Riverside Energy Park

Environmental Statement Technical Appendices

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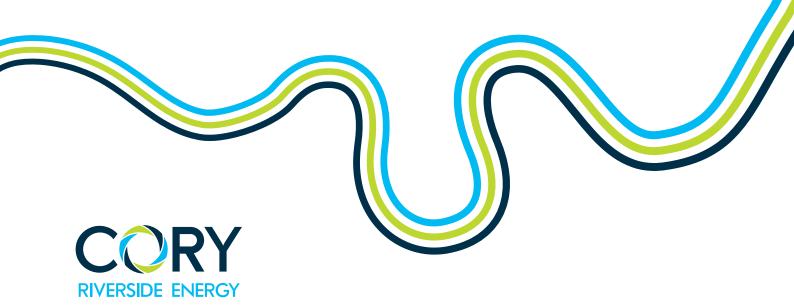
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1 Introduction

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 onsite 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.

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- 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 coarsegrained 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	Number within 1 km of Site (1)
Waste Regulation		
Landfill Sites	0 (0)	0 (3)



Data Type	Number on Site	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 criteria¹ 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.)

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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 m³ of excavated materials were screened to recover 4,270 m³ of aggregate and 20,480 m³ 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 Photolonisation 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 aguifer) 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
ВН09	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	Туре	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 Chrysoti Park	Loose fibrous 0.004
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^{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 μ g/L (BH02) to 5400 μ g/L (BH08). Within the surface water dykes adjacent to the REP site chloride results ranged from 68 μ g/L to 490 μ g/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 detection² (5 μg/L).

 $^{^2}$ Within the laboratory results provided it is noted that the laboratory limit of detection for hexavalent chromium was 5 μ g/L, in excess of the saltwater EQS of 0.6 μ g/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 μ g/L, this is in excess of the fresh water EQS of 3.4 μ g/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 μ g/L), benzo(a)pyrene (0.01 μ g/L), benzo(g,h,i)perylene (0.01 μ g/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.



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 sitewide 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 (I/hr)
BH02	<lod*< td=""><td>0.3 - 0.7</td><td>19.8 – 20.5</td><td>-3.0 – 7.0</td></lod*<>	0.3 - 0.7	19.8 – 20.5	-3.0 – 7.0
BH03	<lod -="" 0.3<="" td=""><td>2.0 – 3.7</td><td>16.0 – 17.0</td><td>0.0 – 1.3</td></lod>	2.0 – 3.7	16.0 – 17.0	0.0 – 1.3
BH11	<lod -="" 0.1<="" td=""><td>2.3 – 3.4</td><td>16.8 – 18.9</td><td>-5.5 – 0.0</td></lod>	2.3 – 3.4	16.8 – 18.9	-5.5 – 0.0
BH13	<lod 10.9<="" td="" –=""><td>3.6 – 5.7</td><td>11.7 – 18.8</td><td>-5.8 – 22.3</td></lod>	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 CH₄ (methane) and CO₂ (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 Qhg values are representative of the potential worst-case. By combining the highest flow rate and highest concentrations of CH4 and CO2 encountered within any of the PBA specified standpipes, Qhg values for CH4 and CO2 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 CH₄ and CO₂ (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

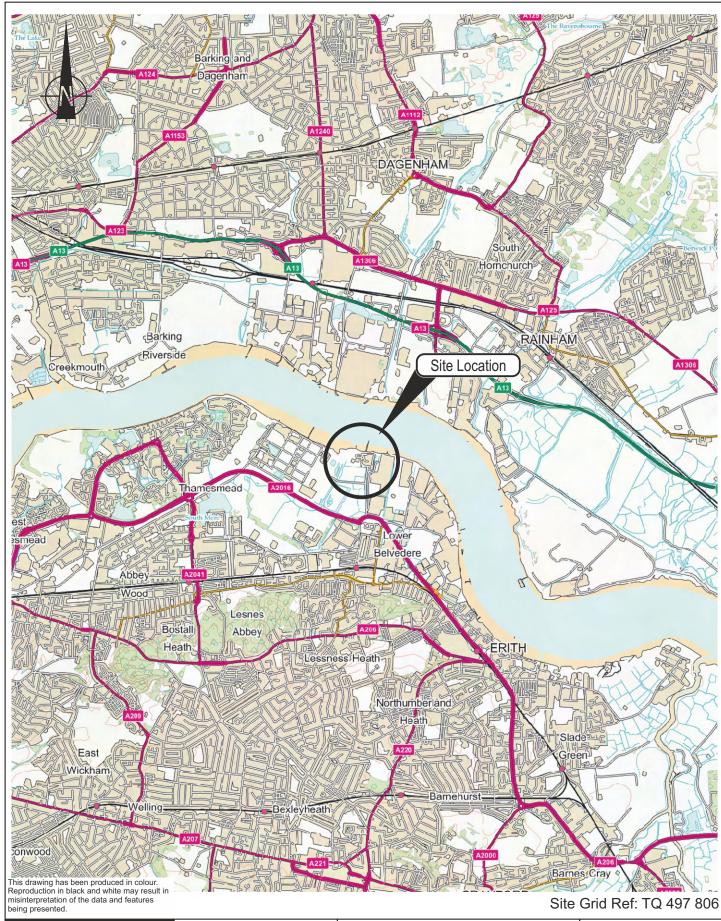
12.7.1 The above assessment has not identified any risks to this receptor.

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





Client Cory Riverside
Environmental
Holdings Ltd

Contains Ordnance Survey data © Crown copyright and database right 2017.

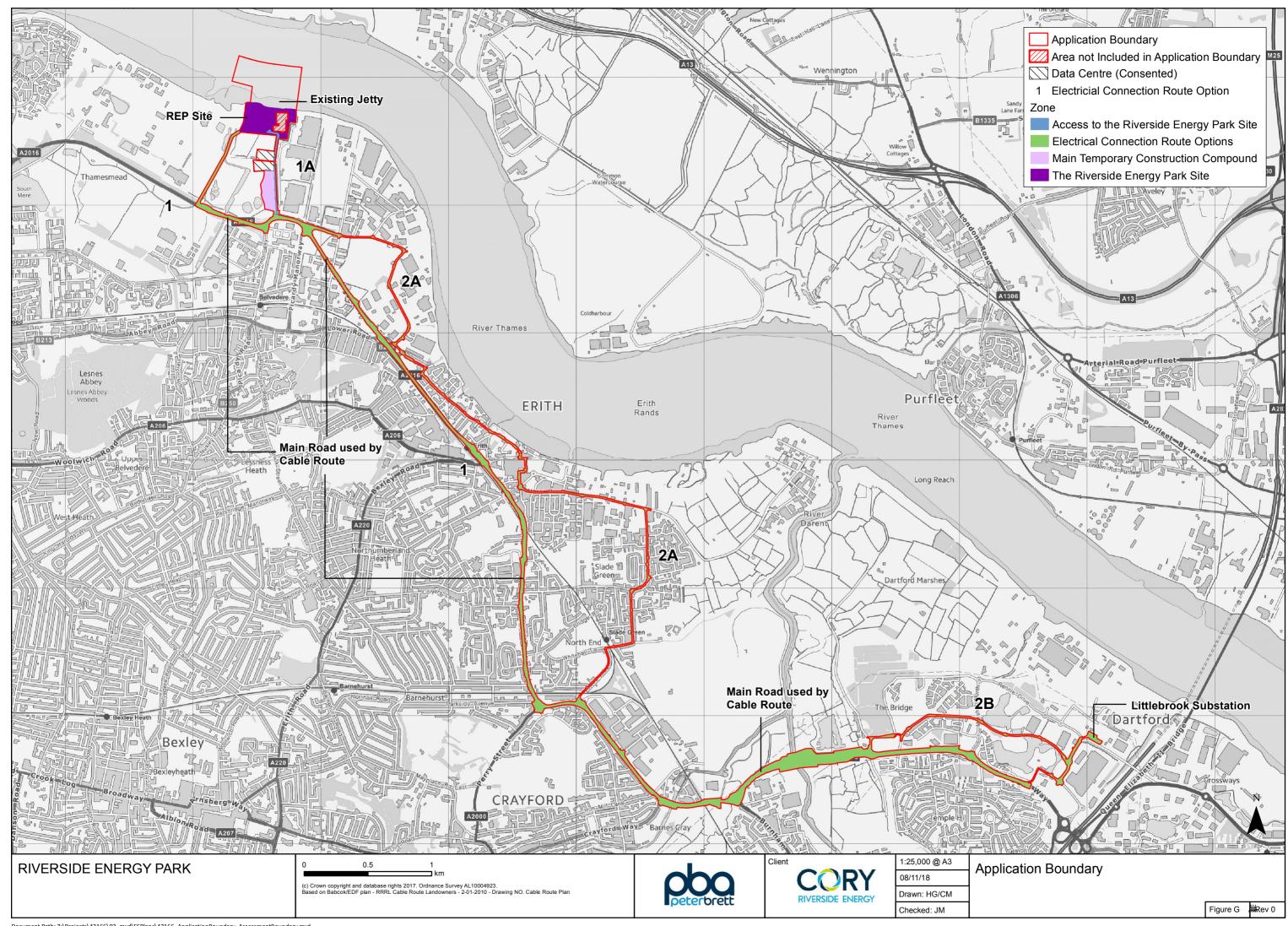
RIVERSIDE ENERGY PARK
SITE LOCATION PLAN

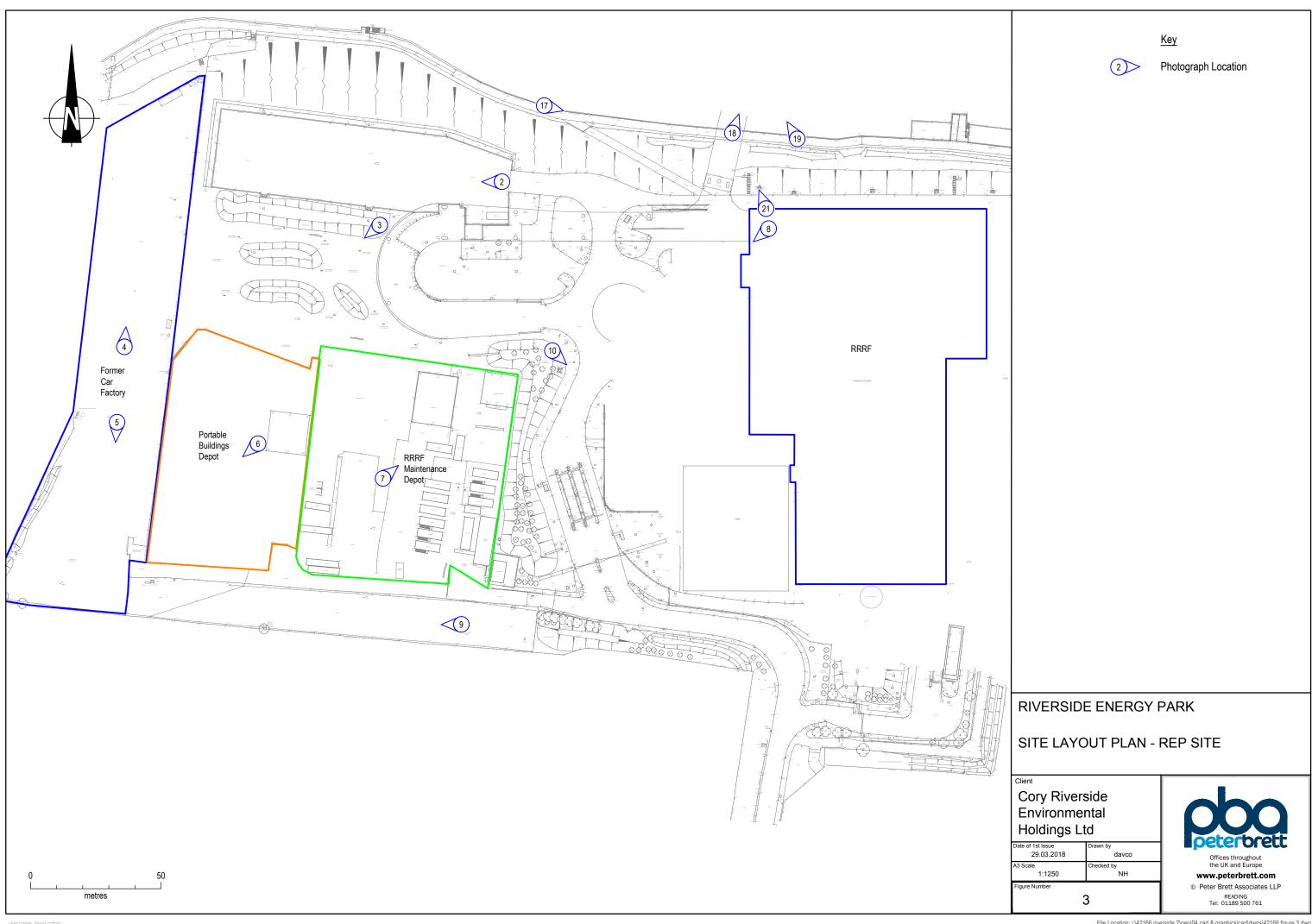
Date	29.03.2018
A4 Scale	1:50 000
Drawn by	davco
Checked by	NH
Revision	0

FIGURE 1

© Peter Brett Associates LLP

J:42166 Riverside 2/Geol/04 CAD & Graphics/Corel







Appendix 1 PBA Methodology for Assessing Land Contamination in England

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:-

- Hazard Identification identifying potential contaminant sources on and off site;
- 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));
- 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)

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

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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.

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

[&]quot;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	Receptor of limited importance
	Groundwater: Non aquifer
1	Surface water: Water body within 25m or eliminate
	Ecology: No local designation
	Buildings: Replaceable
	Human health: Unoccupied/limited access
Low	Receptor of local or county importance with potential for replacement
	Groundwater: Secondary B aquifer or Secondary Undifferentiated
2	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	Receptor of local or county importance with potential for replacement
	Groundwater: Secondary A aquifer
3	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	Receptor of county or regional importance with limited potential for replacement
	Groundwater: Principal aquifer
4	Surface water: Primary water body immediately adjacent
	Ecology: SSSI, National or Marine Nature Reserve (NNR or MNR)
	Buildings: Conservation Area
Manual Bada	Human health: Minimum score 4 where human health identified as potential receptor
Very High	Receptor of national or international importance
_	Groundwater: Source Protection Zone
5	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
	Traman health. Hesidential, 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	See Notes	Runoff/discharge to surface water body	
systems	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	Human health effect - exposure likely to result in "significant harm" as defined in the Defra (2012) Part 2A Statutory Guidance ^{1.}				
(3 out of 25 outcomes)	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	Human health effect - exposure could result in "significant harm" 1. Controlled water effect - equivalent				
10-16	to EA Category 2 incident requiring notification of abstractor				
(7 out of 25 outcomes)	Ecological effect - short-term exposure may result in a substantial adverse effect.				
(* ************************************	Damage to crops, buildings or property				
Mild	Human health effect - exposure may result in "significant harm" 1.				
5-9	Controlled water effect - equivalent to EA Category 3 incident (short lived and/or minimal effects on				
(7 out of 25 outcomes)	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	No measurable effect on humans. Protective equipment is not required during site works.				
1-4	Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems.				
(8 out of 25 outcomes)	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	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.



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

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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
- their use is recommended in DCLG's planning quidance
- 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
- 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 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.

