>C10 to C12 Aromatic	µg/l	-	10	10	10
>C12 to C16 Aromatic	µg/l	-	10	10	10
>C16 to C21 Aromatic	µg/l	-	10	10	10
>C21 TO C35 Aromatic	µg/l	-	10	10	10
>C35 to C44 Aromatic	µg/l	-	10	10	10
Total Aromatic C5-C35	µg/l	-	10	10	10
TPH Ali/Aro	µg/l	-			
Benzene	µg/l	10	1	1	1
Ethylbenzene	µg/l	-	1	1	1
Toluene	µg/l	74	1	1	1
Xylene	µg/l	30			
MTBE	µg/l	-	10	10	10
naphthalene	µg/l	2	1	1	1
acenaphthylene	µg/l	-	0.01	0.01	0.01
acenaphthene	µg/l	-	0.01	0.01	0.01
fluorene	µg/l	-	0.01	0.01	0.01
phenanthrene	µg/l	-	0.01	0.01	0.01
anthracene	µg/l	0.1	0.01	0.01	0.01
fluoranthene	µg/l	0.0063	0.01	0.01	0.01
pyrene	µg/l	-	0.01	0.01	0.01
benzo(a)anthracene	µg/l	-	0.01	0.01	0.01
chrysene	µg/l	-	0.01	0.01	0.01
benzo(b)fluoranthene	µg/l	0.017	0.01	0.01	0.01
benzo(k)fluoranthene	µg/l	0.017	0.01	0.01	0.01
benzo(a)pyrene	µg/l	0.0017	0.01	0.01	0.01
benzo(g,h,i)perylene	µg/l	0.0082	0.01	0.01	0.01
dibenzo(ah)anthracene	µg/l	-	0.01	0.01	0.01
indeno(1,2,3-c,d)pyrene	µg/l	-	0.01	0.01	0.01
Total PAH	µg/l	-	0.16	0.16	0.16

RIVERSIDE ENERGY PARK
TABLE SUMMARISING WATER RESULTS AND HIGHLIGHTING EXCEEDANCES ABOVE WATER ASSESSMENT CRITERIA

Analyte	Units	Assessment Criteria Saltwater	BH02 11/05/2018	BH02 07/06/2018	BH02 12/07/2018	BH03 11/05/2018	BH03 07/06/2018	BH03 12/07/2018	BH05 11/05/2018	BH05 07/06/2018	BH05 12/07/2018	BH08 11/05/2018	BH08 07/06/2018	BH08 12/07/2018	BH12 11/05/2018	BH12 07/06/2018	BH12 12/07/2018	BH13 11/05/2018	BH13 07/06/2018	BH13 12/07/2018	DS 11/05/2018	DS 18/06/2018	S DITCH 11/05/2018	S DITCH 18/06/2018	S DITCH 12/07/2018	US 11/05/2018
Alkalinity as $CaCO_3$	mg/l	-	480	230	240	2400	2300	2000	460	530	660	500	540	550	150	710	830	2300	2500	3500	180	150	620	120	560	200
Arsenic	µg/l	25	0.74	0.82	0.75	33.4	34	9.41	1.04	4.67	5.86	0.49	1.25	0.66	0.5	1.13	2.34	2.22	4.16	15.8	1.14	1.61	5.25	3.57	4.16	1.47
Boron	µg/l	-			8500			23000			6400			12000			19000			89000		860		1100	1200	
Cadmium	µg/l	0.2	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02
Chromuim (Total)	µg/l	-	0.2	0.2	1.1	1.3	1.1	1.9	0.6	0.5	4	0.5	0.5	3.6	0.3	0.8	3.9	0.3	0.5	5.1	0.3	0.4	0.5	0.5	1.1	0.5
Chromium Trivalent	µg/l	-																								
Chromium Hexavalant	µg/l	0.6																								
Copper	µg/l	3.76	2.3	3	3.3	3.3	1.3	0.5	0.6	0.5	1.2	1.5	0.5	0.5	1.5	0.6	0.5	2.6	1.3	1	3.7	2.4	3.7	3.4	2.1	5.1
Iron	µg/l	1																								
Lead	µg/l	1.3	0.2	0.2	0.4	0.3	0.7	0.2	0.2	0.4	0.2	0.2	0.4	0.2	0.2	0.4	0.2	0.4	0.5	0.5	0.6	1.2	0.2	2.4	1	1.9
Mercury	µg/l	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Manganese	µg/l	-																								
Nickel	µg/l	8.6	2.8	1.7	2.2	4.1	4.4	3.4	1.1	0.5	3	0.5	0.5	2.1	0.5	0.5	2	3.3	4.1	24	1.3	1.3	3.3	2.6	3.8	1.9
Selenium	µg/l	-	2.9	2.4	1.6	28	17	24	40	29	30	34	25	26	35	21	22	34	27	33	29	22	5.7	3.2	6	21
Zinc	µg/l	68	7.2	4.3	7.3	5.1	3.6	3.5	0.8	0.7	2.3	3	0.5	2	3	1.8	3.7	7	5.3	12	3.8	2.6	16	8.1	6.5	9.3
Ammoniacal Nitrogen as NH_4	mg/l	-	1500	600	170	24000	23000	16000	16000	16000	17000	17000	16000	17000	21000	18000	18000	25000	24000	9400	180	24	250	150	410	33
Ammoniacal Nitrogen as NH_3	mg/l	21																								
Chloride	µg/l	-	80	120	75	3200	3200	2200	5500	820	5000	4900	5400	4100	4800	3900	2800	3700	4500	1700	3600	4400	400	490	730	2400
Chlorine	µg/l	10																								
Cyanide	µg/l	1			10			10			10			10			10			10		10		10	10	
Nitrate as NO_3	mg/l	-	2.3	2.14	2.67	0.32	0.56	0.29	0.04	0.63	0.33	0.05	0.33	0.17	0.02	0.3	0.22	0.26	0.79	0.11	4.36	5.39	0.07	0.14	0.23	5.55
Nitrite as NO_2	mg/l	-																								
Phenol	µg/l	7.7	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Pentachlorophenol	µg/l	0.4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.09	0.05	0.05	0.05	0.05	0.05	0.05
PCBs	µg/l	-																								
Sodium	µg/l	-	76	85	56	1700	1700	1400	2500	3100	2500	2400	2700	2300	2400	2100	1600	2400	2200	1900	2000	2500	220	430	380	1500
Sulphate	mg/l	-	125000	213000	200000	209000	294000	599000	760000	882000	980000	695000	763000	821000	460000	495000	480000	181000	64400	43800	628000	872000	30900	99600	111000	354000
pH	pH Units	-	7.2	7.3	7.5	6.9	7	6.9	7.1	7.1	7.4	7	7	7	6.8	6.9	7	6.9	6.9	7.3	7.8	8	7.7	7.7	7.6	7.8
C10-13 Chloroalkanes	µg/l	-																								
Dichloromethane	µg/l	-																								
1,2 Dichloroethane	µg/l	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Trichloroethene (PCE)	µg/l	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,1,1 Trichloroethane	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,1,2 Trichloroethane	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Trichloromethane (Chloroform)	µg/l	2.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,2,4 Trichlorobenzene	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tetrachloroethene	µg/l	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tetrachloromethane	µg/l	12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,1,1,2 Tetrachloroethane	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Vinyl Chloride (Chloroethene)	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1,2,4 Trichlorobenzene (TCB)	µg/l	0.4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C5 to C6 Aliphatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C6 to C8 Aliphatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C8 to C10 Aliphatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C10 to C12 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C12 to C16 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C16 to C21 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C21 to C35 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C35 to C44 Aliphatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Aliphatic C5-35	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C5 to C7 Aromatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C7 to C8 Aromatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C8 to C10 Aromatic	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
>C10 to C12 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C12 to C16 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C16 to C21 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C21 TO C35 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
>C35 to C44 Aromatic	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Aromatic C5-C35	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
TPH Ali/Aro	µg/l	-																								
Benzene	µg/l	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ethylbenzene	µg/l	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Toluene	µg/l	74	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Xylene	µg/l	30																								
MTBE	µg/l	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
naphthalene	µg/l	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
acenaphthylene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
acenaphthene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
fluorene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
phenanthrene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
anthracene	µg/l	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
fluoranthene	µg/l	0.0063	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
pyrene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(a)anthracene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
chrysene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(b)fluoranthene	µg/l	0.017	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(k)fluoranthene	µg/l	0.017	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(a)pyrene	µg/l	0.00017	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
benzo(g,h,i)perylene	µg/l	0.00082	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
dibenzo(ah)anthracene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
indeno(1,2,3-c,d)pyrene	µg/l	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total PAH	µg/l	-	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16

RIVERSIDE ENERGY PARK
TABLE SUMMARISING WATER RESULTS AND HIGHLIGHTING EXCEEDANCES ABOVE WATER ASSESSMENT CRITERIA

Analyte	Units	Assessment Criteria Saltwater	US 18/06/2018	W DITCH 11/05/2018	W DITCH 18/06/2018	W DITCH 12/07/2018
Alkalinity as $CaCO_3$	mg/l	-	160	640	330	780
Arsenic	µg/l	25	1.86	5.7	9.1	8.36
Boron	µg/l	-	690		3200	6000
Cadmium	µg/l	0.2	0.02	0.02	0.02	0.02
Chromuim (Total)	µg/l	-	0.2	0.2	0.3	1.4
Chromium Trivalent	µg/l	-				
Chromium Hexavalant	µg/l	0.6				
Copper	µg/l	3.76	2.9	0.9	4.1	0.6
Iron	µg/l	1				
Lead	µg/l	1.3	0.8	0.2	0.5	0.3
Mercury	µg/l	0.07	0.05	0.05	0.05	0.05
Manganese	µg/l	-				
Nickel	µg/l	8.6	1.6	1.4	1.5	1.6
Selenium	µg/l	-	19	3.1	1.4	2
Zinc	µg/l	68	3	7.5	3.2	4.8
Ammoniacal Nitrogen as NH_4	mg/l	-	67	1800	690	510
Ammoniacal Nitrogen as NH_3	mg/l	21				
Chloride	µg/l	-	3700	74	48	68
Chlorine	µg/l	10				
Cyanide	µg/l	1	10		10	10
Nitrate as NO_3	mg/l	-	6.28	0.05	0.16	0.16
Nitrite as NO_2	mg/l	-				
Phenol	µg/l	7.7	0.05	0.05	0.05	0.05
Pentachlorophenol	µg/l	0.4	0.05	0.05	0.05	0.05
PCBs	µg/l	-				
Sodium	µg/l	-	2200	68	65	72
Sulphate	mg/l	-	738000	27400	35200	3440
pH	pH Units	-	8	7.2	7.8	7.5
C10-13 Chloroalkanes	µg/l	-				
Dichloromethane	µg/l	-				
1,2 Dichloroethane	µg/l	10	1	1	1	1
Trichloroethene (PCE)	µg/l	10	1	1	1	1
1,1,1 Trichloroethane	µg/l	-	1	1	1	1
1,1,2 Trichloroethane	µg/l	-	1	1	1	1
Trichloromethane (Chloroform)	µg/l	2.5	1	1	1	1
1,2,4 Trichlorobenzene	µg/l	-	1	1	1	1
Tetrachloroethene	µg/l	10	1	1	1	1
Tetrachloromethane	µg/l	12	1	1	1	1
1,1,1,2 Tetrachloroethane	µg/l	-	1	1	1	1
Vinyl Chloride (Chloroethene)	µg/l	-	1	1	1	1
1,2,4 Trichlorobenzene (TCB)	µg/l	0.4	1	1	1	1
>C5 to C6 Aliphatic	µg/l	-	1	1	1	1
>C6 to C8 Aliphatic	µg/l	-	1	1	1	1
>C8 to C10 Aliphatic	µg/l	-	1	1	1	1
>C10 to C12 Aliphatic	µg/l	-	10	10	10	10
>C12 to C16 Aliphatic	µg/l	-	10	10	10	10
>C16 to C21 Aliphatic	µg/l	-	10	10	10	10
>C21 to C35 Aliphatic	µg/l	-	10	10	10	10
>C35 to C44 Aliphatic	µg/l	-	10	10	10	10
Total Aliphatic C5-35	µg/l	-	10	10	10	10
>C5 to C7 Aromatic	µg/l	-	1	1	1	1
>C7 to C8 Aromatic	µg/l	-	1	1	1	1
>C8 to C10 Aromatic	µg/l	-	1	1	1	1
>C10 to C12 Aromatic	µg/l	-	10	10	10	10
>C12 to C16 Aromatic	µg/l	-	10	10	10	10
>C16 to C21 Aromatic	µg/l	-	10	10	10	10
>C21 TO C35 Aromatic	µg/l	-	10	10	10	10
>C35 to C44 Aromatic	µg/l	-	10	10	10	10
Total Aromatic C5-C35	µg/l	-	10	10	10	10
TPH Ali/Aro	µg/l	-				
Benzene	µg/l	8	1	1	1	1
Ethylbenzene	µg/l	-	1	1	1	1
Toluene	µg/l	74	1	1	1	1
Xylene	µg/l	30				
MTBE	µg/l	-	10	10	10	10
naphthalene	µg/l	2	1	1	1	1
acenaphthylene	µg/l	-	0.01	0.01	0.01	0.01
acenaphthene	µg/l	-	0.01	0.01	0.01	0.01
fluorene	µg/l	-	0.01	0.01	0.01	0.01
phenanthrene	µg/l	-	0.01	0.01	0.01	0.01
anthracene	µg/l	0.1	0.01	0.01	0.01	0.01
fluoranthene	µg/l	0.0063	0.01	0.01	0.01	0.01
pyrene	µg/l	-	0.01	0.01	0.01	0.01
benzo(a)anthracene	µg/l	-	0.01	0.01	0.01	0.01
chrysene	µg/l	-	0.01	0.01	0.01	0.01
benzo(b)fluoranthene	µg/l	0.017	0.01	0.01	0.01	0.01
benzo(k)fluoranthene	µg/l	0.017	0.01	0.01	0.01	0.01
benzo(a)pyrene	µg/l	0.00017	0.01	0.01	0.01	0.01
benzo(g,h,i)perylene	µg/l	0.00082	0.01	0.01	0.01	0.01
dibenzo(ah)anthracene	µg/l	-	0.01	0.01	0.01	0.01
indeno(1,2,3-c,d)pyrene	µg/l	-	0.01	0.01	0.01	0.01
Total PAH	µg/l	-	0.16	0.16	0.16	0.16

Appendix 6 M-BAT Bioavailability Assessment Output Sheets

Pb Screening Tool 1.0

Back

Calculate

Clear Data

INPUT DATA						RESULTS (Pb)			
ID	Location	Waterbody	Date	Measured Pb Concentration (dissolved) (µg l^{-1})	DOC	Site Specific PNEC Dissolved Pb (µg l^{-1})	BioF	Available Pb (µg l^{-1})	Risk Characterisation Ratio
1	BH02	GW		0.20	9.71	11.65	0.10	0.02	0.02
2	BH03	GW		0.30	**54.00**	24.00	0.05	0.02	0.01
3	BH05	GW		0.20	7.69	9.23	0.13	0.03	0.02
4	BH08	GW		0.20	10.70	12.84	0.09	0.02	0.02
5	BH12	GW		0.20	11.30	13.56	0.09	0.02	0.01
6	BH13	GW		0.40	**46.80**	24.00	0.05	0.02	0.02
7	W DITCH	SW (Dyke)		0.20	16.40	19.68	0.06	0.01	0.01
8	S DITCH	SW (Dyke)		0.20	**21.50**	24.00	0.05	0.01	0.01
9	US	RIVER THAMES		1.90	4.71	5.65	0.21	0.40	0.34
10	DS	RIVER THAMES		0.60	3.53	4.24	0.28	0.17	0.14
11	BH02	GW		0.20	6.16	7.39	0.16	0.03	0.03
12	BH03	GW		0.70	**44.60**	24.00	0.05	0.04	0.03
13	BH05	GW		0.40	6.42	7.70	0.16	0.06	0.05
14	BH08	GW		0.40	7.33	8.80	0.14	0.05	0.05
15	BH12	GW		0.40	10.40	12.48	0.10	0.04	0.03
16	BH13	GW		0.50	**72.70**	24.00	0.05	0.03	0.02
17	W DITCH	SW (Dyke)		0.50	17.70	21.24	0.06	0.03	0.02
18	S DITCH	SW (Dyke)		2.40	13.90	16.68	0.07	0.17	0.14
19	US	RIVER THAMES		0.80	6.84	8.21	0.15	0.12	0.10
20	DS	RIVER THAMES		1.20	6.06	7.27	0.17	0.20	0.17
21	BH02	GW		0.40	4.08	4.90	0.25	0.10	0.08
22	BH03	GW		0.20	**73.6**	24.00	0.05	0.01	0.01
23	BH05	GW		0.20	7.13	8.56	0.14	0.03	0.02
24	BH08	GW		0.20	10.2	12.24	0.10	0.02	0.02
25	BH12	GW		0.20	11.5	13.80	0.09	0.02	0.01
26	BH13	GW		0.5	**178**	24.00	0.05	0.03	0.02
27	W DITCH	SW (Dyke)		0.3	**23.1**	24.00	0.05	0.02	0.01
28	S DITCH	SW (Dyke)		1.0	16.6	19.92	0.06	0.06	0.05

Metal Bioavailability Assessment Tool (M-BAT)