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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 **PCBs** available from https://www.claire.co.uk/useful-governmentlegislation-and-guidance-by-country/77-riskassessment-info-ra/199-dioxins-site-specificworksheets.

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

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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.

- 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.

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

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- The Restoration and Aftercare of Metalliferous Mining Sites for Pasture and Grazing (ICRCL 70/90, 1990);
- 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 and approach to managing 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 subsurface, 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

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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) 'deminimus' 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

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.

- 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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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 <u>w</u> 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°	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%/		3700	40000	730000	01000	170000
	0.017/0.034/	0.087/0.17/	0.38/0.7/1.4	27 / 47 / 90	72 / 72 / 73	90 / 100 / 110
Benzene a, b, l, m	0.077	0.087/0.17/	0.30/0.7/1.4	21/41/90	12/12/13	9071007110
	22 / 51 / 120	130 / 290 /	880 ^{vap} (869)	56000 ^{vap} (869) /	56000 /	87000 ^{vap} (869)/
Toluene a, b, l, m	22/31/120	660	/1900/3900	110000 (009)/	56000 /	95000 ^{vap} (1920)/
Toluette		000	/1900/3900	180000 (1920)/ 180000 ^{vap} (4360)	560007	100000 ^{vap} (4360)
	16 / 39 / 91	47 / 110 /	83 / 190 / 440	5700 ^{vap} (518) /	24000 /	17000° (4300)
Ethylbenzene a, b, l, m	107 337 31	260	037 1307 440	13000 ^{vap} (1220) /	24000 /	22000 ^{vap} (1220) /
Littyiberizerie		200		27000 (1220) / 27000 (1220)	25000	27000 (1220) / 27000 (2840)
	28 / 67 / 160	60 / 140 /	88 / 210 / 480	6600 ^{sol} (478) /	41000 /	17000° (478) /
O – Xylene a, b, l, m, n	207017100	330	0072107400	15000° (470)7	42000 /	24000 ^{sol} (1120) /
o Aylene		000		33000° (1120)7	43000	33000 ^{sol} (2620)
	31 / 74 / 170	59 / 140 /	82 / 190 / 450	6200 ^{vap} (625) /	41000 /	17000 ^{vap} (625) /
M – Xylene a, b, l, m, n	31/14/110	320	0271307430	14000 ^{vap} (1470) /	42000 /	24000 ^{vap} (1470) /
W Ayleric		020		31000 (1470)7	43000	32000 (1470)7
	29 / 69 / 160	56 / 130 /	79 / 180 / 430	5900 ^{sol} (576) /	41000 /	17000 ^{sol} (576) /
P – Xylene a, b, l, m, n	257 057 100	310	737 1007 400	14000 ^{sol} (1350) /	42000 /	23000 ^{sol} (1350) /
1 Aylono		0.10		30000 ^{sol} (3170)	43000	31000 ^{sol} (3170)
	28 / 67 / 160	56 / 130 /	79 / 180 / 430	5900 ^{sol} (576) /	41000 /	17000 ^{sol} (576) /
Total xylenes ^t	207017100	310	707 1007 100	14000 ^{sol} (1350) /	42000 /	23000 ^{sol} (1350) /
Total Aylonos		0.10		30000 ^{sol} (3170)	43000	31000 ^{sol} (3170)
Polycyclic Aromatic Hydrocar	bons (SOM 1%/ 2.5%	(/ 6%) a, b, l, p		00000 (0110)	10000	01000 (0170)
1 oryoyono 7 ii omano 1 iyar ooar	34 / 85 / 200	210 /	3000 ^{sol} (57.0)/	84000 ^{sol} (57.0)/	15000 / 15000	29000/
Acenaphthene	047 007 200	510 /	4700 ^{sol} (141)/	97000° (37.0)/	/ 15000	30000/
7.toonapriiriono		1100	6000 ^{sol} (336)	100000	7 10000	30000
	28 / 69 / 160	170 / 420 /	2900 ^{sol} (86.1)/	83000 ^{sol} (86.1)/	15000 / 15000	29000 /
Acenaphthylene	207 037 100	920	4600 ^{sol} (212)/	97000 ^{sol} (212)/	/ 15000	30000 /
7.toonapminytono		020	6000 ^{sol} (506)	100000	7 10000	30000
	380 / 950 /	2400 / 5400 /	31000 ^{sol} (1.17)	520000/	74000 / 74000	150000 /
Anthracene	2200	11000	/35000/	540000/	/74000	150000 /
			37000	540000	, . 1000	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
	290 / 470 /	320 / 340 /	360 / 360 /	3900 / 4000 / 4000	640 / 640 /	1400 / 1500 /
Benzo(g,h,i)perylene	640	350	360	2300 / 1000 / 4000	640	1600
					070	1000
Benzo(k)fluoranthene	37 / 75 / 130	77 / 93 / 100	110 / 110 /	1200 / 1200 /1200	190 / 190 /	370 / 410 / 440

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Determinand	Allotment	R <u>w</u> HP	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 /	0.24 / 0.28 /	0.31 / 0.32 /	3.5 / 3.6 / 3.6	0.57 / 0.57 /	1.1 / 1.3 / 1.4
Fluoranthene	0.43 52 / 130 / 290	0.3 280 / 560 /	0.32 1500 / 1600 /	23000 / 23000 /	0.58 3100 / 3100 /	6300 / 6300 /
	27 / 67 / 160	890 170 / 400 /	1600 2800 ^{sol} (30.9)	23000 63000 ^{sol} (30.9) /	3100 9900 / 9900 /	6400 20000 / 20000 /
Fluorene	217017100	860	/3800 ^{sol} (76.5) /4500 ^{sol} (183)	68000 / 71000	9900	200007
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	1.2	1.1				
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 ₄ H ₈ N ₈ O 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)
Petroleum Hydrocarbons (SOM	l 1%/ 2.5%/ 6%) ^{a, b, l}	, m				/24000 ^{vap} (0.48)
Aliphatic EC 5-6	730 / 1700 / 3900	42 / 78 / 160	42 / 78 / 160	3200 ^{sol} (304) / 5900 ^{sol} (558) /	570000 ^{sol} (304) 590000 /	95000 ^{sol} (304) / 130000 ^{sol} (558)/
	2300 / 5600 /	100 / 230 /	100 / 230 /	12000 ^{sol} (1150) 7800 ^{sol} (144) /	600000 600000 /	180000 ^{sol} (1150) 150000 ^{sol} (144)
Aliphatic EC >6-8	13000	530	530	17000 ^{sol} (322) /	610000 /	220000 ^{sol} (322)/
	320 / 770 /	27 / 65 / 150	27 / 65 / 150	40000 ^{sol} (736) 2000 ^{sol} (78) /	620000 13000 / 13000	320000 ^{sol} (736) 14000 ^{sol} (78) /
Aliphatic EC >8-10	1700	21/65/150	27 / 65 / 150	4800 ^{vap} (190) / 11000 ^{vap} (451)	/ 13000	18000 ^{vap} (190) / 21000 ^{vap} (451)
	2200 / 4400 /	130v ^{ap} (48) /	130v ^{ap} (48) /	9700 ^{sol} (48) /	13000 / 13000	21000 ^{sol} (48) /
Aliphatic EC >10-12	7300	330 ^{vap} (118) / 760 ^{vap} (283)	330 ^{vap} (118) / 770 ^{vap} (283)	23000 ^{vap} (118) / 47000 ^{vap} (283)	/ 13000	23000 ^{vap} (118) / 24000 ^{vap} (283)
All I il EQ 1010	11000 / 13000	1100 ^{sol} (24) /	1100 ^{sol} (24) /	59000 ^{sol} (24) /	13000 / 13000	25000 ^{sol} (24) /
Aliphatic EC >12-16	/ 13000	2400 ^{sol} (59) / 4300 ^{sol} (142)	2400 ^{sol} (59) / 4400 ^{sol} (142)	82000 ^{sol} (59) / 90000 ^{sol} (142)	/ 13000	25000 ^{sol} (59) / 26000 ^{sol} (142)
All I il EQ 10.05 a	260000 /	65000 ^{sol} (8.48	65000 ^{sol} (8.48	1600000 /	250000 /	450000 /
Aliphatic EC >16-35 °	270000 / 270000	92000 ^{sol} (21) 110000	92000 ^{sol} (21) 110000	1700000 / 1800000	250000 / 250000	480000 / 490000
	260000 /	65000 ^{sol} (8.48	65000 ^{sol} (8.48	1600000 /	250000 /	450000 /
Aliphatic EC >35-44 °	270000 / 270000	92000 ^{sol} (21) / 110000	92000 ^{sol} (21) 110000	1700000 / 1800000	250000 / 250000	480000 / 490000
	13 / 27 / 57	70 / 140 /	370 / 690 /	26000 ^{sol} (1220) /	56000 / 56000	76000 ^{sol} (1220)
Aromatic EC 5-7 (benzene)		300	1400	46000 ^{sol} (2260) / 86000 ^{sol} (4710)	/ 56000	/84000 ^{sol} (2260)/ 92000 ^{sol} (4710)
Aramatia FC - 7.0 (taluana)	22 / 51 / 120	130 / 290 /	860 / 1800 /	56000 ^{vap} (869)/	56000 / 56000	87000 ^{vap} (869) / 95000 ^{sol} (1920)/
Aromatic EC >7-8 (toluene)		660	3900	110000 ^{sol} (1920)/ 180000 ^{vap} (4360)	/ 56000	100000 ^{vap} (4360)
Aromatic EC >8-10	8.6 / 21 / 51	34 / 83 / 190	47 / 110 / 270	3500 ^{vap} (613) / 8100 ^{vap} (1500) /	5000 / 5000 / 5000	7200 ^{vap} (613) / 8500 ^{vap} (1500) /
	13 / 31 / 74	74 / 180 /	250 / 590 /	17000 ^{vap} (3580) 16000 ^{sol} (364) /	5000 / 5000 /	9300 ^{vap} (3580) 9200 ^{sol} (364) /
Aromatic EC >10-12	13/31/74	380	1200	28000 ^{sol} (899) / 34000 ^{sol} (2150)	50007	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 °	46 / 110 / 260	260 / 540 / 930	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7600 / 7700 / 7800
Aromatic EC >21-35 °	370 / 820 / 1600	1100 / 1500 / 1700	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7800 / 7800 / 7900
Aromatic EC >35-44 °	370 / 820 /	1100 / 1500 /	1900 / 1900 /	28000 / 28000 /	3800 / 3800 /	7800 / 7800 /
Aliphatic+Aromatic	1600 1200 / 2100 /	1700 1600 / 1800 /	1900 1900 / 1900 /	28000 28000 / 28000 /	3800 3800 / 3800 /	7900 7800 / 7800 /
EC >44-70 ° Chloroalkanes & Chloroalkenes	3000 (SOM 1%/ 2 5%/ 6	1900	1900	28000	3800	7900
1,2-Dichloroethane	0.0046 /	0.0071 /	0.0092 /	0.67 / 0.97 / 1.7	29 / 29 / 29	21 / 24 / 28
1,2-DIGHIGIOEUIANE	0.0083 / 0.016	0.011 / 0.019	0.013 / 0.023	660 / 1200 / 2000	140000 /	57000vap(4.405)
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

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Determinand	Allotment	R <u>w</u> HP	R <u>wo</u> 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 /	0.91 / 1.7 /	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	<u> </u>	0.0011	0.0010		I	I .
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° / 0.3 / 0.7	0.87° / 2.0 / 4.5	94 / 150 / 210	3500 / 4000 / 4300	620 / 620 / 620	1100 / 1100 / 1100
Pentachlorophenol (PCP)	0.03 / 0.08 /	0.22/ 0.52 /	27 ^{vap} (16.4) /	400 / 400 / 400	60 / 60 / 60	110 / 120 / 120
Other a, b, I, p	0.19	1.2	29 / 31			
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 /	31 / 66 / 120	25 / 25 / 25	48 / 50 / 51
Pesticides (SOM 1%/ 2.5%/ 6%)					l	L
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 1.2 / 2.9 / 6.8	0.97/2/3.5 7.4/18/41	7.0 / 7.3 / 7.4 160 ^{vap} (0.003)/	170 / 170 / 170 5600 ^{vap} (0.003) /	18 / 18 / 18 1200 / 1200 /	30 / 30 / 31 2400 / 2400 /
Alpha - Endosulfan	1.2/2.9/0.0	7.4/10/41	280 ^{vap} (0.003)/ 410 ^{vap} (0.016)	7400 ^{vap} (0.003) / 8400 ^{vap} (0.016)	1200 / 1200 /	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	5.9 / 14 / 32	0.46 / 1.0 /	0.46 / 1.0 / 2.4	56 / 130 / 290	11000 / 13000	1300 ^{sol} (675)/
Chlorobenzene	5.97 147 32	2.4	0.40 / 1.0 / 2.4	36 / 130 / 290	/ 14000	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 _E CB)	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

Copyright Land Quality Management Ltd reproduced with permission; Publication Number S4UL3202. All rights reserved 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

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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
- 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	1 1111									
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					

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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-	80 / 180 / 400	3700 / 5400 / 6900	12 / 27 / 63	160000 / 180000 /	15000 / 32500 /
methylphenol)				180000	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

Paramatan.	ICRCL 70/90 ^a Maximum Livestock Crop Growth		SSVs ^b	Code of Practice for Agricultural Use of Sewage Sludge ^c	BS 3882:2015 Specification for topsoil and requirements for use
Parameter					Phytotoxic
					contaminants
	mg/kgDW	mg/kgDW	mg/kgDW	mg/kgDW	mg/kgDW
Antimony	<u> </u>		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

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- 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