Back

Calculate

Clear Data

INPUT DATA											RESULTS (Copper)				RESULTS (Zinc)				RESULTS (Mn)				RESULTS (Ni)			
ID	Location	Waterbody	Date	Measured Cu Concentration (dissolved) (µg l^{-1})	Measured Zn Concentration (dissolved) (µg l^{-1})	Measured Mn Concentration (dissolved) (µg l^{-1})	Measured Ni Concentration (dissolved) (µg l^{-1})	pH	DOC	Ca	Site-specific PNEC Dissolved Copper (µg l^{-1})	BioF	Bioavailable Copper Concentration (µg l^{-1})	Risk Characterisation Ratio	Site-specific PNEC Dissolved Zinc (µg l^{-1})	BioF	Bioavailable Zinc Concentration (µg l^{-1})	Risk Characterisation Ratio	Site-specific PNEC Dissolved Manganese (µg l^{-1})	BioF	Bioavailable Manganese Concentration (µg l^{-1})	Risk Characterisation Ratio	Site-specific PNEC Dissolved Nickel (µg l^{-1})	BioF	Bioavailable Nickel Concentration (µg l^{-1})	Risk Characterisation Ratio
1	BH02	GW	10/05/2018	2.3	7.2		2.8	7.2	9.71	98	45.22	0.02	0.05	0.05	36.20	0.30	2.17	0.20	1033.09	0.12			26.06	0.15	0.43	0.11
2	BH03	GW	11/05/2018	3.3	5.1		4.1	6.9	54	430	43.08	0.02	0.08	0.08	47.63	0.23	1.17	0.11	1846.56	0.07			43.67	0.09	0.38	0.09
3	BH05	GW	11/05/2018	0.6	0.8		1.1	7.1	7.69	240	34.95	0.03	0.02	0.02	30.37	0.36	0.29	0.03	1253.75	0.10			24.03	0.17	0.18	0.05
4	BH08	GW	10/05/2018	1.5	3		0.5	7	10.7	230	44.85	0.02	0.03	0.03	34.32	0.32	0.95	0.09	1521.55	0.08			29.45	0.14	0.07	0.02
5	BH12	GW	10/05/2018	1.5	3		0.5	6.8	11.3	420	37.85	0.03	0.04	0.04	32.12	0.34	1.02	0.09	2240.98	0.05			31.99	0.13	0.06	0.02
6	BH13	GW	10/05/2018	2.6	7		3.3	6.9	46.8	470	43.08	0.02	0.06	0.06	47.63	0.23	1.60	0.15	1846.56	0.07			43.67	0.09	0.30	0.08
7	W DITCH	SW (Dyke)	11/05/2018	0.9	7.5		1.4	7.2	16.4	100	60.74	0.02	0.01	0.01	52.35	0.21	1.56	0.14	1033.09	0.12			36.13	0.11	0.15	0.04
8	S DITCH	SW (Dyke)	11/05/2018	3.7	16		3.3	7.7	21.5	110	42.60	0.02	0.09	0.09	77.78	0.14	2.24	0.21	392.43	0.31			34.93	0.11	0.38	0.09
9	US	RIVER THAMES	11/05/2018	5.1	9.3		1.9	7.8	4.71	120	17.58	0.06	0.29	0.29	27.66	0.39	3.66	0.34	323.36	0.38			12.42	0.32	0.61	0.15
10	DS	RIVER THAMES	11/05/2018	3.7	3.8		1.3	7.8	3.53	140	12.40	0.08	0.30	0.30	24.39	0.45	1.70	0.16	323.36	0.38			10.83	0.37	0.48	0.12
11	BH02	GW	07/06/2018	3	4.3		1.7	7.3	6.16	150	28.67	0.03	0.10	0.10	28.98	0.38	1.62	0.15	851.26	0.14			19.69	0.20	0.35	0.09
12	BH03	GW	07/06/2018	1.3	3.6		4.4	7	44.6	450	50.98	0.02	0.03	0.03	51.10	0.21	0.77	0.07	1521.55	0.08			43.12	0.09	0.41	0.10
13	BH05	GW	07/06/2018	0.5	0.7		0.5	7.1	6.42	270	28.90	0.03	0.02	0.02	28.18	0.39	0.27	0.02	1253.75	0.10			22.14	0.18	0.09	0.02
14	BH08	GW	07/06/2018	0.5	0.5		0.5	7	7.33	270	31.84	0.03	0.02	0.02	28.90	0.38	0.19	0.02	1521.55	0.08			24.50	0.16	0.08	0.02
15	BH12	GW	07/06/2018	0.6	1.8		0.5	6.9	10.4	270	40.56	0.02	0.01	0.01	32.40	0.34	0.61	0.06	1846.56	0.07			29.89	0.13	0.07	0.02
16	BH13	GW	07/06/2018	1.3	5.3		4.1	6.9	72.7	460	43.08	0.02	0.03	0.03	47.63	0.23	1.21	0.11	1846.56	0.07			43.67	0.09	0.38	0.09
17	W DITCH	SW (Dyke)	07/06/2018	4.1	3.2		1.5	7.8	17.7	110	32.93	0.03	0.12	0.12	72.20	0.15	0.48	0.04	323.36	0.38			29.96	0.13	0.20	0.05
18	S DITCH	SW (Dyke)	07/06/2018	3.4	8.1		2.6	7.7	13.9	86	45.06	0.02	0.08	0.08	56.96	0.19	1.55	0.14	392.43	0.31			26.12	0.15	0.40	0.10
19	US	RIVER THAMES	07/06/2018	2.9	3		1.6	8	6.84	110	22.41	0.04	0.13	0.13	35.72	0.31	0.92	0.08	219.55	0.56			12.91	0.31	0.50	0.12
20	DS	RIVER THAMES	07/06/2018	2.4	2.6		1.3	8	6.06	150	19.63	0.05	0.12	0.12	33.06	0.33	0.86	0.08	219.55	0.56			11.97	0.33	0.43	0.11

Appendix 7 JIWG Decision Support Tool Output

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	42166
Site Name	Riverside Energy Park
Client	Cory Riverside Environmental Holdings Ltd
Run by	NH
Date	11-Jul-18
Scenario details	Assessment based upon demo crush used to create wasteland habitat area

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs at outset of work	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Low quantities - >0.01 to <0.05 %wt/wt	2
Sub-total		**12**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking **Medium**

Stage 2

Exposure Factors		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.1 fibres/ml (4 Hr TWA) or <0.6 fibres/ml (10 minute STEL)	2
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Activity type and effect on deterioration of ACMs during work	Not low intensity, significant deterioration expected	4
Best description of primary host material matrix (soil/made ground)	Coarse to Fine Gravel	3
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Low	2
Sub-total		15
Exposure ranking		Medium
Combined hazard and exposure ranking	27	Medium

Stage 3

Risk Assessment Outputs

Probable Licensing Status	Non-Licensed Work
RPE*	EN149 type FFP3 disposable
Dust Suppression**	Manual/localised dust suppression
Hygiene/Decontamination***	Localised and basic personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

Appendix 8 ESI Statistical Calculator Summary Sheets

RIVERSIDE ENERGY PARK
STATISTICAL ASSESSMENT
SOIL SAMPLES FROM
ALLUVIAL DEPOSITS
METALS COMPARED TO
COMMERCIAL/INUSTRIAL END USE
CRITICAL CONCENTRATION

Client/client ref: Cory Riverside Environmental Holdings Ltd
Project ref: 42166
Site ref: Riverside Energy Park
Data description:
Contaminant(s): Metals in Alluvial soil samples
Test scenario: Planning
Date: 11.07.18
User details: Nick Hills PBA LLP

	Arsenic* (mg/kg)	Cadmium (mg/kg)	Chromium Hexavalent* (mg/kg)	Copper (mg/kg)	Lead* (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Zinc (mg/kg)	Boron (mg/kg)
Critical concentration, C_c	**640**	**410**	**49**	**68000**	**2300**	**1100**	**980**	**12000**	**730000**	**240000**
Notes	Commercial / Industrial C4SL	Commercial / Industrial C4SL	Commercial / Industrial C4SL	Commercial / Industrial S4UL	Commercial / Industrial C4SL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL
Full dataset size	19	19	17	19	19	19	19	19	19	19
Outliers present?	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No
Number of outliers temporarily excluded										
Number removed by filter	0	0	0	0	0	0	0	0	0	0
Sample size, n	**19**	**19**	**17**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
Sample mean, $\overline{x}$	22.0210526	0.24210526	4	19.4315789	57.2526316	0.36315789	27.9842105	1.50526316	312.052632	124.5
Standard deviation, s	8.66971606	0.18353259	0	9.03604219	51.2346602	0.11160708	6.04099543	0.50052604	754.595953	131.194559
Number of non-detects	0	0	0	0	0	0	0	0	0	0
Set non-detect values to:	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit
Distribution	Normal	Non-normal	Single value	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach	Auto: One-sample t	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev

Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?				**Evidence level required:**		**95%**	Use Normal distribution to test for outliers		
t statistic, t_0 (or k_0)	-310.7031143	-9731.75	N/A	-32793.16559	-190.8065573	-42947.1487	-686.929939	-104490.5199	-4215.018659	-7969.789862
Upper confidence limit (on true mean concentration, μ)	25.4700519	0.42563785	4	28.4676211	108.487292	0.47476497	34.025206	2.0057892	1066.64858	255.694559
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**

RIVERSIDE ENERGY PARK
STATISTICAL ASSESSMENT
SOIL SAMPLES FROM
MADE GROUND
METALS COMPARED TO
COMMERCIAL/INUSTRIAL END USE
CRITICAL CONCENTRATION