Metals Arsenic SP		Screening Concentration (mg/l)					
Marsanic SP		Reporting	Human				
Assenic SF	Metals	raido					
Boron		_	0.01	0.05 (2)	0.025 ⁽²⁾		
Cadmium PS		_		-	-		
Chromium (III) SP		0.0001	0.005	0.00009, 0.00015,	0.0002		
Chromium (Vf) SP	Chromium (total)	-	0.05	-	-		
Chromium (Vf) SP	Chromium (III) SP	-	-	0.0047	-		
Copper SP		-	-	0.0034	0.0006		
Iron SP		-	2		0.00376 bioavailable		
Lead PS		-					
Mercury compounds PS		-		0.0012 bioavailable	0.0013 bioavailable		
Manganese SP		0.00001					
Nickel PS		-			-		
Selenium		_			0 0086 bioavailable		
Chlorinated Compounds				- 0.004 bloavallable			
C10-13 chloroalkanes PS short chain chlorinated paraffins Dichloromethane PS		-		0.0109bioavailable ⁽¹³⁾			
C10-13 chloroalkanes PS short chain chlorinated paraffins Dichloromethane PS	Chlorinated Compounds						
Short chain chlorinated paraffins Dichloromethane PS 0.02 0.02 0.02 1.2-Dichloromethane PS 0.001 0.003 0.01 0.01 0.01 1.7-Chloroethane PS 0.0001 0.01 0.01 0.01 0.01 1.1.1-Trichloroethane 0.0001		-	-	0.0004	0.0004		
Dichloromethane PS							
1,2-Dichloroethane PS 0.001 0.003 0.01 0.01 1richloroethene PS 0.0001 0.0165 0.01 0.01 1,1,1-Trichloroethane 0.0001 - - - 1,1,2-Trichloroethane 0.0001 - - - 1,2,4-Trichloroethane SP - 0.1(1) 0.0025 0.0025 1,2,4-Trichloroethene PS 0.00001 0.01(5) 0.01 0.01 Tetrachloroethene PS 0.0001 0.003 0.012 0.012 Tetrachloroethane SP - 0.0005 - - Vinyl chlorde - 0.0005 - - Trichlorobenzene (TCB) PS - - 0.0004 0.0004 Chloroform 0.0001 - - - Chloroformsethanes (CNT)(1) 0.001 - - - Hexachlorobutadiene PS 0.000005 - 0.0006 max 0.0006 max Hexachlorocyclohexanes (HCH) PS 0.000001 - - -		_	-	0.02	0.02		
Trichloroethane		0.001	0.003				
1,1,1-Trichloroethane 0.0001 - </td <td></td> <td></td> <td></td> <td></td> <td></td>							
1,1,2-Trichloroethane							
Trichloromethanes PS			_	_	_		
1, 2, 4-Trichlorobenzene			0.1(1)	0.0025	0.0025		
Tetrachloroethene PS			0.1	0.0020	0.0020		
Tetrachloromethane PS			0.01(5)	0.01	0.01		
Tetrachloroethane SP							
Vinyl chloride - 0.0005 - - Trichlorobenzene (TCB) PS - - 0.0004 0.0004 Chloroform 0.0001 - - - Chloronitrotoluenes(CNT)(II) 0.0001 - - - Hexachlorobutadiene PS 0.000005 - 0.00006 max 0.00006 max Hexachlorocyclohexanes (HCH) PS 0.000001 - 0.00002 0.000002 Polycyclic Aromatic Hydrocarbons - - - - - Acenaphthene - - - - - - Acenaphthylene - - - - - - - Acenaphthylene -			0.003		0.012		
Trichlorobenzene (TCB) PS - - 0.0004 0.0004 Chloroform 0.0001 - - - Chloronitrotoluenes(CNT) ⁽¹¹⁾ 0.001 - - - Hexachlorobutadiene PS 0.000005 - 0.0006 max 0.00006 max Hexachlorocyclohexanes (HCH) PS 0.000001 - 0.00002 0.000002 Polycyclic Aromatic Hydrocarbons - - - - - Acenaphthene - - - - - - Acenaphthylene - - - - - - Anthracene PS - - 0.0001 0.0001 0.0001 0.0001 Benzo(a)phthracene - - 0.0001 (10) 0.000017 max (12) 0.0000017 0.00000017 Benzo(b)fluoranthene PS - 0.0001 (10) 0.000017 max (12) 0.0000017 0.0000017 0.0000017 0.0000017 0.0000017 0.0000017 0.0000017 0.0000017 0.0000017 0.0000017			0.0005	0.140			
Chloroform 0.0001 - - - Chloronitrotoluenes(CNT)(11) 0.001 - - - - Hexachlorobutadiene PS 0.000005 - 0.0006 max 0.00006 max Hexachlorocyclohexanes (HCH) PS 0.000001 - 0.00002 0.000002 Polycyclic Aromatic Hydrocarbons - - - - - Acenaphthene - - - - - - Acenaphthene - <td></td> <td></td> <td></td> <td>- 0.0004</td> <td>- 0.0004</td>				- 0.0004	- 0.0004		
Chloronitrotoluenes(CNT) ⁽¹¹⁾ 0.001 - - - Hexachlorobutadiene PS 0.000005 - 0.0006 max 0.00006 max Hexachlorocyclohexanes (HCH) PS 0.000001 - 0.00002 0.000002 Polycyclic Aromatic Hydrocarbons Acenaphthene - - - - Acenaphthylene - - - - Acenaphthylene - - - - Anthracene PS - - 0.0001 0.0001 Benzo(a)anthracene - - - - Benzo(b)fluoranthene PS - 0.00001 (10) 0.000017 max (12) 0.0000017 max (12) Benzo(a)pyrene PS - 0.0001 (10) 0.000017 max (12) 0.0000017 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 - 0.00001 (10) 0.0000082 max (12) 0.00000082 max (12) Chrysene - - - - - <td></td> <td></td> <td>-</td> <td>0.0004</td> <td>0.0004</td>			-	0.0004	0.0004		
Hexachlorobutadiene PS							
Note							
Polycyclic Aromatic Hydrocarbons Acenaphthene							
Acenaphthene - <t< td=""><td></td><td></td><td>-</td><td>0.00002</td><td>0.000002</td></t<>			-	0.00002	0.000002		
Acenaphthylene -							
Anthracene PS - - 0.0001 0.0001 Benzo(a)anthracene - - - - Benzo(b)fluoranthene PS - 0.0001 (10) 0.0000017 max (12) 0.0000017 max (12) Benzo(a)pyrene PS - 0.00001 (10) 0.0000017 max (12) 0.0000017 max (12) Benzo(g,h,i)perylene PS - 0.0001 (10) 0.0000082 max (12) 0.0000082 max (12) Indeno(1,2,3-cd)pyrene PS - 0.0001 (10) - (12) - (12) Chrysene - - - - Dibenzo(a,h)anthracene - - - - Fluorene - - 0.0000063 0.0000063 Fluorene - - - - Phenanthrene - - - - Pyrene - - - -			-	-	-		
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) 0.0000082 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 - - - -		-	-	0.0001	0.0001		
Benzo(a)pyrene PS - 0.00001 0.00000017 0.0000017 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) 0.0000082 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 - - - - -		-	- (10)	- (10)	- (42)		
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) 0.0000082 max (12) Indeno(1,2,3-cd)pyrene PS - 0.00001 (10) - (12) - (12) Chrysene - - - - Dibenzo(a,h)anthracene - - - Fluoranthene PS - - 0.0000063 0.0000063 Fluorene - - - - - Phenanthrene - - - - - Pyrene - - - - -		-					
Benzo(g,h,i)perylene PS - 0.0001 (10) 0.0000082 max (12) 0.0000082 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 - - - - -		-					
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 - - - -		-					
Chrysene - - - Dibenzo(a,h)anthracene - - - Fluoranthene PS - - 0.0000063 0.0000063 Fluorene - - - - Phenanthrene - - - - Pyrene - - - -		-					
Dibenzo(a,h)anthracene - - - Fluoranthene PS - - 0.0000063 0.0000063 Fluorene - - - - - Phenanthrene - - - - - Pyrene - - - - -		-	0.0001 (10)	_ (12)	_ (12)		
Fluoranthene PS - - 0.0000063 0.0000063 Fluorene - - - - Phenanthrene - - - - Pyrene - - - -			-	-	-		
Fluorene -<			-	-	-		
Fluorene -<		-	-	0.000063	0.000063		
Phenanthrene - <t< td=""><td></td><td>-</td><td>-</td><td>-</td><td>-</td></t<>		-	-	-	-		
Pyrene		-	-	-	-		
		-	-	-	-		
	Naphthalene PS	-	-	0.002	0.002		

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	Screening Concentration (mg/l)				
	Minimum Human Fresh Water/Inland Reporting Consumption			Salt Water/Other	
	Value	(10)			
Polycyclic Aromatic Hydrocarbons		0.0001(10)			
Petroleum hydrocarbons	<u> </u>	(0)			
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	
<u>Ethylbenzene</u>	- (4)	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	-	- 0.0040	- 0.00040	
2,4 dichlorophenol SP	0.0001	-	0.0042	0.00042	
2,4 D ester SP	0.0001	- 0.001 ⁽⁶⁾	0.0003	0.0003	
op and pp DDT (each) PS		0.001(0)	0.000025 (6)	0.000025 (6)	
op and pp DDE (each)					
op and pp TDE (each)	0.00004		0.00048	0.00040	
Dimethoate SP	0.00001	-	0.00048	0.00048	
Endosulfan PS	0.000005	-	0.000005	0.000005	
Hexachlorobenzene PS	0.000001	-	0.00005 max	0.00005 max	
Permethrin SP Atrazine PS	0.00003		0.00001 0.0006	0.0000002 0.0006	
Simazine PS	0.00003	-	0.000	0.000	
Linuron SP	0.00003	-	0.0005	0.0005	
Mecoprop SP		-	0.0003	0.0003	
Trifluralin PS	0.00001		0.00003	0.00003	
Total pesticides	0.00001	0.0005	0.00003	0.00003	
Miscellaneous		0.0000			
Ammoniacal nitrogen (as NH4+)	_	0.5	0.26 ¹⁶		
, and the open (do thing)		0.0	0.20 0.39 ¹⁷		
Ammoniacal nitrogen (as N)	_	0.39	0.2 16	-	
7 (do 11)		0.00	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		0.0077	0.0077 0.0004	
PCBs (individual congeners)	0.0001	-	0.0004		
Sodium		200	-	<u>-</u>	
Sulphate	-	250	-	-	
Tributyl and triphenyl tin	0.000001	250	0.0000002	0.0000002	
compounds (each) PS	0.000001	-			
Di(2-ethylhexyl)-phthalate PS Substances highlighted in yellow are	hazardous su	- bstances. PS = Pr	0.0013 iority Substances, SP = Si	0.0013 pecific Pollutants.	

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.

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

- 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 _{gw\}	_{/ap} (μg/l) ^{1,2}	Aqueous
		Residential	Commercial	Solubility (µg/l)
	Petrole	um Hydrocarbons		(107
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
		natic Hydrocarbons		
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	1 0 700 ("	
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
1 1 1 2 Totrophlers others	79-34-5	enated Organics	22,000	1 110 000
1,1,1,2-Tetrachloroethane 1,1,1-Trichloroethane	79-34-5 71-55-6	240 3,000	290,000	1,110,000 1,300,000
1,1,1-111011010ethane	7 1-55-6	3,000	290,000	1,300,000

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

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	75-25-2	3,100	400,000	3,000,000
(Tribromomethane)				
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 (or	ganic 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

<u>Notes</u>

- 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).

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Appendix 3 Geoenvironmental Laboratory Testing Certificates





Derek Daniels

TerraConsult Ltd Bold Business Centre Bold Lane Sutton St Helens Merseyside WA9 4TX

t: 01925 291111 **f:** 01925 291191

e: derekdaniels@terraconsult.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
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:

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.





Lab Sample Number				936131	936132	936133	936134	
•				320121	930132	930133	930134	
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		1		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	
1			· · · · · · · · · · · · · · · · · · ·					
Asbestos in Soil	Туре	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
Conoral Inorganies								
General Inorganics pH - Automated	pH Units	N/A	MCERTS	8.9	8.0	7.7	8.1	
Total Cyanide	mg/kg	1 1	MCERTS	< 1	< 1	< 1	< 1	
Total Cyanide	mg/kg		MCERTS	<u> </u>	\ 1	\ 1	\1	
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS	280	510	860	380	
Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate Water Soluble SO4 16hr extraction (2:1 Leachate	g/l	0.00125	MCERTS	0.14	0.26	0.43	0.19	
Equivalent)	mg/l	1.25	MCERTS	141	257	429	191	
Organic Matter	%	0.1	MCERTS	4.0	2.4	5.8	1.7	
· (M.666)	, ,,							
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 Penze(h)fluoranthone	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 Benzo(a)pyrene	mg/kg mg/kg	0.05 0.05	MCERTS MCERTS	< 0.05 < 0.05	< 0.05 < 0.05	0.29 0.56	< 0.05 < 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg 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	
	9/119	_ 0.00		. 3.03	. 5.05		. 3.03	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.09	< 0.80	6.85	< 0.80	
	2. 2		<u> </u>				•	-
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) Zinc (aqua regia extractable)	mg/kg	1	MCERTS	34	68	72 760	84	
zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	180	760	95	





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) Accreditation Status Units								
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	-	-	
Toluene	μg/kg	1	MCERTS	< 1.0	-	-	-	
Ethylbenzene	μg/kg	1	MCERTS	< 1.0	-	-	-	
& 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		10	MCERTS	2300	32	720	41	ı
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	-	-	-	





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			1	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
		•	on					
VOCs			Ξ-					
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	< 1.0	
Vinyl Chloride Trichlorofluoromethane	μg/kg μg/kg	1	NONE NONE	< 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
1,1-Dichloroethene	μg/kg 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 1,1,1-Trichloroethane	μg/kg	1	MCERTS MCERTS	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-1 richioroethane 1,2-Dichloroethane	μg/kg μg/kg	1	MCERTS	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
1,1-Dichloropropene	μg/kg 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 Bromodichloromethane	μg/kg	1	MCERTS MCERTS	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	μg/kg μg/kg	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 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 Chlorobenzene	μg/kg μg/kg	1	ISO 17025 MCERTS	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
1,1,1,2-Tetrachloroethane	μg/kg μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	μg/kg 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 < 1.0	
Isopropylbenzene Bromobenzene	μg/kg μg/kg	1	MCERTS MCERTS	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
n-Propylbenzene	μg/kg 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 ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene p-Isopropyltoluene	μg/kg μg/kg	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
1,2-Dichlorobenzene	μg/kg μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	μg/kg 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	





F								
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	1		1	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
SVOCs								<u> </u>
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 Bis(2-chloroisopropyl)ether	mg/kg mg/kg	0.2	MCERTS MCERTS	< 0.2 < 0.1	< 0.2 < 0.1	< 0.2 < 0.1	< 0.2 < 0.1	
2-Methylphenol	mg/kg mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
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 Bis(2-chloroethoxy)methane	mg/kg mg/kg	0.3	MCERTS MCERTS	< 0.3 < 0.3	< 0.3 < 0.3	< 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 2,4,5-Trichlorophenol	mg/kg mg/kg	0.1	MCERTS MCERTS	< 0.1 < 0.2	< 0.1 < 0.2	< 0.1 < 0.2	< 0.1 < 0.2	
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.2	< 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 Dibenzofuran	mg/kg mg/kg	0.2	MCERTS MCERTS	< 0.2 < 0.2	< 0.2 < 0.2	< 0.2 < 0.2	< 0.2 < 0.2	
4-Chlorophenyl phenyl ether	mg/kg	0.2	ISO 17025	< 0.3	< 0.2	< 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 Promonhonyl phonyl othor	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	
Bromophenyl phenyl ether Hexachlorobenzene	mg/kg mg/kg	0.2	MCERTS MCERTS	< 0.2 < 0.3	< 0.2 < 0.3	< 0.2 < 0.3	< 0.2 < 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 Pyrene	mg/kg mg/kg	0.05	MCERTS MCERTS	0.39 0.37	0.27 0.22	1.5 1.2	0.30 0.23	
Butyl benzyl phthalate	mg/kg mg/kg	0.05	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 Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS MCERTS	< 0.05 < 0.05	< 0.05 < 0.05	0.31 < 0.05	< 0.05 < 0.05	
Benzo(ghi)perylene	mg/kg mg/kg	0.05	MCERTS	< 0.05 < 0.05	< 0.05	0.34	< 0.05	
Denizo(grii/peryierie	mg/kg	0.03	PICENTO	\ U.UJ	~ U.UJ	0.57	\ U.UJ	





Analytical Report Number : 18-80943 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	С	Total cyanide in soil	L080-PL	С
BH11		S	18-80943	936132	С	Total cyanide in soil	L080-PL	С
BH12		S	18-80943	936133	С	Total cyanide in soil	L080-PL	С
BH12		S	18-80943	936134	С	Total cyanide in soil	L080-PL	С





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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:

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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Lab Sample Number				937197	937198	937199	937200	937201
Sample Reference				BH01	BH01	BH08	BH08	BH02
Sample Number				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				
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
	9							
Asbestos in Soil	Туре	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
General Inorganics	T			0.4		0.0	0.0	0.0
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		1.25	MCEDIC	1140	F10	440	100	12.6
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		0.05	MOEDTO		1	. 0.05		. 0.05
	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 (agua regia extractable)	mg/kg	1	MCERTS	320	66	250	140	14
zine (aqua regia extractable)	my/ky		PICENTS	320	00	230	170	17





TPH-CWG - Aliphatic >EC21 - EC35 TPH-CWG - Aliphatic > EC35 - EC44

Lab Sample Number		937197	937198	937199	937200	937201		
Sample Reference				BH01	BH01	BH08	BH08	BH02
Sample Number				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				
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	-	-	<u>-</u>
	5, 5		-					*
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

	9/9	٠						
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

8

8.4

mg/kg mg/kg MCERTS

NONE

230

< 8.0

< 8.4

< 8.0

< 8.4





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		
			A					
		윤ᆫ	Accreditation Status					
Analytical Parameter	Units	Limit of detection	ed					
(Soil Analysis)	its	ctic o	tus					
		5 T	Ö					
								_
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		
				1	1		1	1
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	<u> </u>	<u> </u>
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	_		1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	_	< 0.05	_		1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	_	< 0.05	_	l	1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	_	< 0.05	_		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	_	< 0.05	_		1
penzo(grii/peryiene	ing/kg	0.03	PICENTO		` 0.03			
Total PAH								
Speciated Total EPA-16 PAHs	me/lie	0.8	MCERTS	_	< 0.80	_	1	
Openated Total LFM-10 FM135	mg/kg	0.0	MICERIS	-	< 0.00	-		. 1
Honor Motole / Motolloids								
Heavy Metals / Metalloids	"		MCERTC	10	7.0	24	I	1
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	l	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	ļ	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	51	14	51		<u> </u>
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15	7.1	16		Į
Lead (aqua regia extractable)	mg/kg	1	MCERTS	32	44	23		Į
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		
	_		_		-			





TPH-CWG - Aromatic >EC8 - EC10

TPH-CWG - Aromatic >EC10 - EC12

TPH-CWG - Aromatic >EC12 - EC16

TPH-CWG - Aromatic >EC16 - EC21

TPH-CWG - Aromatic >EC21 - EC35 TPH-CWG - Aromatic > EC35 - EC44

TPH-CWG - Aromatic (EC5 - EC35)

TPH-CWG - Aromatic (EC5 - EC44)

Lab Sample Number				937202	937203	937204	i I	
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	-		
o & 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	T					
	mg/kg	10	MCERTS	< 10	-	< 10		
		•		< 10		< 10		
	mg/kg	0.001	MCERTS	-	< 0.001	-		
FPH-CWG - Aliphatic >EC6 - EC8	mg/kg mg/kg	0.001	MCERTS MCERTS	-	< 0.001 < 0.001	-		
TPH-CWG - Aliphatic >EC6 - EC8 TPH-CWG - Aliphatic >EC8 - EC10	mg/kg mg/kg mg/kg	0.001 0.001 0.001	MCERTS MCERTS MCERTS		< 0.001 < 0.001 < 0.001	- - -		
IPH-CWG - Aliphatic >EC6 - EC8 IPH-CWG - Aliphatic >EC8 - EC10 IPH-CWG - Aliphatic >EC10 - EC12	mg/kg mg/kg mg/kg	0.001 0.001 0.001 1	MCERTS MCERTS MCERTS MCERTS		< 0.001 < 0.001 < 0.001 < 1.0	- - -		
IPH-CWG - Aliphatic >EC6 - EC8 IPH-CWG - Aliphatic >EC8 - EC10 IPH-CWG - Aliphatic >EC10 - EC12 IPH-CWG - Aliphatic >EC12 - EC16	mg/kg mg/kg mg/kg mg/kg mg/kg	0.001 0.001 0.001 1 2	MCERTS MCERTS MCERTS MCERTS MCERTS		< 0.001 < 0.001 < 0.001 < 1.0 < 2.0			
TPH-CWG - Aliphatic >EC6 - EC8 TPH-CWG - Aliphatic >EC8 - EC10 TPH-CWG - Aliphatic >EC10 - EC12 TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC16 - EC21	mg/kq mg/kg mg/kg mg/kg mg/kg	0.001 0.001 0.001 1 2 8	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS		< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0			
TPH-CWG - Aliphatic >EC6 - EC8 TPH-CWG - Aliphatic >EC8 - EC10 TPH-CWG - Aliphatic >EC10 - EC12 TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC16 - EC21 TPH-CWG - Aliphatic >EC21 - EC35	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	0.001 0.001 0.001 1 2 8	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS		< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0			
TPH-CWG - Aliphatic >EC5 - EC6 TPH-CWG - Aliphatic >EC6 - EC8 TPH-CWG - Aliphatic >EC8 - EC10 TPH-CWG - Aliphatic >EC10 - EC12 TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC16 - EC21 TPH-CWG - Aliphatic >EC16 - EC21 TPH-CWG - Aliphatic >EC35 - EC44	mg/kg	0.001 0.001 0.001 1 2 8 8 8	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS NONE	- - - - - -	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 10 83			
TPH-CWG - Aliphatic >EC6 - EC8 TPH-CWG - Aliphatic >EC8 - EC10 TPH-CWG - Aliphatic >EC10 - EC12 TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC16 - EC21 TPH-CWG - Aliphatic >EC21 - EC35 TPH-CWG - Aliphatic >EC35 - EC44 TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	0.001 0.001 0.001 1 2 8 8 8 8.4	MCERTS NONE MCERTS		< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 10 83			
TPH-CWG - Aliphatic >EC6 - EC8 TPH-CWG - Aliphatic >EC8 - EC10 TPH-CWG - Aliphatic >EC10 - EC12 TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC16 - EC21 TPH-CWG - Aliphatic >EC21 - EC35 TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	0.001 0.001 0.001 1 2 8 8 8	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS NONE	- - - - - -	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 10 83			
IPH-CWG - Aliphatic > EC6 - EC8 IPH-CWG - Aliphatic > EC8 - EC10 IPH-CWG - Aliphatic > EC10 - EC12 IPH-CWG - Aliphatic > EC12 - EC16 IPH-CWG - Aliphatic > EC12 - EC16 IPH-CWG - Aliphatic > EC21 - EC35 IPH-CWG - Aliphatic > EC21 - EC35 IPH-CWG - Aliphatic > EC35 - EC44 IPH-CWG - Aliphatic (EC5 - EC35) IPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	0.001 0.001 0.001 1 2 8 8 8.4 10	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS NONE MCERTS NONE	- - - - - - -	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 10 83 10 94	- - - - - - -		
IPH-CWG - Aliphatic > EC6 - EC8 IPH-CWG - Aliphatic > EC8 - EC10 IPH-CWG - Aliphatic > EC10 - EC12 IPH-CWG - Aliphatic > EC12 - EC16 IPH-CWG - Aliphatic > EC12 - EC16 IPH-CWG - Aliphatic > EC21 - EC35 IPH-CWG - Aliphatic > EC21 - EC35 IPH-CWG - Aliphatic > EC35 - EC44 IPH-CWG - Aliphatic (EC5 - EC35) IPH-CWG - Aliphatic (EC5 - EC44) IPH-CWG - Aromatic > EC5 - EC7	mg/kg	0.001 0.001 1 2 8 8 8.4 10 10	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS NONE MCERTS NONE	- - - - - - -	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 10 83 10 94			
TPH-CWG - Aliphatic >EC6 - EC8 TPH-CWG - Aliphatic >EC8 - EC10 TPH-CWG - Aliphatic >EC10 - EC12 TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC16 - EC21 TPH-CWG - Aliphatic >EC21 - EC35 TPH-CWG - Aliphatic >EC35 - EC44 TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	0.001 0.001 0.001 1 2 8 8 8.4 10	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS NONE MCERTS NONE	- - - - - - -	< 0.001 < 0.001 < 0.001 < 1.0 < 2.0 < 8.0 10 83 10 94	- - - - - - -		

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg mg/kg

mg/kg

0.001

10

10 8.4

10

MCERTS

MCERTS

MCERTS

MCERTS

NONE

MCERTS

NONE

< 0.001

< 1.0

< 2.0

< 10

41 320

42





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)

			Method	Wet / Dry	Accreditation
Analytical Test Name	Analytical Method Description	Analytical Method Reference	number	Analysis	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.

Iss No 18-81153-2 Riverside EfW 3765





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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



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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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	Туре	N/A	ISO 17025	-	-	Chrysotile	-	
Asbestos in Soil	Туре	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 Cvanide	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		0.05	MOEDEO		T	0.26	. 0.05	
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 0.05	MCERTS	-	-	1.1 6.5	< 0.05 < 0.05	
Fluoranthene Pyrene	mg/kg	0.05	MCERTS MCERTS	-		5.7	< 0.05 < 0.05	
Pyrene Benzo(a)anthracene	mg/kg mg/kg	0.05	MCERTS	-	-	3.2	< 0.05 < 0.05	
Chrysene		0.05	MCERTS	-		2.8	< 0.05	
Benzo(b)fluoranthene	mg/kg mg/kg	0.05	MCERTS	-	-	3.7	< 0.05	
Benzo(k)fluoranthene	mg/kg 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	ma/ka	0.05	MCERTS	-	_	2.3	< 0.05	
Total PAH	шу/ку	0.03	PICERTS			2.5	\ 0.05	
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	41.2	< 0.80	





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

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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	





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	
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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	





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 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	





Lab Sample Number				941650	941651	941652	941653	
Sample Reference				BH10	BH10	BH13	BH13	
Sample Number Depth (m)				None Supplied 0.20	None Supplied 0.80	None Supplied 0.70	None Supplied 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 1,4-Dichlorobenzene	mg/kg mg/kg	0.1	MCERTS MCERTS	-	-	< 0.1 < 0.2	< 0.1 < 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 1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS MCERTS	-	-	< 0.3 < 0.3	< 0.3 < 0.3	
Naphthalene	mg/kg mg/kg	0.05	MCERTS	-	_	0.36	< 0.05	
2,4-Dichlorophenol	mg/kg	0.03	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 Dimethylphthalate	mg/kg	0.1	MCERTS MCERTS	-	-	< 0.1 < 0.1	< 0.1 < 0.1	
2,6-Dinitrotoluene	mg/kg 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 mg/kg	0.2	MCERTS	-	<u>-</u>	< 0.2 1.6	< 0.2 < 0.05	
Fluorene Azobenzene	mg/kg mg/kg	0.05	MCERTS MCERTS	<u> </u>	-	< 0.3	< 0.05	
Bromophenyl phenyl ether	mg/kg	0.3	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 MCERTS		<u>-</u>	6.5 5.7	< 0.05 < 0.05	
Pyrene Butyl benzyl phthalate	mg/kg mg/kg	0.05	ISO 17025	-	-	2.8	< 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	





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	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
SVOCs TICs	-	_	_					
L						Naphthalene,		
SVOCs TICs Compound Name		N/A	NONE	-	-	1,6,7-trimethyl-	ND	
SVOC % Match	%	N/A	NONE	-	-	98 Azulene, 4,6,8-	-	
SVOCs TICs Compound Name		N/A	NONE				_	
SVOC % Match	%	N/A	NONE NONE		-	trimethyl- 98		
SVOCs TICs Compound Name	70	N/A	NONE	_	-	Benzo[e]pyrene	_	
SVOC % Match	%	N/A	NONE	_	_	98	_	
SVOCs TICs Compound Name	/0	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	-	
						Naphthalene, 1,4-		
SVOCs TICs Compound Name		N/A	NONE			dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	96	-	
						Naphthalene, 2-		
SVOCs TICs Compound Name		N/A	NONE	-	-	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	





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)

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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

Iss No 18-81926-1 Riverside EfW 3765





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



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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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



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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Lab Sample Number				943185	943186	943187	943188	943189
Sample Reference				313103	313100	313107	313100	313103
· · · · · · · · · · · · · · · · · · ·				BH05	BH05	BH03	BH03	BH03
Sample Number				None Supplied				
Depth (m) Date Sampled				0.30 10/04/2018	1.00 10/04/2018	0.60 11/04/2018	1.00 11/04/2018	2.40 11/04/2018
Time Taken				None Supplied				
Time Taken			_	None Supplied	топе заррнеа	None Supplied	Hone Supplied	Hone Supplied
		e L	Accreditation Status					
Analytical Parameter	Units	Limit of detection	edi					
(Soil Analysis)	ß	tion	us					
		_	9					
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
<u>'</u>				,			,	
Asbestos in Soil	Туре	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
rom Gydrido	mg/kg	1	TICENTO	` 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
organic Matter	70	0.1	PICERTS	2.0	0.0	1.0		0.1
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 Chrysene	mg/kg	0.05 0.05	MCERTS MCERTS	1.1 1.1	0.43 0.50	0.55 0.46	-	4.2 3.3
Benzo(b)fluoranthene	mg/kg mg/kg	0.05	MCERTS	1.1	0.50	0.46	-	4.5
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.61	0.75	0.36	-	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
						<u> </u>	<u> </u>	<u> </u>
Total PAH	•	•						
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	11.4	4.65	4.91	-	43.7
Heavy Metals / Metalloids	"	1	MCERTO	220	45	27		
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	230	45	37	-	55
Boron (water soluble) Cadmium (agua regia extractable)	mg/kg	0.2	MCERTS MCERTS	1200 < 0.2	390 < 0.2	600 < 0.2	-	320 1.2
Cadmium (aqua regia extractable) Chromium (hexavalent)	mg/kg mg/kg	4	MCERTS	< 0.2 < 4.0	< 0.2 < 4.0	< 0.2 < 4.0	-	< 4.0
Chromium (nexavalent) Chromium (aqua regia extractable)	mg/kg mg/kg	1	MCERTS	< 4.0 29	< 4.0 39	< 4.0 36	-	< 4.0 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
· · · · · · · · · · · · · · · · · · ·		·						





Lab Sample Number				943185	943186	943187	943188	943189
Sample Reference				BH05	BH05	BH03	BH03	BH03
Sample Number		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				
Analytical Parameter (Soil Analysis) Accreditation Status Units								
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	< 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	-	-
	<u> </u>							
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





Lah Camula Numban			1	042100	042101	042402	042402	1
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	1			None Supplied	None Supplied	None Supplied	None Supplied	
		Δ.	Accreditation Status					
Analytical Parameter	Units	Limit of detection	Sta					
(Soil Analysis)	its	Ctic o	it us					
		3 -	tion					
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	Туре	N/A	ISO 17025		Chrysotile &			
Asbestos III 3011 3Creen / Identinication Name	туре		130 17023		Amosite		_	
Asbestos in Soil	Туре	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	-	-	
Conoral Inorganics								
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	
. can cyanide	mg/kg	 	TICENTO	` 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) Water Soluble SO4 16hr extraction (2:1 Leachate	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	mg/i %	0.1	MCERTS	5.6	2.3	2.3	2.4	
organia i futtor	, ,,		TICENTO	3.0	2.3	2.5	<u></u>	
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 0.05	MCERTS MCERTS	< 0.05 0.30	0.35 2.9	-	< 0.05 < 0.05	
Fluoranthene Pyrene	mg/kg mg/kg	0.05	MCERTS	0.30	2.9	-	< 0.05 < 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	
Taral BAU								
Total PAH		0.0	MCERTC	1.00	10.3		< 0.00	
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	