Client/client ref: Cory Riverside Environmental Holdings Ltd
Project ref: 42166
Site ref: Riverside Energy Park
Data description:
Contaminant(s): Metals in made ground samples
Test scenario: Planning
Date: 11.07.18
User details: Nick Hills PBA LLP

	Arsenic* (mg/kg)	Cadmium (mg/kg)	Chromium Hexavalent* (mg/kg)	Copper (mg/kg)	Lead* (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Zinc (mg/kg)	Boron (mg/kg)
Critical concentration, C_c	**640**	**410**	**49**	**68000**	**2300**	**1100**	**980**	**12000**	**730000**	**240000**
Notes	Commercial / Industrial C4SL	Commercial / Industrial C4SL	Commercial / Industrial C4SL	Commercial / Industrial S4UL	Commercial / Industrial C4SL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL
Full dataset size	21	21	19	21	21	21	21	21	21	21
Outliers present?	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Number of outliers temporarily excluded										
Number removed by filter	0	0	0	0	0	0	0	0	0	0
Sample size, n	**21**	**21**	**19**	**21**	**21**	**21**	**21**	**21**	**21**	**21**
Sample mean, $\overline{x}$	95.1857143	0.33809524	4	42.9571429	307.809524	0.46190476	21.2952381	1.25238095	375.428571	591.447619
Standard deviation, s	146.656177	0.28013602	0	25.3710183	476.04145	0.43528863	8.91344357	0.39321629	491.693459	1088.79186
Number of non-detects	0	0	0	0	0	0	0	0	0	0
Set non-detect values to:	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit
Distribution	Non-normal	Non-normal	Single value	Normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev
Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?				**Evidence level required:**		**95%**	Use Normal distribution to test for outliers		
t statistic, t_0 (or k_0)	-17.02384961	-6701.41126	N/A	-12274.56812	-19.17766543	-11575.57587	-492.8888716	-139834.4147	-6800.090116	-1007.637777
Upper confidence limit (on true mean concentration, μ)	234.683564	0.60455774	4	52.5058903	760.615262	0.87594684	29.7736141	1.62640425	843.12234	1627.09526
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**

RIVERSIDE ENERGY PARK
STATISTICAL ASSESSMENT
SOIL SAMPLES FROM
ALLUVIAL DEPOSITS
PAHs COMPARED TO
COMMERCIAL/INUSTRIAL END USE
CRITICAL CONCENTRATION

Client/client ref: Cory Riverside Environmental Holdings Ltd
Project ref: 42166
Site ref: Riverside Energy Park
Data description:
Contaminant(s): PAHs in alluvial soil samples
Test scenario: Planning
Date: 11.07.18

	naphthalene (mg/kg)	acenaphthylene (mg/kg)	acenaphthene (mg/kg)	fluorene (mg/kg)	phenanthrene (mg/kg)	anthracene (mg/kg)	fluoranthene (mg/kg)	pyrene (mg/kg)	benzo(a)anthracene (mg/kg)	chrysene (mg/kg)	benzo(b)fluoranthene (mg/kg)	benzo(k)fluoranthene (mg/kg)	benzo(a)pyrene* (mg/kg)	indeno(1,2,3-c,d)pyrene (mg/kg)	dibenzo(ah)anthracene (mg/kg)	benzo(g,h,i)perylene (mg/kg)	Coal Tar (Bap as surrogate) (mg/kg)
Critical concentration, C_c	**190**	**83000**	**84000**	**63000**	**22000**	**520000**	**23000**	**54000**	**170**	**350**	**44**	**1200**	**35**	**500**	**3.5**	**3900**	**350**
Notes	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial C4SL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL
Full dataset size	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Outliers present?	No	No	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Number of outliers temporarily excluded																	
Number removed by filter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
Sample mean, $\bar{x}$	0.06875	0.05	0.05	0.05	0.08125	0.05	0.21	0.1775	0.12375	0.125	0.175	0.09	0.175	0.08	0.05	0.0775	0.125
Standard deviation, s	0.02587746	7.418E-18	7.418E-18	7.418E-18	0.08838835	7.418E-18	0.20078418	0.1634232	0.14391838	0.16035675	0.25495098	0.0855236	0.24494897	0.08485281	7.418E-18	0.07778175	0.16035675
Number of non-detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Set non-detect values to:	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev
Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?				**Evidence level required:**		**95%**	Use Normal distribution to test for outliers									
t statistic, t_0 (or k_0)	-20759.63912	-3.16473E+22	-3.20286E+22	-2.40214E+22	-703997.4	-1.98272E+23	-323995.7993	-934595.3395	-3338.577008	-6171.214933	-486.194722	-39683.2932	-402.1244625	-16664	-1.31546E+18	-141815.3636	-6171.214933
Upper confidence limit (on true mean concentration, μ)	0.10862984	0.05	0.05	0.05	0.21746559	0.05	0.5194292	0.42935207	0.34554312	0.37212634	0.56790584	0.22180072	0.55249172	0.21076697	0.05	0.19736972	0.37212634
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**

RIVERSIDE ENERGY PARK
STATISTICAL ASSESSMENT
SOIL SAMPLES FROM
MADE GROUND
PAHs COMPARED TO
COMMERCIAL/INUSTRIAL END USE
CRITICAL CONCENTRATION

Client/client ref: Cory Riverside Environmental Holdings Ltd
Project ref: 42166
Site ref: Riverside Energy Park
Data description:
Contaminant(s): PAHs in made ground samples
Test scenario: Planning
Date: 11.07.18

	naphthalene (mg/kg)	acenaphthylene (mg/kg)	acenaphthene (mg/kg)	fluorene (mg/kg)	phenanthrene (mg/kg)	anthracene (mg/kg)	fluoranthene (mg/kg)	pyrene (mg/kg)	benzo(a)anthracene (mg/kg)	chrysene (mg/kg)	benzo(b)fluoranthene (mg/kg)	benzo(k)fluoranthene (mg/kg)	benzo(a)pyrene* (mg/kg)	indeno(1,2,3-c,d)pyrene (mg/kg)	dibenzo(ah)anthracene (mg/kg)	benzo(g,h,i)perylene (mg/kg)	Coal Tar (Bap as surrogate) (mg/kg)
Critical concentration, C_c	**190**	**83000**	**84000**	**63000**	**22000**	**520000**	**23000**	**54000**	**170**	**350**	**44**	**1200**	**35**	**500**	**3.5**	**3900**	**350**
Notes																	
Full dataset size	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Outliers present?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	No	Yes	Yes	Yes
Number of outliers temporarily excluded																	
Number removed by filter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
Sample mean, $\bar{x}$	0.12842105	0.08368421	0.51578947	0.40526316	3.52052632	0.65578947	4.03736842	3.23947368	1.63631579	1.37947368	1.83631579	0.69263158	1.65473684	0.76473684	0.14684211	0.85	1.65473684
Standard deviation, s	0.20298503	0.0810494	1.12674219	0.77106253	6.96372304	0.97800997	5.90408036	4.16318851	1.62757902	1.31260332	1.79921344	0.54510796	1.5652063	0.78678932	0.16469003	0.86635892	1.5652063
Number of non-detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Set non-detect values to:	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev
Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?				**Evidence level required:**		95%	Use Normal distribution to test for outliers									
t statistic, t_0 (or k_0)	-4077.300721	-4463799.002	-324959.221	-356143.446	-13768.55894	-2317588.422	-16977.59364	-56535.13447	-450.9030151	-1157.700591	-102.1486581	-9590.136243	-92.86228428	-2765.818013	-88.74900397	-19617.73629	-970.0969131
Upper confidence limit (on true mean concentration, μ)	0.33140609	0.16473361	1.64253166	1.17632569	10.4842494	1.63379945	9.94144878	7.4026622	3.2638948	2.69207701	3.63552923	0.90948723	3.21994314	1.55152616	0.31153214	1.71635892	3.21994314
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**

RIVERSIDE ENERGY PARK
STATISTICAL ASSESSMENT
SOIL SAMPLES FROM ALLUVIAL DEPOSITS
TPHs COMPARED TO COMMERCIAL/INUSTRIAL END USE CRITICAL CONCENTRATION

Client/client ref: Cory Riverside Environmental Holdings Ltd
Project ref: 42166
Site ref: Riverside Energy Park
Data description:
Contaminant(s): TPHs in made ground samples
Test scenario: Planning
Date: 11.07.18

	>C5 to C6 Aliphatic (mg/kg)	>C6 to C8 Aliphatic (mg/kg)	>C8 to C10 Aliphatic (mg/kg)	>C10 to C12 Aliphatic (mg/kg)	>C12 to C16 Aliphatic (mg/kg)	>C16 to C35 Aliphatic (mg/kg)	>C35 to C44 Aliphatic (mg/kg)	>C5 to C7 Aromatic (mg/kg)	>C7 to C8 Aromatic (mg/kg)	>C8 to C10 Aromatic (mg/kg)	>C10 to C12 Aromatic (mg/kg)	>C12 to C16 Aromatic (mg/kg)	>C16 to C21 Aromatic (mg/kg)	>C21 to C35 Aromatic (mg/kg)	>C35 to C44 Aromatic (mg/kg)
Critical concentration, C_c	**3200**	**7800**	**2000**	**9700**	**59000**	**1600000**	**26000**	**56000**	**3500**	**16000**	**36000**	**28000**	**28000**	**28000**	**28000**
Notes															
Full dataset size	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Outliers present?	No	No	No	No	Yes	No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes
Number of outliers temporarily excluded															
Number removed by filter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Sample mean, $\bar{x}$	0.001	0.001	0.001	1	2.65	12	16	0.001	0.001	0.001	1.8	4.16666667	15.5	41.3333333	33.8833333
Standard deviation, s	0	0	0	0	1.59216833	4.38178046	18.616122	0	0	0	1.95959179	5.30722778	13.4721936	68.0783862	61.7864845
Number of non-detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Set non-detect values to:	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit
Distribution	Single value	Single value	Single value	Single value	Non-normal	Non-normal	Non-normal	Single value	Single value	Single value	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev
Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?				**Evidence level required:**		**95%**	Use Normal distribution to test for outliers							
t statistic, t_0 (or k_0)	N/A	N/A	N/A	N/A	-90765.15385	-894420.4828	-3418.947368	N/A	N/A	N/A	-44997.75	-12921.15385	-5088.090909	-1005.964904	-1108.700656
Upper confidence limit (on true mean concentration, μ)	0.001	0.001	0.001	1	5.48328431	19.7974355	49.127632	0.001	0.001	0.001	5.28711915	13.6109477	39.4739442	162.479709	143.833188
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**

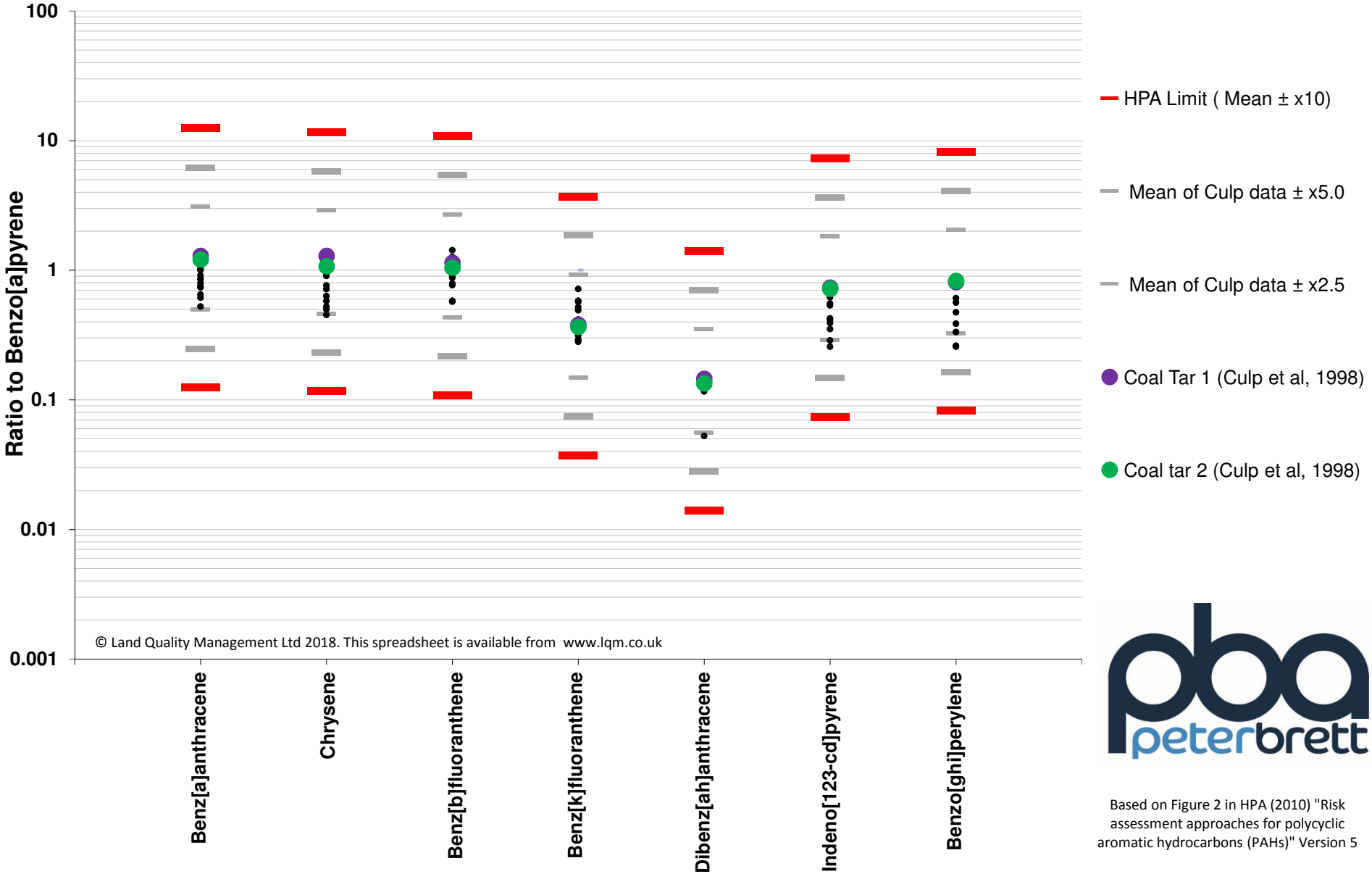
RIVERSIDE ENERGY PARK
STATISTICAL ASSESSMENT
SOIL SAMPLES FROM
MADE GROUND
TPHs COMPARED TO COMMERCIAL/INUSTRIAL END USE CRITICAL CONCENTRATION

Client/client ref: Cory Riverside Environmental Holdings Ltd
Project ref: 42166
Site ref: Riverside Energy Park
Data description:
Contaminant(s): TPHs in made ground samples
Test scenario: Planning
Date: 11.07.18
User details: Nick Hills PBA LLP

	>C5 to C6 Aliphatic (mg/kg)	>C6 to C8 Aliphatic (mg/kg)	>C8 to C10 Aliphatic (mg/kg)	>C10 to C12 Aliphatic (mg/kg)	>C12 to C16 Aliphatic (mg/kg)	>C35 to C44 Aliphatic (mg/kg)	>C5 to C7 Aromatic (mg/kg)	>C7 to C8 Aromatic (mg/kg)	>C8 to C10 Aromatic (mg/kg)	>C10 to C12 Aromatic (mg/kg)	>C12 to C16 Aromatic (mg/kg)	>C16 to C21 Aromatic (mg/kg)	>C21 to C35 Aromatic (mg/kg)	>C35 to C44 Aromatic (mg/kg)
Critical concentration, C_c	**3200**	**7800**	**2000**	**9700**	**59000**	**1600000**	**26000**	**56000**	**3500**	**16000**	**36000**	**28000**	**28000**	**28000**
Notes	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL	Commercial / Industrial S4UL
Full dataset size	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Outliers present?	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Number of outliers temporarily excluded														
Number removed by filter	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**
Sample mean, $\bar{x}$	0.001	0.001	0.001	1.32857143	30.2785714	144.457143	0.001	0.001	0.001	3.08571429	16.1785714	60.4285714	250.071429	391.242857
Standard deviation, s	4.5005E-19	4.5005E-19	4.5005E-19	0.5676247	80.8059992	232.997926	4.5005E-19	4.5005E-19	4.5005E-19	3.11296474	20.7573593	53.7411378	206.543147	691.212421
Number of non-detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Set non-detect values to:	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit	Detection limit
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Normal	Non-normal
Statistical approach	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: One-sample t	Auto: Chebychev
Test scenario:	Planning: is true mean lower than critical concentration (μ < Cc)?				**Evidence level required:**		**95%**	Use Normal distribution to test for outliers						
t statistic, t_0 (or k_0)	-2.66043E+22	-6.48479E+22	-1.66277E+22	-63931.51227	-2730.545949	-25691.69356	-2.1616E+23	-4.65575E+23	-2.90984E+22	-19227.64232	-6486.332342	-1945.256616	-502.7071917	-149.4511774
Upper confidence limit (on true mean concentration, μ)	0.001	0.001	0.001	1.98983419	124.414712	415.891512	0.001	0.001	0.001	6.71220846	40.3601633	123.035102	347.828684	1196.48096
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Base decision on:	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level	evidence level
Result	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**	**μ < Cc**