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	Date Sampled						11/04/2018	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis) Accreditation Status Units								
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	< 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	
							1	T
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	-	-	





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



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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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					
			ä					
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	Туре	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos in Soil	Туре	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	-	<u> </u>	-	< 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	a/l	0.00125	MCEDTC	_	0.27	0.70	0.82	1.8
Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l mg/l	1.25	MCERTS MCERTS	-	268	698	824	1800
Organic Matter	%	0.1	MCERTS	-	3.0	2.2	2.0	-
Total Phenois								
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 Benzo(b)fluoranthene	mg/kg mg/kg	0.05 0.05	MCERTS MCERTS	4.6 3.6	< 0.05 < 0.05	0.19 0.27	1.5 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 Consisted Total EDA 16 DAHs		0.0	MCERTC	00.0	< 0.00	2.10	17.4	1
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	99.9	< 0.80	2.10	17.4	-
Heavy Metals / Metalloids								
Arsenic (agua 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 < 1.0
Selenium (aqua regia extractable) Zinc (aqua regia extractable)	mg/kg mg/kg	1	MCERTS MCERTS	-	< 1.0 85	< 1.0 68	< 1.0 130	< 1.0 230
zine (aqua regia extractable)	my/kg		PICEKIS	<u> </u>	UJ	UU	130	230





Lab Sample Number	ab Sample Number						951941	951942				
Sample Reference				TP01	TP01	TP01	TP02	TP02				
Sample Number				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								
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	-				
					T	T	ı	T				
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 10	MCERTS	-	-	< 10 < 10	66 260	-				
TPH-CWG - Aromatic > EC21 - EC35 TPH-CWG - Aromatic > EC35 - EC44	mg/kg mg/kg	8.4	MCERTS NONE	-	-	< 10 < 8.4	350	-				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	_	_	< 10	360	_				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	NONE	-	_	< 10	700	_				
TETT-CARG - MIDITIALIC (ECS - EC44)	my/ky	10	NONE	-		< 10	700					





Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				None Supplied				
Depth (m)				1.45 25/04/2018	1.65 25/04/2018	2.55 25/04/2018	0.50 26/04/2018	0.80 26/04/2018
Date Sampled Time Taken				None Supplied				
Time Taken				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 1,1-Dichloroethene	μg/kg μg/kg	1	NONE NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	μg/kg μg/kg	1	ISO 17025		-	-	-	-
Cis-1,2-dichloroethene	μg/kg 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 Benzene	μg/kg μg/kg	1	NONE 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 1,1,2-Trichloroethane	μg/kg	1	MCERTS MCERTS	-	-	-	-	-
1,3-Dichloropropane	μg/kg 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 Styrene	μg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	μg/kg μg/kg	1	MCERTS NONE	-		-	-	-
o-Xylene	μg/kg 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 1,2,4-Trimethylbenzene	μg/kg μg/kg	1	MCERTS ISO 17025	-	-	-	-	<u>-</u>
sec-Butylbenzene	μg/kg μg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	μg/kg 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 1,2,3-Trichlorobenzene	μg/kg μg/kg	1	MCERTS ISO 17025	-	- -	-	-	-
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Lab Cannala Namahan				051030	051030	051040	051041	051040
Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				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				
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	-	-	-	-	-





Lab Cample Number				051020	051020	051040	051041	051043
Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01	TP01	TP02	TP02
Sample Number				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	-	-	-	-	-





Lab Sample Number				951938	951939	951940 TD01	951941	951942
Sample Reference Sample Number				TP01 None Supplied	TP01 None Supplied	TP01 None Supplied	TP02 None Supplied	TP02 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
Time raken			_	Hone Supplied	топе заррнеа	топе заррнеа	попе заррнеа	Hone Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
SVOCs					1		1	1
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	-	<u>-</u>	-	- -	-
Isophorone 2-Nitrophenol	mg/kg	0.2	MCERTS MCERTS	-	-	-	-	<u>-</u>
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-			
Bis(2-chloroethoxy)methane	mg/kg 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 Dibenzofuran	mg/kg	0.2	MCERTS MCERTS	-	<u>-</u>	-	-	<u>-</u>
4-Chlorophenyl phenyl ether	mg/kg mg/kg	0.2	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 Chrysene	mg/kg	0.05	MCERTS	-	<u>-</u>	-	- -	- -
Cnrysene Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	<u>-</u>	<u>-</u>	-	-	-
Benzo(k)fluoranthene Benzo(k)fluoranthene	mg/kg mg/kg	0.05	MCERTS 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	-	-	-	-	-





Units	de	>	951938 TP01 None Supplied 1.45 25/04/2018 None Supplied	951939 TP01 None Supplied 1.65 25/04/2018	951940 TP01 None Supplied 2.55 25/04/2018	951941 TP02 None Supplied 0.50	951942 TP02 None Supplied 0.80
Units	de Li	Α	None Supplied 1.45 25/04/2018	None Supplied 1.65 25/04/2018	None Supplied 2.55	None Supplied	None Supplied
Units	de	>	1.45 25/04/2018	1.65 25/04/2018	2.55		
Units	de	>	25/04/2018	25/04/2018			
Units	Li de	>			Z3/UT/ZU10	26/04/2018	26/04/2018
Units	Li de:	>		None Supplied	None Supplied	None Supplied	None Supplied
	Limit of detection	Accreditation Status					
	N/A	NONE	-	-	-	-	-
%	N/A	NONE	-	-	-	-	-
%	N/A N/A	NONE NONE	-	-	-	-	-
0/	N/A	NONE	-	-	-	-	-
96	N/A	NONE	-	-	-	-	-
%	N/A	NONE	-	-	-	-	-
%	N/A N/A	NONE NONE	-	-	-	-	-
%	N/A N/A	NONE NONE	-	-	-	-	-
	N/A	NONE	-	-	-	-	-
<u></u> %			-	-			-
%	N/A	NONE	-	-	-	-	-
0/4	N/A	NONE	-	-	-	-	-
70			-				
0/4			_				
	% % % %	% N/A	N/A NONE	N/A NONE -	N/A NONE	N/A NONE	N/A NONE - - - - -

Environmental Forensics

Chlorophenols								
Pentachlorophenol (PCP)	ma/ka	0.1	NONE	-	-	-	-	-





Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				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	1		1	None Supplied				
		Δ.	Accreditation Status					
Analytical Parameter	Units	Limit of detection	ored Sta					
(Soil Analysis)	its	Cti of	itat					
		5 7	ion					
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
	71.	,				,		ŕ
Asbestos in Soil	Туре	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	~//	0.00125	MCEDIC	1.8	0.33	1.8	0.20	1.1
Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate	g/l	0.00125	MCERTS	1.0	0.33	1.0	0.20	1.1
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 Phenois	1 "		MOEDTO		T	.10		· ·
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 Fluoranthene	mg/kg mg/kg	0.05	MCERTS MCERTS	0.30 2.3	-	1.5 8.6	-	0.28 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 Benzo(ghi)perylene	mg/kg mg/kg	0.05	MCERTS MCERTS	0.12 0.54	-	0.63 3.1	-	0.41 2.0
benzo(gni)peryiene	mg/kg	0.03	MCLKIS	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	_				•			1
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) Chromium (hexavalent)	mg/kg mg/kg	0.2 4	MCERTS MCERTS	< 0.2 < 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





Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				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				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics			l					
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	-
_								1
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 - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	1/0	-	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





ab 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 MTBE (Methyl Tertiary Butyl Ether)	μg/kg μg/kg	1	MCERTS MCERTS	-	<u>-</u> -	< 1.0 < 1.0	<u>-</u> -	-
1,1-Dichloroethane	μg/kg μg/kg	1	MCERTS	-	-	< 1.0	-	-
2,2-Dichloropropane	μg/kg 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 Takan di kanana di kanana	μg/kg	1	MCERTS	-	-	< 1.0	-	-
Tetrachloromethane 1,2-Dichloropropane	μg/kg	1	MCERTS MCERTS	-	<u>-</u>	< 1.0	<u>-</u>	-
Trichloroethene	μg/kg μg/kg	1	MCERTS	-	-	< 1.0 < 1.0	-	-
Dibromomethane	μg/kg 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 Tetrachloroethene	μg/kg μg/kg	1	ISO 17025 NONE	-	-	< 1.0 < 1.0	-	-
1,2-Dibromoethane	μg/kg μg/kg	1	ISO 17025		-	< 1.0	<u>-</u>	-
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	<u>-</u>	-
1,1,2,2-Tetrachloroethane Isopropylhenzene	μg/kg μα/ka	1	MCERTS MCERTS	-	-	< 1.0	-	-
Isopropylbenzene Bromobenzene	μg/kg μg/kg	1	MCERTS	-	-	< 1.0 < 1.0	-	-
n-Propylbenzene	μg/kg 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	-	<u>-</u> -	< 1.0	<u>-</u>	-
1,3-Dichlorobenzene p-Isopropyltoluene	μg/kg μg/kg	1	ISO 17025 ISO 17025	-	<u>-</u>	< 1.0 < 1.0	<u>-</u>	-
1,2-Dichlorobenzene	μg/kg μg/kg	1	MCERTS	-	-	< 1.0	-	-
1,4-Dichlorobenzene	μg/kg 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	-	-





Lab Cample Number				051042	051044	051045	051046	051047
Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				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				
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	-	-





Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				TP02	TP02	TP04	TP04	TP05
Sample Number				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	-	-





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					
		5 T	ion					
SVOCs								<u> </u>
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 2-Methylphenol	mg/kg mg/kg	0.1	MCERTS MCERTS	-	-	< 0.1 < 0.3	<u>-</u>	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.03	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	-	<u>-</u> -	< 0.3 0.23	<u>-</u>	-
Naphthalene 2,4-Dichlorophenol	mg/kg mg/kg	0.05	MCERTS MCERTS		-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.3	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 2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	<u>-</u> -	< 0.1 < 0.1	<u>-</u> -	-
Acenaphthylene	mg/kg mg/kg	0.05	MCERTS 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 Bromophenyl phenyl ether	mg/kg mg/kg	0.3	MCERTS MCERTS	-	<u>-</u>	< 0.3 < 0.2	<u>-</u>	-
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 Rutyl honzyl phtholoto	mg/kg	0.05	MCERTS	-	<u>-</u> -	7.7	- -	-
Butyl benzyl phthalate Benzo(a)anthracene	mg/kg mg/kg	0.3	ISO 17025 MCERTS	-	-	< 0.3 4.4	-	-
Chrysene	mg/kg 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	-	-





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								
CVOCa TICa Campayind Name		N/A	NONE		_	Danma falmums :: :		
SVOCs TICs Compound Name SVOC % Match	%	N/A N/A	NONE NONE	-	-	Benzo[e]pyrene 98	-	-
SVOC % Match	%	IN/A	NONE	-	-		-	-
SVOCs TICs Compound Name		N/A	NONE	_	_	Naphthalene, 1,6,7-trimethyl-	_	_
SVOC % Match	%	N/A N/A	NONE		-	1,6,7-trimetriyi- 97	-	_
SVOC 70 Match	70	IN/A	NONE		_	3,4:9,10-	_	_
SVOCs TICs Compound Name		N/A	NONE	_	_	Dibenzopyrene		_
SVOC % Match	%	N/A	NONE	_		97	-	_
SVOC 76 Match	70	IN/A	NONE	_	_	Phenanthrene, 4-		-
SVOCs TICs Compound Name		N/A	NONE	_	_	methyl-	_	_
SVOC % Match	%	N/A	NONE	_	-	96	_	_
SVGC 70 Match	70	IN/A	IVOIVE			50		
SVOCs TICs Compound Name		N/A	NONE	_	_	Pyrene, 1-methyl-	_	_
SVOC % Match	%	N/A	NONE	_	-	96	_	_
SVOC 70 Flater	70	,//	NONE			Benz[i]aceanthryl		
SVOCs TICs Compound Name		N/A	NONE	_	_	ene, 3-methyl-	_	_
SVOC % Match	%	N/A	NONE	-	-	96	_	_
		,				Benzo[b]triphenyl		
SVOCs TICs Compound Name		N/A	NONE	-	-	ene	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
		,				Naphthalene, 2,7-		
SVOCs TICs Compound Name		N/A	NONE	-	-	dimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	_	-
						Naphthalene, 2,6-		
SVOCs TICs Compound Name		N/A	NONE		-	dimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	95	-	-
						Benz[a]anthracen		
SVOCs TICs Compound Name		N/A	NONE		-	e, 7-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-

Environmental Forensics

Chlorophenols								
Pentachlorophenol (PCP)	ma/ka	0.1	NONE	-	-	< 0.10	_	-





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	1			None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	0/	0.1		z 0 1	z 0 1	z 0 1		
Stone Content Moisture Content	%	0.1 N/A	NONE NONE	< 0.1 25	< 0.1 16	< 0.1 23		1
Total mass of sample received	kg	0.001	NONE	1.4	1.6	1.2		
Total mass of sample received	Ng	0.001	NONL	1.7	1.0	1.2		<u> </u>
Asbestos in Soil Screen / Identification Name	Туре	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	ļ	↓
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	ļ	1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS	1400	190	190		
Equivalent)	g/l	0.00125	MCERTS	0.71	0.097	0.094	<u> </u>	<u>l </u>
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 Phonois								
Total Phenois			1405575				r	1
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	1	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	_	_	_		1
Acenaphthylene	mg/kg	0.05	MCERTS	-	<u>-</u>	-		-
Acenaphthene	mg/kg	0.05	MCERTS	_	_	_		1
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	-	-	-	I	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	_	_		1
Specialcu Total Ern-10 Fn 15	mg/kg	0.0	PICERTS					
Heavy Metals / Metalloids Arsenic (agua regia extractable)	mg/kg	1	MCEDIC	27	21	16	ı	
Boron (water soluble)	mg/kg mg/kg	0.2	MCERTS 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	†	1
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	48	32	47	1	1
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		





TPH-CWG - Aromatic >EC10 - EC12

TPH-CWG - Aromatic >EC12 - EC16

TPH-CWG - Aromatic >EC16 - EC21

TPH-CWG - Aromatic >EC21 - EC35 TPH-CWG - Aromatic > EC35 - EC44

TPH-CWG - Aromatic (EC5 - EC35)

TPH-CWG - Aromatic (EC5 - EC44)