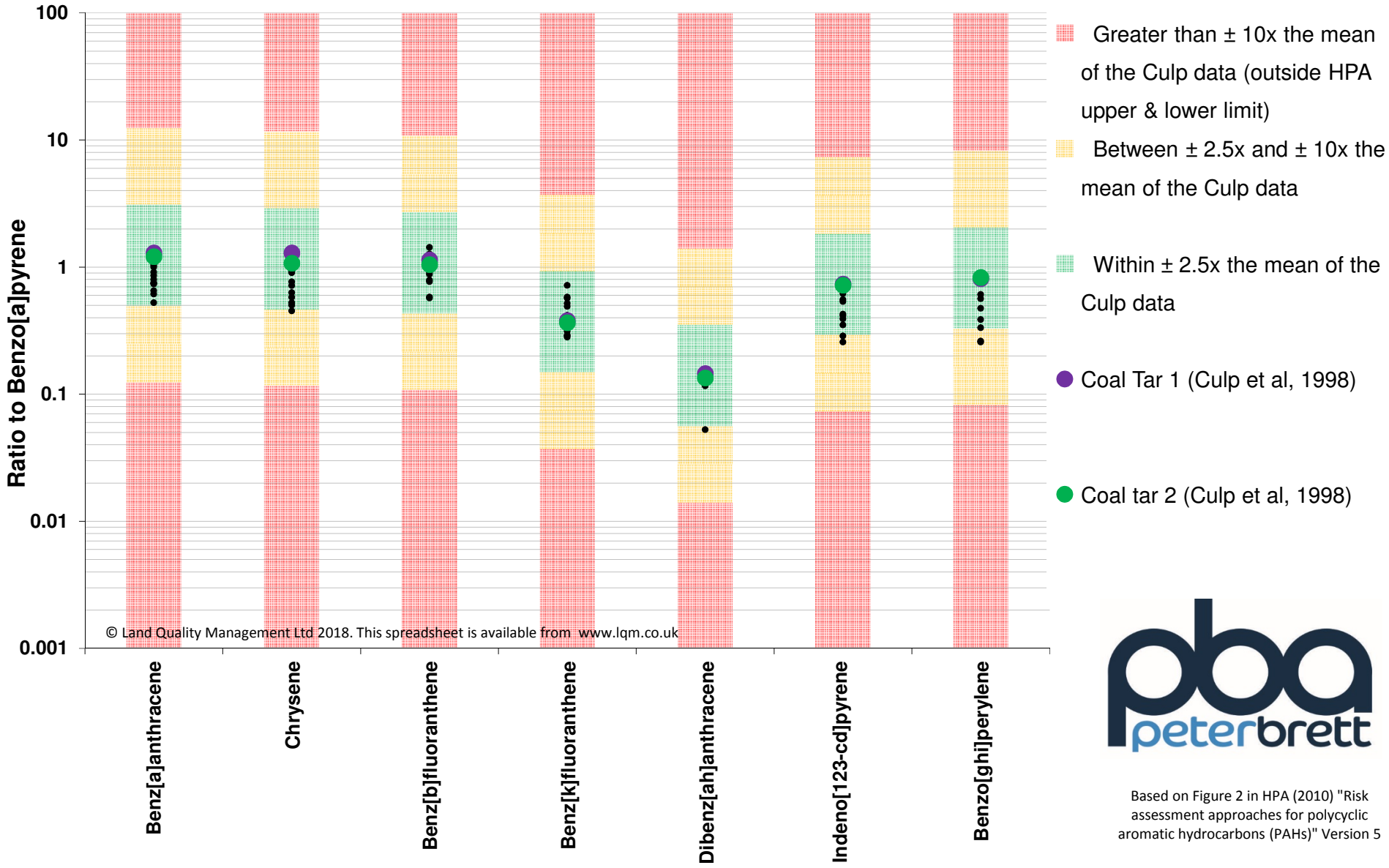
Appendix 9 PAH Profiling Plots

RIVERSIDE ENERGY PARK
PAH PROFILING (<LOD RESULTS REMOVED)



Based on Figure 2 in HPA (2010) "Risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs)" Version 5

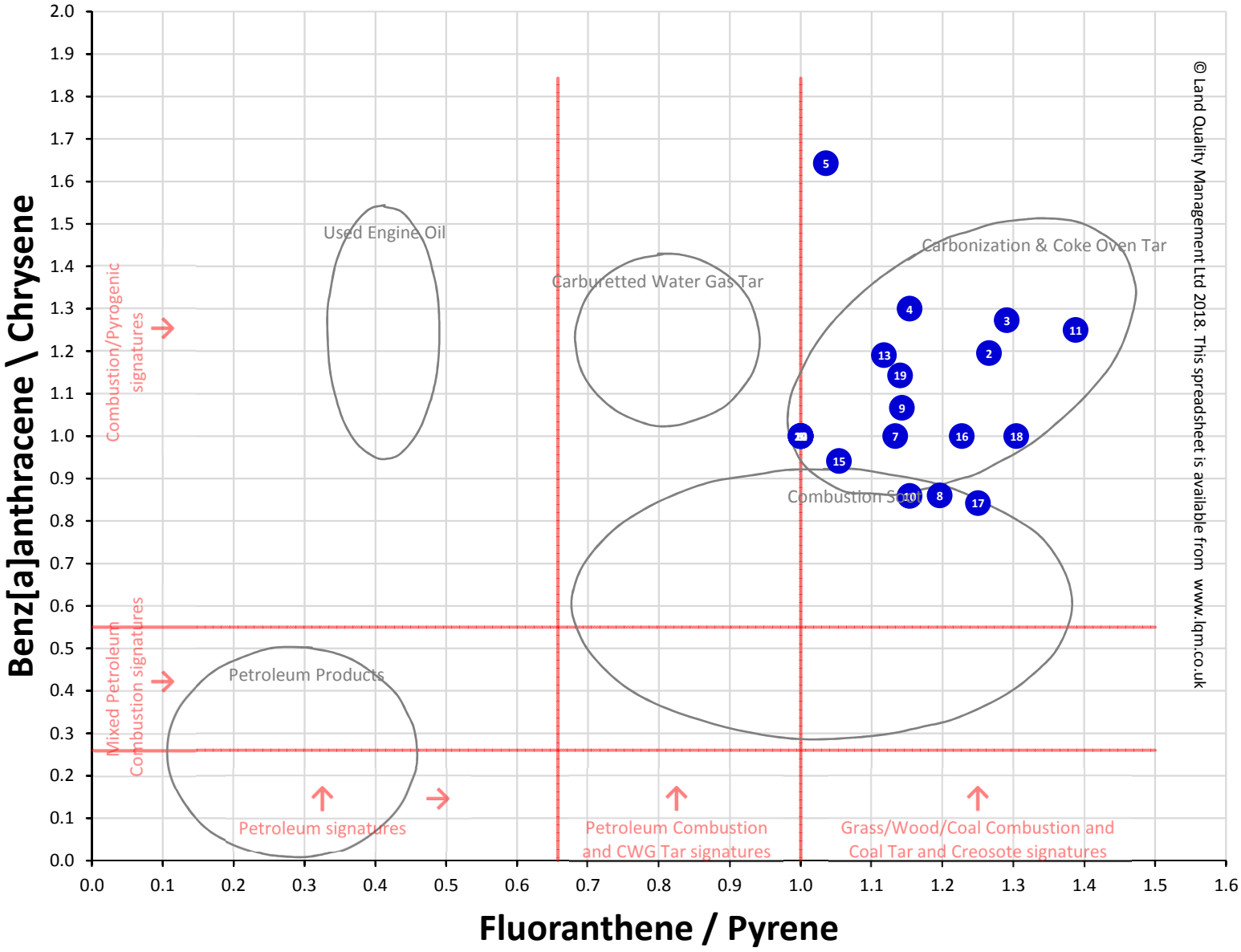
RIVERSIDE ENERGY PARK
PAH PROFILING (<LOD RESULTS REMOVED)



Based on Figure 2 in HPA (2010) "Risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs)" Version 5

Appendix 10 PAH Double Ratio Plots

RIVERSIDE ENERGY PARK
PAH DOUBLE RATIO PLOT

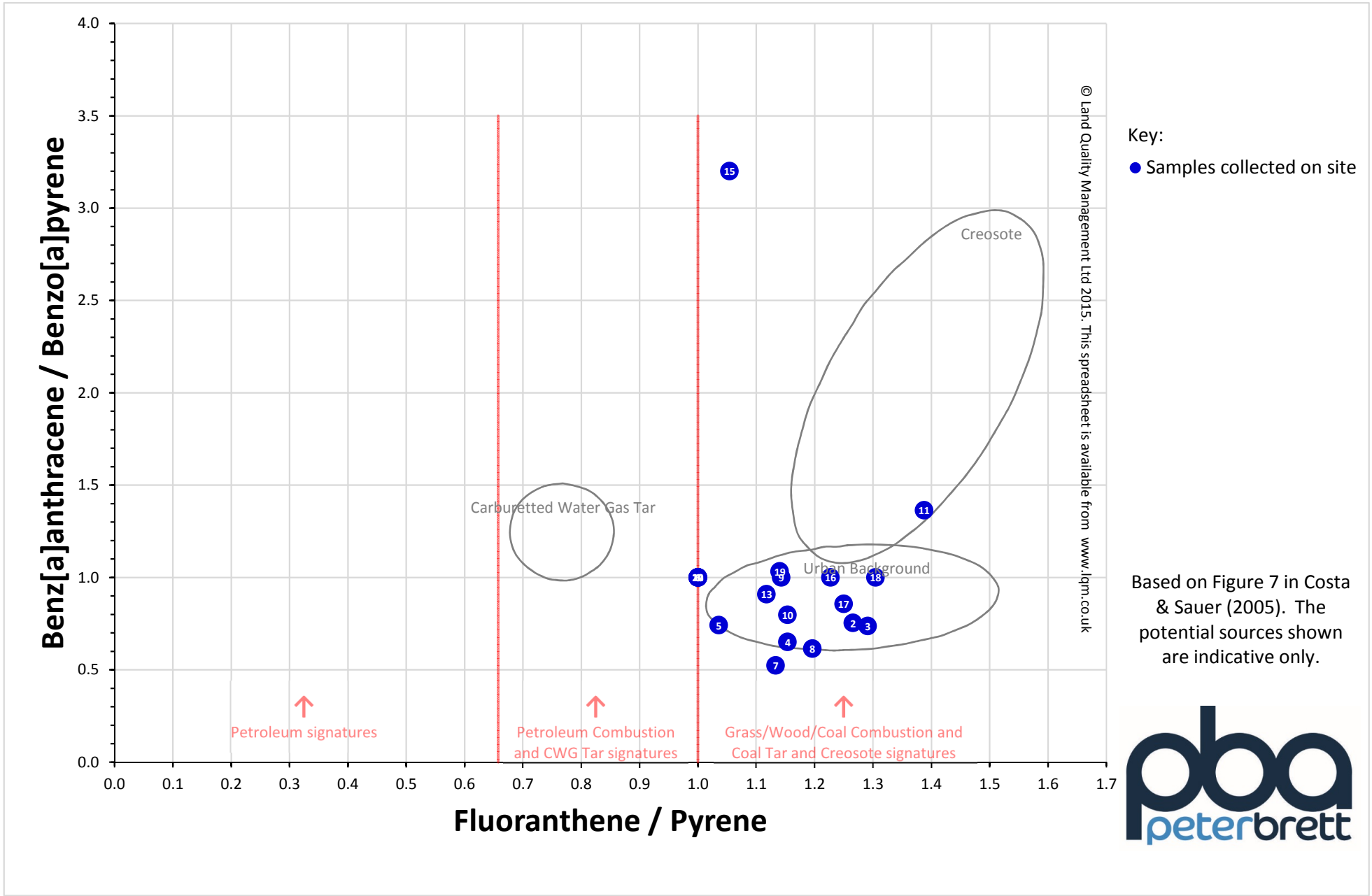


Key:

● Samples collected on site

Based on Figure 6 in Costa & Sauer (2005) with additional details based on a conference presentation by Costa (2005) in San Diego. The potential sources shown are indicative only.

RIVERSIDE ENERGY PARK
PAH DOUBLE RATIO PLOT



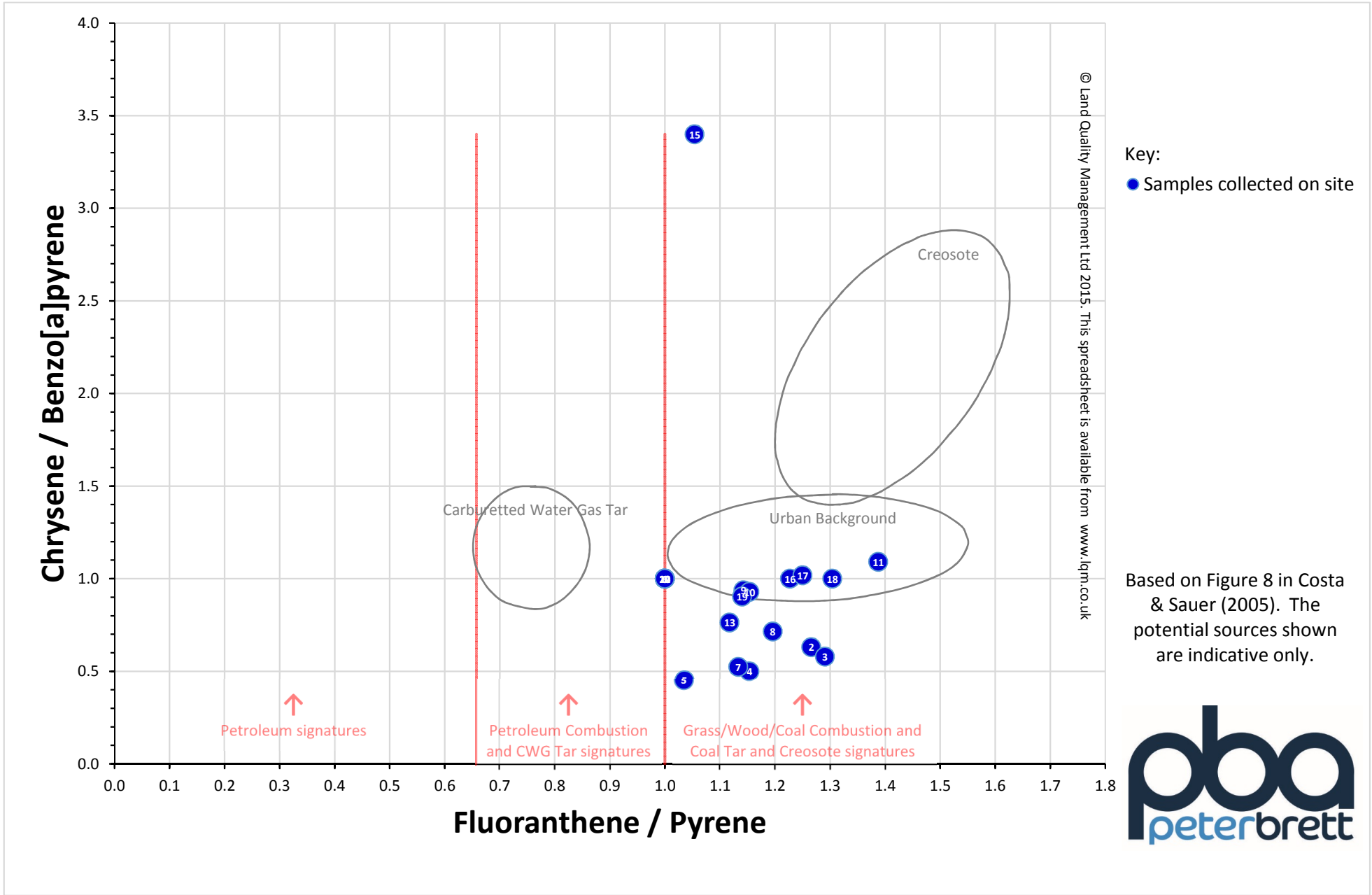
Key:

● Samples collected on site

Based on Figure 7 in Costa & Sauer (2005). The potential sources shown are indicative only.

pba peterbrett

RIVERSIDE ENERGY PARK
PAH DOUBLE RATIO PLOT



Key:

- Samples collected on site

Based on Figure 8 in Costa & Sauer (2005). The potential sources shown are indicative only.

Appendix 11 Assessment Criteria and Tools

1.1 Approach

1.1.1 The PBA Methodology for ground condition assessment is presented in **Appendix 1**. This methodology has been prepared in general accordance with current technical guidance including EA 2004 and EA 2010.

1.1.2 In accordance with the PBA methodology for assessing ground conditions site specific concentrations of potential soil and groundwater contaminants have been compared with published / generic criteria to screen the data. If the concentration is below the screening criterion for the specified end use the parameter is not deemed to be a hazard. Exceedance of the criterion indicates that the parameter is a possible hazard and either that further assessment or risk management is required.

1.1.3 A copy of PBA rationale for selection of generic assessment criteria is also presented in **Appendix 2**.

1.2 Assessment Criteria for Screening Soil Results

Potential to Impact Human Health

1.2.1 Information on PBA's rationale for the selection of criteria used in Tier 2 risk assessment is included in the Guidance Notes appended to this report.

1.2.2 For the protection of human health from chronic (long term) exposure we have selected the criteria for the commercial/industrial use, with a Soil Organic Matter (SOM) content of 1%. The key assumptions in the model used to generate the criteria are considered suitably conservative for the proposed commercial redevelopment.

1.2.3 There are no published criteria for assessing the potential for soil concentrations for the protection of human health to acute (short term) exposure.

Potential to impact Controlled Waters

1.2.4 At present, there is no published criteria in the UK for assessing the quality of soils and potential to impact Controlled Waters.

1.3 Assessment Criteria for Screening Liquid Results

Potential to impact Controlled Waters

1.3.1 For screening groundwater the criteria selected are the standards for surface water together with the following: -

- For a hazardous substance PBA adopts the approach that, if the concentration in a discharge is less than the Minimum Reporting Value (MRV), the input is regarded as automatically meeting the Article 2 (b) 'de-minimis' requirement of exemption 6 (3) (b) of the GWDD. PBA has selected hazardous substances and associated MRV from those listed in Table 13 of UKTAG WFD River Basin Management 2015-21 Updated Recommendations on Environmental Standards (as referenced in Defra 2014). MRV is the lowest concentration of a substance that can be routinely determined with a known degree of confidence, and may not be equivalent to limit of detection.