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				I			
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	I
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	<u> </u>	< 0.001	- I	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	- 1	
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	-	
TDH_CMG - Aromatic > EC10 - EC12	malka	1	MCEDIC		Ε 0		

mg/kg

mg/kg

mg/kg

mg/kg mg/kg

mg/kg

10

10 8.4

10

MCERTS

MCERTS

MCERTS

NONE

MCERTS

NONE

5.8

15

43

160

250





Sample Reference TP05 TP06 TP	1950 P06 Supplied .70 4/2018 Supplied
Depth (m) 1.30 0.30 0.30 0.30 25/04/2018 2	
Date Sampled 25/04/2018 25/04/2018 25/04/2018 25/04/2018 None Supplied None Sup	
None Supplied None Suppli	
Analytical Parameter (Soil Analysis) Soil Fig.	
VOCs μg/kg 1 ISO 17025 - - Chloromethane 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 NONE -	
VOCs μg/kg 1 ISO 17025 - - Chloromethane 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 NONE -	
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 MCERTS - <	
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 - - - - Li-Dichloroethane μg/kg 1 MCERTS -	
Bromomethane	
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 - -	
1,1-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 - - Trichloroethane µg/kg 1 MCERTS - - 1,1,1-Trichloroethane µg/kg 1 MCERTS - -	
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 - - 1,1,1-Trichloroethane μg/kg 1 MCERTS - -	
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 - -	- - -
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 - -	
1,1-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 - -	-
2,2-Dichloropropane μg/kg 1 MCERTS - - Trichloromethane μg/kg 1 MCERTS - - 1,1,1-Trichloroethane μg/kg 1 MCERTS - -	
Trichloromethane μg/kg 1 MCERTS - - 1,1,1-Trichloroethane μg/kg 1 MCERTS - -	=
1,1,1-Trichloroethane µg/kg 1 MCERTS	-
1.2 Dichloroothana	-
1,2 Dichloroctuanc	-
-y- = 15/15/ = 1	-
Trains 1/2 distributions	-
15/ 5	-
15/ 5	-
	-
	-
	-
0. 4.2 1.11	-
Trans-1,3-dichloropropene μg/kg 1 ISO 17025	-
Totaline Parity 1 Manual 1	-
-1-1	-
-/	-
15/ 5	-
	-
	-
	-
	-
p & m-Xylene µg/kg 1 MCERTS	-
pg/kg 1 Hearts	-
pg///g 1 Non2	-
- 1/1-1/2 - 1/1-	-
1,1,2,2-Tetrachloroethane µg/kg 1 MCERTS	
	-
	-
	-
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	-
pg/kg 1 Hourts	-
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	-
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	-
	-
Total north of the state of the	-
1,2,3-Trichlorobenzene µg/kg 1 ISO 17025	-





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) Accreditation Status Units							
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					-	-	
1,2,3,4-Tetrachlorobenzene µg/kg 1 NONE				-	-	-	
1,2,3,5-Tetrachlorobenzene	-	-	-				
1,2,4,5-Tetrachlorobenzene	-	-	-				
Pentachlorobenzene	μg/kg	1	NONE	-	-	-	





				0=1010	0=1010		1	
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) Accreditation Status Limit of detection								
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)						-		
Methyl-t-butyl ether (MTBE)	NONE	-	-	-				
t-amyl ethyl ether (TAEE)	NONE	-	-	-				
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	_	-		
t-butylalcohol (TBA)	mg/kg	0.1	NONE	-	-	-		





Lab Sample Number		951948	951949	951950	I			
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 Bis(2-chloroisopropyl)ether	mg/kg mg/kg	0.2	MCERTS MCERTS	-	-	-		
2-Methylphenol	mg/kg	0.1	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 Naphthalene	mg/kg mg/kg	0.05	MCERTS MCERTS	-	-	-		
2,4-Dichlorophenol	mg/kg	0.03	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 Dimethylphthalate	mg/kg mg/kg	0.1	MCERTS 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 4-Nitroaniline	mg/kg	0.2	MCERTS MCERTS	-	-	-		
Fluorene	mg/kg mg/kg	0.2	MCERTS	-	-	-		
Azobenzene	mg/kg	0.03	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 Anthraquinone	mg/kg mg/kg	0.2	MCERTS 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	-	-	ı		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-		ļ
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-		
Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene	mg/kg mg/kg	0.05	MCERTS MCERTS	-	-	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-		
(g. 11)por yrono	9/119	0.05						





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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		-			
SVOC 70 MALCII	%	IN/A	INUINE	· ·	_	_	1	
SVOCs TICs Compound Name		N/A	NONE	_	_	_		
SVOC % Match	%	N/A N/A			-		1	
SVOC % Match	- %	N/A	NONE	-	-	-		
CVOC- TIC- Command None		N1/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	-	-	-		
5100 70 Hatan		.,,,,	HOILE					
SVOCs TICs Compound Name		N/A	NONE	_	_	_		
SVOC % Match	%	N/A	NONE	_	_	_		
5.55 /5. lacer	70	11//	HOHE	Ì			İ	Ì
SVOCs TICs Compound Name		N/A	NONE	_	_	_		
SVOC % Match	%	N/A	NONE	_	_	_	1	
5.55 % later	70	11//1	HOHE				1	
SVOCs TICs Compound Name		N/A	NONE	_	_	_		
SVOC % Match	%	N/A	NONE	_	_	_		
5100 70 Flater	70	11/7	IVOIVE					
SVOCs TICs Compound Name		N/A	NONE	-	-	-		
SVOC % Match	%	N/A	NONE	-	-	-		
	, ,							
SVOCs TICs Compound Name		N/A	NONE	-	_	_		
SVOC % Match	%	N/A	NONE	-	_	_		
5.00 /o . laca.	70	,//	one				İ	l
SVOCs TICs Compound Name		N/A	NONE	-	_	_		
SVOC % Match	%	N/A	NONE	_	_	_	İ	Ì
5100 /0 i idtal	70	11/7	INOINE		1		1	I.

Environmental Forensics

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





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.





Analytical Report Number : 18-83760 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.





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)

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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

Iss No 18-83760-1 Riverside EfW 3765





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

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:

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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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	Туре	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			1					
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	





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	
1111 C10 - C40	IIIg/kg	10	MCLKIS	440	210	700	< 10	1
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	-	





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 None Supplied	11/06/2018	11/06/2018 None Supplied	11/06/2018 None Supplied	
Time Taken	Ι			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	-	< 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 1,1,2-Trichloro 1,2,2-Trifluoroethane	μg/kg	1	NONE	-	-	< 1.0	-	
	μg/kg	1	ISO 17025 MCERTS	-	-	< 1.0	-	
Cis-1,2-dichloroethene MTBE (Methyl Tertiary Butyl Ether)	μg/kg μg/kg	1	MCERTS	-	-	< 1.0 < 1.0	-	
1,1-Dichloroethane	μg/kg 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 MCERTS	-	-	< 1.0	-	
1,2-Dichloropropane Trichloroethene	μg/kg μg/kg	1	MCERTS	-	-	< 1.0 < 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 Chlorobenzene	μg/kg μg/kg	1	ISO 17025 MCERTS	-	-	< 1.0	-	
1,1,1,2-Tetrachloroethane	μg/kg μg/kg	1	MCERTS		-	< 1.0 < 1.0	-	
Ethylbenzene	μg/kg 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	<u>-</u> -	
2-Chlorotoluene 4-Chlorotoluene	μg/kg μg/kg	1 1	MCERTS MCERTS	-	-	< 1.0 < 1.0	-	
1,3,5-Trimethylbenzene	μg/kg μg/kg	1	ISO 17025		-	< 1.0	-	
tert-Butylbenzene	μg/kg μg/kg	1	MCERTS	-	_	< 1.0	-	
1,2,4-Trimethylbenzene	μg/kg 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 ISO 17025	-	-	< 1.0	-	
1,2-Dibromo-3-chloropropane 1,2,4-Trichlorobenzene	μg/kg	1		-	-	< 1.0	-	
Hexachlorobutadiene	μg/kg μg/kg	1	MCERTS MCERTS	-	-	< 1.0 < 1.0	-	
1,2,3-Trichlorobenzene	μg/kg μg/kg	1	ISO 17025	-	-	< 1.0	-	
	■ M3/ M9					. 1.0		





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	-	





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)								
VOCs TICs								
VOCs TICs Compound Name VOC % Match	%	N/A N/A	NONE NONE	-	_	ND -	_	
700 /8 i ideali								
Oxygenates by headspace GC-MS								
t-amyl methyl ether (TAME)	mg/kg	0.1	NONE	-	-	< 0.10	-	





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			<u> </u>					
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 < 0.2	-	
1,3-Dichlorobenzene 1,2-Dichlorobenzene	mg/kg mg/kg	0.2	MCERTS MCERTS	-	-	< 0.2	-	
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 < 0.2	-	
Isophorone 2-Nitrophenol	mg/kg mg/kg	0.2	MCERTS 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 Hexachlorobutadiene	mg/kg	0.1	NONE	-	-	< 0.1 < 0.1	-	
4-Chloro-3-methylphenol	mg/kg mg/kg	0.1	MCERTS 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 Acenaphthylene	mg/kg mg/kg	0.1	MCERTS MCERTS	-	-	< 0.1 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 Azobenzene	mg/kg mg/kg	0.05	MCERTS MCERTS	-	-	2.7 < 0.3	-	
Azobenzene Bromophenyl phenyl ether	mg/kg mg/kg	0.3	MCERTS MCERTS	-	-	< 0.3	-	
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 6.8	-	
Fluoranthene Pyrene	mg/kg mg/kg	0.05	MCERTS MCERTS	-	-	4.9	-	
Butyl benzyl phthalate	mg/kg	0.03	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 Dibenz(a,h)anthracene	mg/kg mg/kg	0.05 0.05	MCERTS MCERTS	-	-	0.43 < 0.05	-	
Benzo(ghi)perylene	mg/kg mg/kg	0.05	MCERTS	-	-	0.52	-	
20.120(grif/poryrone	mg/kg	3.03	LICENTO			0.52		





Lab Sample Number				981344	981345	981346	981347	
Sample Reference				961344 BH06	BH06	961346 BH06	961347 BH06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
				0.50	1.50	2.00	3.00	
Depth (m)								
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								
						Naphthalene,		
SVOCs TICs Compound Name		N/A	NONE	-	-	1,6,7-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	98	-	
						Naphthalene, 1,5-		
SVOCs TICs Compound Name	0/	N/A	NONE	-	-	dimethyl- 97	-	
SVOC % Match	%	N/A	NONE	-	-	Naphthalene, 1,4-		
SVOCs TICs Compound Name		N/A	NONE	_	_	dimethyl-	_	
SVOC % Match	%	N/A	NONE		-	97	_	
SVOC 70 Materi	70	IN/A	NONE			Naphthalene,		
SVOCs TICs Compound Name		N/A	NONE	_	-	1,4,6-trimethyl-	_	
SVOC % Match	%	N/A	NONE	-	-	97	-	
						Naphthalene,		
SVOCs TICs Compound Name		N/A	NONE	-	-	2,3,6-trimethyl-	-	
SVOC % Match	%	N/A	NONE	-	-	97 1H-	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Cyclopropa[I]phen anthrene,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	-	





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.





* 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.





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

		· · ·			1
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

Iss No 18-88953-2 Riverside EfW 3765





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.





Derek Daniels

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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:

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.





	Your	Order	No:	PO-0027	15
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Lab Sample Number	Your Order No: PO-002715								
None Suppled None	Lab Sample Number				960223	960224	960225	960226	960227
None Suppled None									
1005/2018 1105/2018 1105/2018 1105/2018 1105/2018 1005									
Secretal Conceptions									
Control Properties Control Properties Control Properties									
Centeral Inorganics	Time Taken	-		1	1530	0915	1325	1220	1045
Pit Units	-	Units	Limit of detection	Accreditation Status					
Electrical Conductivity at 20 °C Signer 10 SO 7005 590 11000 17000 140	General Inorganics								
Suphate as SQ, mg/l 0.045 Sp.1025 125000 209000 760000 699000 480000 Chloride mg/l 0.045 Sp.1025 125 299 760 695 460 Chloride mg/l 0.15 Sp.1025 125 299 760 695 480 Mg/l 1 20 Sp.1025 125 299 760 695 480 Mg/l 1 20 Sp.1025 125 299 760 695 480 Mg/l 1 20 Sp.1025 125 299 760 695 480 Mg/l 1 20 Sp.1025 125 290 760 695 480 Mg/l 1 20 Sp.1025 120 590 180 1500 480 120 Mg/l 1 20 Sp.1025 120 590 180 1500 480 220 Mg/l 1 20 Sp.1025 120 120 120 120 120 120 120 120 120 120		pH Units	N/A	ISO 17025	7.2	6.9	7.1	7.0	6.8
Suphter as SQ,		μS/cm							
Chloride									
Total Pincopitate as P ug/l 20 So 17025 < 20 990 180 1500 48 Pug/l 50 So 17025 < 70 590 180 1500 48 Pug/l 50 So 17025 < 70 500 540 460 220 Pug/l 50 So 17025 570 260 540 460 220 Pug/l 50 So 17025 570 260 540 460 220 Pug/l 15 So 17025 1500 24000 16000 17000 21000 Pug/l 15 So 17025 230 0.32 0.04 0.05 0.02 Pug/l 15 So 17025 2.30 0.32 0.04 0.05 0.02 Pug/l 15 So 17025 2.30 0.32 0.04 0.05 0.02 Pug/l 15 So 17025 2.30 0.32 0.04 0.05 0.02 Pug/l 15 So 17025 2.30 0.32 0.04 0.05 0.02 Pug/l 15 So 17025 2.30 0.32 0.04 0.05 0.02 Pug/l 15 So 17025 2.30 0.32 0.04 0.05 0.02 Pug/l 15 So 17025 2.30 0.32 0.04 0.05 0.02 Pug/l 10 Pug/l Pu	•	_							
Filloritie 99f 50 89 J 1028 570 260 590 460 220									
Ammoniscal Nirogen as N 1901 15 50 17025 1500 24000 15000 17000 21000 17000 21000									
Dissolved Organic Carbon (DOC)									
Ninte as N									
Note as N									
Chemical Dovgon Demand (Total)	Nitrite as N			ISO 17025					
Total Oxidised Nitropen (TON)		mgCaCO3/I							
Total Suspended Solids	, ,								
Dissolved Oxygen									
Total Phenols (monohydric) μg/l 1 ISO 17025 < 1.0 7.6 80 15 17									
Total Phenols Total Phenols (monohydric) μg/l 1 ISO 17025 < 1.0 7.6 80 15 17									
	TOTIC Balance	+/-	-100	NONE	-10	-0.0	-9.2	-0.5	1.1
	Total Phenois								
Speciated PAHS Naphthalene		ug/l	1	ISO 17025	< 1.0	7.6	80	15	17
Nephthalene	rotal i Helios (Historyane)	P9/ ·		100 17020	, 210	,			
Acenaphthylene μg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 <th< td=""><td>Speciated PAHs</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Speciated PAHs								
Acenaphthene	Naphthalene	μg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene		μg/l	0.01				< 0.01	< 0.01	
Phenanthrene									
Anthracene									
Fluoranthene									
Pyrene									
Benzo(a)anthracene									
Chrysene									
Benzo(b)fluoranthene μg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 Senzo(k)fluoranthene μg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 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-cd)pyrene μg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.									
Benzo(a)pyrene									
Inden(1,2,3-cd)pyrene	. ,	μg/l							
Dibenz(a,h)anthracene pg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.0	· · · · · · · · · · · · · · · · · · ·								
Denzo(ghi)perylene Pµg/I 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 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 Total EPA-16 PAHs μg/l 0.16 ISO 17025 < 0.16									
Total EPA-16 PAHs	ренzо(упі)регуіене	μg/I	0.01	150 1/025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total EPA-16 PAHs	Total PAH								
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		ug/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
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		F31:							
Cadmium (dissolved) μg/l 0.02 ISO 17025 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 < 0.02 < 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 < 0.03 < 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 < 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									
Calcium (dissolved) mg/l 0.012 ISO 17025 98 430 240 230 420 Chromium (dissolved) µg/l 0.2 ISO 17025 < 0.2									
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	` '								
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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									
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	, , ,								
Selenium (dissolved)	,								
Zinc (dissolved) µg/l 0.5 ISO 17025 7.2 5.1 0.8 3.0 3.0		mg/l							
	Zinc (dissolved)	μg/l	0.5	ISO 17025	7.2	5.1	0.8	3.0	3.0