- The UKTAG values for hazardous substances published in September 2016 which are concentrations in groundwater below which the danger of deterioration in the quality of the receiving groundwater is avoided.

- For non-hazardous substance's the GWDD requires that inputs be limited to avoid deterioration. UKTAG guidance equates deterioration with pollution. Non-hazardous substances are all substances not classified as hazardous.

Potential to Impact Human Health

1.3.2 As the shallow groundwater is not currently, and is unlikely to be in the future, a drinking water resource, comparison to UK drinking water quality standards (DETR, 2000) is only provided where there are no criteria in the Directions.

1.3.3 The Tier 2 water screening values adopted by PBA for assessing the potential for chronic human health risk from the inhalation of vapours from volatile contaminants in groundwater are presented in Table 5 of the rationale. These generic assessment criteria have been taken from a report published by the Society of Brownfield Risk Assessment (SoBRA) (SoBRA. 2017).

1.3.4 Based on the following justifications it is considered that the GWGAC are precautionary/appropriate for use: -

- Building Type – the default parameters are likely to over-estimate gas ingress into the structures proposed.

- Soil Type – the default adopted is a sand and in the context of the site-specific ground conditions being silty clays is likely to over-estimate gas migration.

- Depth to Source - the source (i.e. groundwater) is modelled as 65cm below ground surface and is considered conservative in the context of the site-specific groundwater depth which varies to considerably deeper depths and, as sensitivity modelling shows, increasing the depth to groundwater generally increases the GAC.

- Preferential Pathways – the proposed development will require piled foundations which could create preferential gas migrations pathways. However, as this possibility is identified, further assessment can be incorporated into the evaluation stage.

- Free Phase Hydrocarbon - the presence of a non-aqueous phase liquid (NAPL) has not been observed.

Property - Animal or Crop and Buildings

1.3.4 At present, there is no published criteria in the UK for assessing the quality of waters and potential to impact these receptors.

1.4 Ratio Plot – Source Identification

1.4.1 Different types of combustion yield different types of PAHs. Those produced from coal burning are different from those produced by motor-fuel combustion which differ from those produced by forest fires. Some PAHs occur within crude oil which arise from chemical conversion of natural product molecules. They can be summarised into three distinct groups:

- Phytogenic – hydrocarbon compounds derived from plants (phyto = plant).

- Petrogenic – hydrocarbon compounds associated with petroleum (petro = petroleum).

- Pyrogenic – hydrocarbon compounds associated with the combustion of petroleum, wood, coal etc. including creosote, coal tar (pyro = fire/burn).

1.4.2 The ratios of certain pairs of PAH isomers (i.e. congeners with different structures but the same molecular mass) can also be used to infer the possible source of PAH mixtures found in environmental samples. By plotting each sample in terms of two such ratios, it is possible to tease apart mixtures with different PAH profiles and tentatively assign a possible source based on where these samples cluster within the plot. A range of possible ratios can be used and collectively these methods are referred to as "double ratio plots".

1.4.3. The Land Quality Management (LQM) PAH Double Ratio Plot tool is a spreadsheet that calculates and plots three pairs of ratios and calculates a number of other indices that, collectively, can indicate the potential source(s) of the PAHs, delineate different source terms and/or samples that may show different clustering.

1.4 Surrogate Marker Approach

1.4.1 Polyaromatic Hydrocarbon (PAH) mixtures are commonly encountered in urban soils and Made Ground. These PAHs can be associated with a diverse range of contaminative sources, including petroleum spillages, disposal of ash and clinker etc., atmospheric deposition of smoke and soot, gas works wastes, coal storage and dusts, and tarmac etc. A surrogate marker approach has the potential to substantially simplify the risk assessment of PAH mixtures in soil.

1.4.2 Health Protection Agency (HPA) (2010) recommended the use of benzo[a]pyrene (BaP) as a surrogate marker approach in the assessment of carcinogenic risks posed by PAHs in soils. It was recommended that such assessments should be based on toxicological benchmarks derived from the data for two coal tar mixtures presented by Culp et al. (1998). HPA (2010) presented a graphical analysis method that compared the proportions of eight genotoxic PAHs within soil samples (as ratios relative to BaP) with those in the two coal tars tested by Culp et al. (1998). They cited the International Programme on Chemical Safety (IPCS, 1998) as concluding that “the PAH profile of a tested mixture may deviate from the average profile by about an order of magnitude (up or down)” and adopted this criterion for indicating whether soil PAH mixtures are sufficiently similar to the Culp et al. coal tars, and thus BaP can be considered a suitable surrogate marker.

1.4.3 Two generic assessment criteria have currently been published for BaP as a surrogate marker; a Category 4 Safe Level (C4SL) (Defra 2014) and a S4UL (Nathanail et al. 2015). However, before these assessment criteria (or any other criteria based on the Culp et al. coal tars) can justifiably be used to assess PAH mixtures in soils, the PAH profile in the soil should be assessed and shown to be sufficiently similar to the coal tars tested by Culp et al. (1998).

1.4.4 The LQM PAH Profiling Tool has been used to determine if the PAH profile in soil samples deviates from that of coal tar and so determine whether a "surrogate marker approach" is applicable to the risk assessment of the PAH mixtures at the site.

1.4.5 The tool calculates the relative proportions of the eight genotoxic PAHs and plots them on two charts relative to composition of the two coal mixtures used by Culp et al. The plots identify which samples, if any, deviate significantly from coal tar using a plus/minus an order of magnitude limits suggested by HPA.

1.5 ESI Statistical Calculator Tool

1.5.1 The ESI Statistical Calculator tool (V2 1121) has been used to conduct the statistical techniques advocated in “Guidance on Comparing Soil Contamination Data with a Critical Concentration” (CL:AIRE 2008).

1.5.2 The assessment criteria used as the critical concentration is the lower value from the various chosen assessment criteria for residential (with and without home-grown produce) end use, commercial/industrial end use and public open space (park).

1.5.3 The tool has been run in planning mode where the key question is “can we confidently say that the level of contamination on this land is low relative to some appropriate measure of risk?”

1.5.4 In this respect the Null Hypothesis is defined as: -

- “the true mean is equal to or greater than the critical concentration”

1.5.5 The soil data has been divided into samples from each stratum, and each stratum has then been analysed independently from the other strata.

1.6 Hydrocarbon Hazard Index

1.6.1 In addition to the comparison of the individual hydrocarbon fraction results to their respective Safe For Use Level it is necessary to also consider the potential for significant harm to human health due to additive effects of the hydrocarbons.

1.6.2 The additive effect of the hydrocarbon fractions is considered by calculating a hazard quotient (HQ) for each fraction (hydrocarbon band) which is the result for the fraction/band divided by the fraction S4UL criterion. All HQ are added to give a Hazard Index (HI). If the HI exceeds unity (1) then this can indicate a potentially significant human health risk.

1.7 EQS Bioavailable

1.7.1 EQS bioavailable have been developed for UK Specific Pollutants copper, zinc and manganese and the EU priority substances lead and nickel. An EQS is the concentration of a chemical in the environment below which there is not expected to be an adverse effect on the specific endpoint being considered, e.g. the protection of aquatic life.

1.7.2 The bioavailability of a metal depends on a number of physico-chemical factors which govern both metal behaviour and the interactions of the toxic forms of the metals with a biological receptor. For example, if the metal ions (Me2+) bind to other ions, such as carbonate ions (CO32-) or DOC then it reduces the ability of the ions to bind to the organism and have an impact. In addition, other ions such as sodium (Na+) and hardness (Ca2+) can compete with the metal ions in binding to the organisms and prevent the metal binding.

1.7.3 The EQS bioavailable corresponds to the bioavailable fraction (BioF) of dissolved metal in a sample, as determined by the physico-chemical characteristics of the water, and can be calculated using a biotic ligand model (BLM) or other calculation method. To assess compliance, the bioavailable fraction of dissolved metal can be compared to the EQS bioavailable. However, bioavailable metal is not the same metric as dissolved metal as only a fraction of the dissolved metal will usually be bioavailable. Dissolved metal concentrations (in µg L-1) refer to the concentrations of metals determined in a water sample obtained by filtration through a 0.45 µm filter or any equivalent pre-treatment. USEPA guidance recommends filtering the sample at the earliest convenience after collection (ideally, filter it in the field). If possible, filter into sample containers with preservation acid already added, so the samples are preserved immediately after filtration.

1.7.4 It is very difficult to measure the bioavailable concentration of a metal directly. Biotic Ligand Models (BLMs) are a predictive tool that can take account of water quality parameters such as pH, and calcium to determine the amount of bioavailable metal present. However, the complexity of the models, the runtime per sample, input data requirements and level of operator skill needed to interpret the model outputs mean that few regulatory organisations have adopted

the full BLMs. The UK has developed simplified Metal Bioavailability Assessment Tool (M-BAT) for copper, zinc, nickel and manganese.