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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	•	I .						
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
	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)		10	NONE	< 10	< 10	< 10	< 10	< 10

TITBE (Hearly) Terdary Bacyl Edici)	μ9/1	•	150 17025	1 1.0	\ 1.0	11.0	11.0	١
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





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 2,2-Dichloropropane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0	< 1.0 < 1.0	< 1.0
Z,Z-Dictiloropi opane Trichloromethane	μg/I	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0	< 1.0 < 1.0	< 1.0 < 1.0
1,1,1-Trichloroethane	μg/I μg/I	1	ISO 17025	< 1.0	< 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 ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane Chlorobenzene	μg/l μg/l	1	ISO 17025	< 1.0 < 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	< 1.0 < 1.0	< 1.0 < 1.0
Ethylbenzene	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	μg/I μg/I	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 1,3-Dichlorobenzene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
p-Isopropyltoluene	μg/l μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	μg/I μg/I	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
T lexactilo obutadiene								





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		r	1		.			
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-





Your Order No: PO-002715								
Lab Sample Number				960223	960224	960225	960226	960227
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied				
Depth (m)				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 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
4-Methylphenol Isophorone	μg/l μg/l	0.05	NONE 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/I	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 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
Dimethylphthalate 2,6-Dinitrotoluene	μg/l	0.05	NONE NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	μg/l μg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
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 Carbazole	μg/l	0.01	ISO 17025 NONE	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01	< 0.01 < 0.05	< 0.01
Carbazole Dibutyl phthalate	μg/l μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05 < 0.05	< 0.05	< 0.05 < 0.05
Anthraguinone	μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	μg/I	0.03	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	< 0.01 < 0.01	< 0.01 < 0.01
Benzo(ghi)perylene	μg/l	0.01	ISO 17025	< 0.01				





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 SVOC % Match	%	N/A N/A	NONE NONE	ND -	ND -	ND -	ND -	ND -		

Environmental Forensics

Chlorophenols								
Pentachlorophenol (PCP)	μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

 $\label{eq:U/S} \text{U/S} = \text{Unsuitable Sample} \qquad \text{I/S} = \ \text{Insufficient Sample}$





Analytical Parameter C B E B B B B B B B B	Your Order No: PO-002715			-					
Sample Number	•								
None Supplied None Supplie									
Delis Sampled 1005/2018 1109/2018									
Time Taken									
Principal Prin	Time Taken								
Principal Prin				A					
Principal Prin	Annalistical Barrens day	_	Lii det	S					
Principal Prin		Jnit	mit	edit tatı					
Principal Prin	(Water Analysis)	v	of ion	atio					
Bettinate Conductivity at 20 °C Specim 10 Bot 20 705 14000 1000 1800 8500 12000 12000 18000				ă					
Bettinate Conductivity at 20 °C Specim 10 Bot 20 705 14000 1000 1800 8500 12000 12000 18000									
Electrical Conductivity of 20 °C		n I I I I nito	NI/A	TCO 1702F	6.0	7.2	7 7	7.0	7.0
Sulphate as SQ,									
Chanded mg/d 0.15 Si0 17025 3700 74 400 2-400 3600 Total Phosphate as P μg/d 20 Si0 17025 270 36 340 910 71	Sulphate as SO ₄								
Total Principate as P Ugal 20 Sio 1705 27 36 340 910 7	Sulphate as SO ₄	mg/l	0.045	ISO 17025	181	27.4	30.9	354	628
Fluonide	Chloride	mg/l	0.15	ISO 17025	3700	74	400	2400	3600
Ammonical Nitrogen as N yug/l 15 S0 17025 25000 1800 250 33 180									
Dispolved Organic Carbon (DOC) mg/l 0.1 NoNE 46.8 16.4 21.5 4.71 3.33 Ninte as N mg/l 0.01 150 17025 0.05 0.05 0.07 5.55 4.36 Ninte as N mg/l 0.1 150 17025 < 1.0 14 3.4 44 23 23 23 23 23 23 2									
Mirate as N									
Nitrite as N									
Alkalinity	Nitrite as N								
Total Dischided Nitropen (TON)									
Total Supended Solids	Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	210	48	48		
Dissolved Oxygen	Total Oxidised Nitrogen (TON)								
Total Phenols Total Phenols (monohydric) Ligor									
Total Phenols Total Phenols (monohydric) μg/l 1 ISO 17025 9.3 < 1.0 < 1.0 6.1 13									
Speciated PAHS Naphthalene	TOTIC Balance	+/-	-100	NONE	-1.0	-19	-13	3.9	-1.3
Speciated PAHS Naphthalene	Total Phenois								
Speciated PAHS Naphthalene		ug/l	1	ISO 17025	9.3	< 1.0	< 1.0	6.1	13
Naphthalene								-	
Acenaphthylene	Speciated PAHs								
Acenaphthene μg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 <									
Pluoranthrene μg/l 0.01 ISD 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0	. ,								
Phenanthrene	•								
Anthracene									
Fluoranthene	Anthracene								
Denzo(a)anthracene	Fluoranthene		0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	Pyrene	μg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene μg/ 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 Benzo(k)fluoranthene μg/ 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 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								
Benzo(k)fluoranthene μg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.0									
Benzo(a)pyrene									
Indeno(1,2,3-cd)pyrene									
Dibenz(a,h)anthracene μg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.									
Benzo(ghi)perylene μg/l 0.01 ISO 17025 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01 < 0.01									
Part Part	Benzo(ghi)perylene								
Part Part					- 		- 		-
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	Total PAH								
Arsenic (dissolved)	Total EPA-16 PAHs	μg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Arsenic (dissolved)	Heavy Metals / Metalloids								
Cadmium (dissolved) µg/I 0.02 ISO 17025 < 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 < 0.02 < 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 < 0.03 < 0.02 < 0.05 < 0.05 < 0.03 < 0.02 < 0.05 < 0.05 < 0.03 < 0.02 < 0.05 < 0.05 < 0.03 < 0.02 < 0.05 < 0.05 < 0.03 < 0.02 < 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		ug/l	0.15	ISO 17025	2.22	5.70	5.25	1.47	1.14
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									
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	` '								
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Chromium (dissolved)					0.2	0.5		0.3
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$,, ,								
Mercury (dissolved) µg/l 0.05 ISO 17025 < 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 < 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 < 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 < 0.05 < 0.05 < 0.05 < 0.05 < 0.05		μg/l							
Nickel (dissolved)									
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									
Selenium (dissolved) µg/I 0.6 ISO 17025 34 3.1 5.7 21 29 Sodium (dissolved) mg/I 0.01 ISO 17025 2400 68 220 1500 2000	, ,								
Sodium (dissolved) mg/l 0.01 ISO 17025 2400 68 220 1500 2000									
	,								
	Zinc (dissolved)								





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)	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		

MIDE (Medity) Terdary Bucyl Ediler)	µg/i		130 17023	< 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





Semple Number	Your Order No: PO-002715								
Sample Number	Lab Sample Number				960228	960229	960230	960231	960232
Sample Number	•								
Dote Sampled 1005/2018 1105/2018 1	Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Time Taken									
Discrementation					1745	1144	1120	1052	1036
Chromethane		Units	Limit of detection	Accreditation Status					
Followed Properties	VOCs	1							
Chromethane	Chloromethane	μq/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomehane			1	ISO 17025	< 1.0				
Trichtoriuscomethane	Bromomethane	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichtorribucomethane	Vinyl Chloride	μq/l	1	NONE	< 1.0				
11,12-Trichioro-1,12-2-trifuovoethene	Trichlorofluoromethane		1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
GS-12-dichloroethene	1,1-Dichloroethene	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Nethyl Tertiany Burly Ether)	1,1,2-Trichloro-1,2,2-trifluoroethane	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tetrary Burk)	Cis-1,2-dichloroethene		1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropethane	MTBE (Methyl Tertiary Butyl Ether)	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	1,1-Dichloroethane	μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
1.1.1-Trichforothane		μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
1.2-Dichloropene		μg/l						< 1.0	
1-10-Intropropene	1,1,1-Trichloroethane	μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
Trans-12-dichloroethene µg/l 1 \$0.17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 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
Bezzene	1,1-Dichloropropene	μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
Tetrachromethane	Trans-1,2-dichloroethene	μg/l	1		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
12-Dichloropropane		μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0		μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
Dibromoethane	1,2-Dichloropropane	μg/l	1	ISO 17025		< 1.0	< 1.0	< 1.0	< 1.0
Bromodichoromethane		μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene μg/l 1 150 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.								< 1.0	< 1.0
Trans-1,3-dichloropropene									
Toluene									
1,1,2-Trichloroethane µg/l 1 ISO 17025 < 1.0									
1,3-Dichloropropane µg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
Dibromochloromethane									
Tetrachloroethene	· ' '								
1,2-Dibromoethane									
Chlorobenzene									
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	7								
Ethylbenzene									
p 8 m-Xylene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 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 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 <	,								
Tribromomethane									
o-Xylene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 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 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 <									
Isopropylbenzene			1		1.0	1.0	1.0	4.0	4.0
Bromobenzene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0			1						
$\begin{array}{cccccccccccccccccccccccccccccccccccc$									
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4-Chlorotoluene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0	• •								
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Hexachlorobutadiene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0			1	ISO 17025	< 1.0				
	Hexachlorobutadiene		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





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	μq/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	ND	ND	ND	ND	ND			
VOC % Match	%	10	NONE	-	-	-	-	-





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				
Depth (m)				None Supplied				
Date Sampled				10/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Time Taken		ı		1745	1144	1120	1052	1036
		۵.	Ac					
Analytical Parameter	⊆	Limit of detection	Accreditation Status					
(Water Analysis)	Units	Ct. it	lita					
		3 4	tior					
			,					
SVOCs		0.05	NONE	. 0.05	. 0.05	. 0.05	. 0.05	. 0.05
Aniline Phenol	μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
2-Chlorophenol	μg/l μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	μg/I μg/I	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 Bis(2-chloroethoxy)methane	μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
1,2,4-Trichlorobenzene	μg/l μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	μg/I	0.03	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 Acenaphthylene	μg/l μg/l	0.05	NONE ISO 17025	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 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 Phenanthrene	μg/l	0.05	NONE ISO 17025	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01
Anthracene	μg/l μg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	μg/I μg/I	0.01	NONE	< 0.01	< 0.01	< 0.05	< 0.05	< 0.01
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 ISO 17025	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01
Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene	μg/l μg/l	0.01	ISO 17025 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
penzo(grii/peryiene	μg/I	0.01	100 1/025	< U.UI	< 0.01 → 0.01	< 0.01	< 0.01	< 0.01





Your Order No: PO-002715

1001 01001 1101 1 0 0027 25								
Lab Sample Number	ab Sample Number					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





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.(AI, 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

Iss No 18-85315-1 Riverside EfW 3765





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.

 $\label{lem:continuous} \mbox{For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.}$

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	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH02		W	18-85315	960223	С	Dissolved Oxygen in water	L086-PL	С
BH02		W	18-85315	960223	С	Electrical conductivity at 20oC of water	L031-PL	С
BH02		W	18-85315	960223	С	pH at 20oC in water (automated)	L099-PL	С
BH03		W	18-85315	960224	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH03		W	18-85315	960224	С	Dissolved Oxygen in water	L086-PL	С
BH03		W	18-85315	960224	С	Electrical conductivity at 20oC of water	L031-PL	С
BH03		W	18-85315	960224	С	pH at 20oC in water (automated)	L099-PL	С
BH05		W	18-85315	960225	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH05		W	18-85315	960225	С	Dissolved Oxygen in water	L086-PL	С
BH05		W	18-85315	960225	С	Electrical conductivity at 20oC of water	L031-PL	С
BH05		W	18-85315	960225	С	pH at 20oC in water (automated)	L099-PL	С
BH08		W	18-85315	960226	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH08		W	18-85315	960226	С	Dissolved Oxygen in water	L086-PL	С
BH08		W	18-85315	960226	С	Electrical conductivity at 20oC of water	L031-PL	С
BH08		W	18-85315	960226	С	pH at 20oC in water (automated)	L099-PL	С
BH12		W	18-85315	960227	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH12		W	18-85315	960227	С	Dissolved Oxygen in water	L086-PL	С
BH12		W	18-85315	960227	С	Electrical conductivity at 20oC of water	L031-PL	С
BH12		W	18-85315	960227	С	pH at 20oC in water (automated)	L099-PL	С
BH13		W	18-85315	960228	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH13		W	18-85315	960228	С	Dissolved Oxygen in water	L086-PL	С
BH13		W	18-85315	960228	С	Electrical conductivity at 20oC of water	L031-PL	С
BH13		W	18-85315	960228	~	pH at 20oC in water (automated)	L099-PL	С
DS		W	18-85315	960232	С	Ammoniacal Nitrogen as N in water	L082-PL	С
DS		W	18-85315	960232	С	Dissolved Oxygen in water	L086-PL	С
DS		W	18-85315	960232	С	Electrical conductivity at 20oC of water	L031-PL	С
DS		W	18-85315	960232	С	pH at 20oC in water (automated)	L099-PL	С
S DITCH		W	18-85315	960230	С	Ammoniacal Nitrogen as N in water	L082-PL	С
S DITCH		W	18-85315	960230	С	Dissolved Oxygen in water	L086-PL	С
S DITCH		W	18-85315	960230	С	Electrical conductivity at 20oC of water	L031-PL	С
S DITCH		W	18-85315	960230	С	pH at 20oC in water (automated)	L099-PL	С
US		W	18-85315	960231	С	Ammoniacal Nitrogen as N in water	L082-PL	С
US		W	18-85315	960231	С	Dissolved Oxygen in water	L086-PL	С
US	_	W	18-85315	960231	С	Electrical conductivity at 20oC of water	L031-PL	С
US		W	18-85315	960231	С	pH at 20oC in water (automated)	L099-PL	С
W DITCH		W	18-85315	960229	С	Ammoniacal Nitrogen as N in water	L082-PL	С
W DITCH	_	W	18-85315	960229	С	Dissolved Oxygen in water	L086-PL	С
W DITCH		W	18-85315	960229		Electrical conductivity at 20oC of water	L031-PL	С
W DITCH		W	18-85315	960229	c	pH at 20oC in water (automated)	L099-PL	С





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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:

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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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
			Α					
	_	Limit of detection	Accreditation Status					
Analytical Parameter	Units	mit	creditat Status					1
(Water Analysis)	ធ	tio f	tati us					1
		1	on					
	l							
General Inorganics								
рН	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 Cvanide	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/I	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
					<u>-</u>			
Total PAH								
Total EPA-16 PAHs	μg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16





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
			V					
	_	g L	Accreditation Status					
Analytical Parameter	Units	Limit of detection	tat					
(Water Analysis)	ज ज	호 역 -	us					
		_	9					
Heavy Metals / Metalloids	<u> </u>							
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 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	0.3	0.4
Magnesium (dissolved)		0.005	ISO 17025	15	260	400	350	240
Magnesium (dissolved) Mercury (dissolved)	mg/l	0.005	ISO 17025 ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	μg/l	0.05	ISO 17025	1.7	< 0.05 4.4	< 0.05	< 0.05	< 0.05
, ,	μg/l	0.025	ISO 17025	117	35	110	95	63
Potassium (dissolved) Selenium (dissolved)	mg/l	0.025	ISO 17025	2.4	17	29	25	21
, ,	μg/l							
Sodium (dissolved) Zinc (dissolved)	mg/l	0.01	ISO 17025 ISO 17025	85 4.3	1700 3.6	3100 0.7	2700 < 0.5	2100 1.8
Zific (dissolved)	μg/l	0.5	150 17025	4.3	3.0	0.7	< 0.5	1.0
Managemetica								
Monoaromatics				1.0	4.0	1.0	4.0	1.0
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								
TOU CAIC Alimberia CF CF			roo 4700F	. 1.0		. 1.0	. 1.0	. 1.0
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
TDLL CMC Assessing CF C7		-	100 1700-	. 1 0	. 10	. 1 0	. 1 0	. 1 0
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	10	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





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) 1.1-Dichloroethane	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane 2,2-Dichloropropane	μg/l μg/l	1	ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0	< 1.0
Z,Z-Dichiolopropane Trichloromethane	μg/I	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0 < 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 ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane 1,3-Dichloropropane	μg/l μg/l	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0 < 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 Bromobenzene	µg/l µg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
n-Propylbenzene	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/I µg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	μg/I	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 Hexachlorobutadiene	μg/l	1	ISO 17025 ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0	< 1.0 < 1.0	< 1.0 < 1.0
1,2,3-Trichlorobenzene	μg/l μg/l	1	ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0 < 1.0	< 1.0	< 1.0
1/2/3 THORIOTODORACITE	μ <u>y</u> /1		100 1/025	× 1.0	× 1.0	× 1.0	< 1.U	\ 1.U





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					
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	<u> </u>	<u> </u>	1					
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





Your Order No: PO-002715								
Lab Sample Number				979021	979022	979023	979024	979025
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied				
Depth (m)				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								L.
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 ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene 2,4-Dichlorophenol	μg/l	0.01	NONE	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01 < 0.05
4-Chloroaniline	μg/l	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	μg/l μg/l	0.05	NONE 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/I μg/I	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 Promonhonyl phonyl othor	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 Phenanthrene	μg/l	0.05	NONE ISO 17025	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01
Anthracene	μg/l μg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	μg/I μg/I	0.01	NONE	< 0.05	< 0.01	< 0.05	< 0.01	< 0.05
Dibutyl phthalate	μg/I	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





Your Order No: PO-002715

1001 Order No. FO-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





Valir	Order	No.	PO-002715	:

Your Order No: PO-002715				1	1		
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							
pН	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 SO₄	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/I	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 Phenois							
Total Phenols (monohydric)	μg/l	1	ISO 17025	11			
Total Frictions (monorityarie)	μ9/1		150 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				1	T	T	1
Total EPA-16 PAHs	μg/l	0.16	ISO 17025	< 0.16			





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			
			4				
		de L	Accreditation Status				
Analytical Parameter	Units	Limit of detection	ed i				
(Water Analysis)	S.	tio e	itat				
		5 7	Ö				
Harris Makala / Makallatia			_				
Heavy Metals / Metalloids		0.15	100 17005	4.16	ı	1	
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	-	<u> </u>	 	
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		<u> </u>	
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	μq/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			
	r <i>yr</i>			-		•	
TPH-CWG - Aromatic >C5 - C7	μg/l	1	ISO 17025	< 1.0			
TPH-CWG - Aromatic >C7 - C8	μg/l	1	ISO 17025	< 1.0	İ	1	
TPH-CWG - Aromatic > C8 - C10	μg/l	1	ISO 17025	< 1.0	Ì	1	
TPH-CWG - Aromatic >C10 - C12	μg/l	10	NONE	< 10		1	
TPH-CWG - Aromatic >C12 - C16	μg/l	10	NONE	< 10			
TPH-CWG - Aromatic >C12 - C10	μg/l	10	NONE	< 10		 	
TPH-CWG - Aromatic >C10 - C21 TPH-CWG - Aromatic >C21 - C35	μg/I μg/I	10	NONE	< 10		 	
TPH-CWG - Aromatic >C21 - C33	μg/I μg/I	10	NONE	< 10			
TPH-CWG - Aromatic (C5 - C35)	μg/l	10	NONE	< 10			
TPH-CWG - Aromatic (C5 - C44)		10	NONE	< 10		 	
1711-0440 - AIUIIIAUC (C3 - C44)	μg/l	10	INOINE	< 10		I	





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		1		1745			
		유	Accreditation Status				
Analytical Parameter	Units	Limit of detection	redi Stat				
(Water Analysis)	ढ	ti of	:us				
		_	9				
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 < 1.0		-	
Vinyl Chloride Trichlorofluoromethane	μg/l μg/l	1 1	NONE NONE	< 1.0		1	
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		1	
MTBE (Methyl Tertiary Butyl Ether)	μg/l	1	ISO 17025	< 1.0			
1,1-Dichloroethane	μg/l	1	ISO 17025	< 1.0		1	<u> </u>
2,2-Dichloropropane Trichloromethane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0		1	
1,1,1-Trichloroethane	μg/I μg/I	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 1,2-Dichloropropane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0			
Trichloroethene	μg/I μg/I	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 1,3-Dichloropropane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0		1	
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 p & m-Xylene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0		-	
Styrene	μg/l μg/l	1	ISO 17025	< 1.0			
Tribromomethane	μg/l	1	ISO 17025	< 1.0	Ì	1	
o-Xylene	μg/l	1	ISO 17025	< 1.0			
1,1,2,2-Tetrachloroethane	μg/l	1	ISO 17025	< 1.0			
<u>Isopropylbenzene</u>	μg/l	1	ISO 17025	< 1.0		1	<u> </u>
Bromobenzene n-Propylbenzene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	1	1	
n-Propyibenzene 2-Chlorotoluene	μg/l μg/l	1	ISO 17025	< 1.0 < 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	ļ	1	
sec-Butylbenzene	μg/l	1	ISO 17025	< 1.0		 	
1,3-Dichlorobenzene p-Isopropyltoluene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0		1	
1,2-Dichlorobenzene	μg/I μg/I	1	ISO 17025	< 1.0	1	1	
1,4-Dichlorobenzene	μg/l	1	ISO 17025	< 1.0			1
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 1,2,3-Trichlorobenzene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0		 	
T ₁ Z ₁ J-THCHOLODERZEHE	μg/l	1	130 1/025	< 1.0		I	





Your Order No: PO-002715								
Lab Sample Number				979026				
Sample Reference				BH13				
Sample Number		None Supplied None Supplied						
Depth (m)	Depth (m)							
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							1	
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				





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			
			A				
Annal Maria Barrara at an	_	Limit of detection	Accreditation Status				
Analytical Parameter (Water Analysis)	Units	m it	creditat Status				
(Water Analysis)	v	ig of	atic				
			ğ				
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 Bis(2-chloroisopropyl)ether	μg/l μg/l	0.05	NONE NONE	< 0.05 < 0.05			
2-Methylphenol	μg/I μg/I	0.05	NONE	< 0.05			
Hexachloroethane	μg/I μg/I	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 2,4,6-Trichlorophenol	μg/l	0.05	NONE	< 0.05 < 0.05			
2,4,5-Trichlorophenol	μg/l μg/l	0.05	NONE 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 4-Nitroaniline	μg/l	0.05	NONE NONE	< 0.05 < 0.05			
Fluorene	μg/l μg/l	0.05	ISO 17025	< 0.05			
Azobenzene	μg/I μg/I	0.01	NONE	< 0.01			
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 Rutul honzul ahthalata	μg/l	0.01	ISO 17025	< 0.01			
Butyl benzyl phthalate	μg/l	0.05	NONE	< 0.05			
Benzo(a)anthracene Chrysene	μg/l μg/l	0.01	ISO 17025 ISO 17025	< 0.01 < 0.01			
Benzo(b)fluoranthene	μg/I μg/I	0.01	ISO 17025	< 0.01			
Benzo(k)fluoranthene	μg/I μg/I	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			





Your Order No: PO-002715

Tour Order No. PO-002713						
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





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

		Madle	Mich / Book	A compatitue of
Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
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
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
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
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
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
Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
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
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
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
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
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
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
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
Determination of nitrite in water by addition of sulphanilamide and NED followed by discrete analyser (colorimetry). Accredited matrices SW,	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW. Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW. Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW. Determination of Chloride colorimetrically by discrete analyser. Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser. Determination of dissolved oxygen. Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW. Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations. 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. Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW except B=SW, GW, Hg=SW, PW, Al=SW, PW. Determination of phenols in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW, PrW.(Al, Cu, Fe, Zn). Determination of phenols in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW, PrW.(Al, Cu, Fe, Zn). Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices: SW, GW, PW.	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW. Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/introprusside method. Accredited matrices SW, GW, PW. Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW Determination of total COD in water by reflux oxidation with acidified K2G/2O/7 followed by colorimetry. Accredited matrices: SW PW GW Determination of Chloride colorimetrically by discrete analyser. Determination of Glissolved inorganic carbon in water by TOC/DOC NDIR Analyser. Determination of dissolved oxygen. In-house method based on USEPA8260 headspace analyser. In-house method based on USEPA8260 headspace analyser. In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW. Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser. Determination of dissolved oxygen. In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode. Accredited matrices: SW, PW, GW. Determination of Pexavalent chronium in water by acidification, addition of 1,5 diphenylcarbazide followed by ICP-MS. Accredited Matrices: SW, GW, GW, Electrode Determination of Pexavalent chronium in water by acidification, addition of 1,5 diphenylcarbazide followed by ICP-MS. Accredited Matrices: SW, GW, GW, PW. Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, GW, PW. Determination of phenols in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, GW, PW. PW. (Al, Cu, Fe, Zn). Determination of phenols in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, GW, PW. Determination of phenols in water by acidification followed by ICP-MS. Accred	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW. Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetry). Accredited matrices: SW, PW, GW. Determination of Chloride colorimetrically by Determination of Chloride Colorimetrically by Determination of Determinat	Determination of Alkalinity by discreet analyses (colorimetry). Accredited matrices: SW, PW, GW. Determination of Alkalinity by discreet analyses (colorimetry). Accredited matrices: SW, PW, GW. Determination of Armonium/Armonola/ Amnonician/Introprusside method. Accredited matrices: SW, PW, GW. Determination of Dron in water by acidification included by ICP-OES. Accredited matrices: SW, PW, GW. Determination of bron in water by acidification included by ICP-OES. Accredited matrices: SW PW GW Determination of BTEX and MTBE in water by Inchouse method based on MEWAM (1039-Pt. W. W. GW) Determination of Ital COD in water by reflux oxidation with acide accredited matrices: SW PW GW Determination of Ital COD in water by reflux oxidation with acide Accredited matrices: SW PW, GW. Determination of Ital COD in water by reflux oxidation with acide Accredited matrices: SW, PW, GW. Determination of Ital COD in water by reflux oxidation with acide Accredited matrices: SW, PW, GW. Determination of Ital COD in water by reflux oxidation with acide Accredited matrices: SW, PW, GW. Determination of Chloride colorimetrically by good oxidation with acide Accredited matrices: SW, PW, GW. Determination of dissolved inorganic carbon in water by TCC/DOC NDIR Analyser. Determination of dissolved inorganic carbon in water by TCC/DOC NDIR Analyser. Determination of electrical conductivity in water by In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton Determination of fluoride in water by In-house method based on Desertion and Carbon of Burden Accredited Matrices SW, GW, PW, GW. Determination of fluoride in water by In-house method based on Desertination of Water Burden Accredited Matrices SW, GW, PW, GW, PW, GW, PW, GW, PW, GW, GW, PW, GW, GW, PW, GW, GW, PW, GW, GW, PW, GW, GW, GW, PW, GW, GW, GW, GW, GW, GW, GW, GW, GW, G

Iss No 18-88577-2 Riverside EfW 3765





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
	IV analysis have been sayvied sut in our laboration			1	

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.

Iss No 18-88577-2 Riverside EfW 3765



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test name	test ref	Test Deviation code
BH02	_	W	18-88577	979021	С	BTEX and MTBE in water (Monoaromatics)	L073B-PL	С
BH02		W	18-88577	979021	С	Hexavalent chromium in water	L080-PL	С
BH02		W	18-88577	979021	С	Alkalinity in Water	L082-PL	С
BH02		W	18-88577	979021	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH02		W	18-88577	979021	С	Boron in water	L039-PL	С
BH02		W	18-88577	979021		Chemical Oxygen Demand in Water (Total)	L065-PL	C
BH02		W	18-88577	979021	c	Chloride in water	L082-PL	С
BH02		W	18-88577	979021		Dissolved Organic Carbon in water	L037-PL	c
BH02		W	18-88577	979021		Dissolved Oxygen in water	L086-PL	С
BH02		W	18-88577	979021		Electrical conductivity at 20oC of water	L031-PL	C
BH02		W	18-88577	979021	С	Fluoride in water	L033B-PL	С
BH02		W	18-88577	979021	С	Metals in water by ICP-MS (dissolved)	L012-PL	C
BH02		W	18-88577	979021	С	Metals in water by ICP-OES (dissolved)	L039-PL	C
BH02		W	18-88577	979021		Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH02		W	18-88577	979021		Nitrate as N in water	L078-PL	С
BH02		W	18-88577	979021		Nitrite as N in water	L082-PL	C
BH02		W	18-88577	979021		Oxygenates in water by HS-GC-MS	L052B-PL	c
BH02		W	18-88577	979021	С	Semi-volatile organic compounds in water	L102B-PL	С
BH02		W	18-88577	979021		Settleable Solids in water	L004-PL	c
BH02		W	18-88577	979021	С	Speciated EPA-16 PAHs in water	L102B-PL	С
BH02		W	18-88577	979021		Sulphate in water	L039-PL	С
BH02		W	18-88577	979021	С	Suspended solids in water	L004-PL	C
BH02		W	18-88577	979021	С	TO - Chlorophenols in water		C
BH02		W	18-88577	979021		TPH in (Water)	L070-PL	С
BH02		W	18-88577	979021		TPHCWG (Waters)	L070-PL	C
BH02		W	18-88577	979021	c	Tentatively identified compounds (SVOC) in water	L070-PL	С
BH02		W	18-88577	979021	С	Tentatively identified compounds (VOC) in water	L073B-PL	С
BH02		W	18-88577	979021	С	Total Phosphate as P in water	L082-PL	С
BH02		W	18-88577	979021	С	Total Phosphate in water	L082-PL	С
BH02		W	18-88577	979021	С	Total cyanide in water	L080-PL	С
BH02		W	18-88577	979021	С	Total oxidised nitrogen in water	L078-PL	С
BH02		W	18-88577	979021	С	Volatile organic compounds in water	L073B-PL	С
BH02		W	18-88577	979021	С	Volatile organic compounds in water extended	L073B-PL	С
BH02		W	18-88577	979021	С	pH at 20oC in water (automated)	L099-PL	С
BH03		W	18-88577	979022	С	BTEX and MTBE in water (Monoaromatics)	L073B-PL	С
BH03		W	18-88577	979022	С	Hexavalent chromium in water	L080-PL	С
BH03		W	18-88577	979022	С	Alkalinity in Water	L082-PL	С
BH03		W	18-88577	979022	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH03		W	18-88577	979022	С	Boron in water	L039-PL	С
BH03		W	18-88577	979022	С	Chemical Oxygen Demand in Water (Total)	L065-PL	С
BH03		W	18-88577	979022	С	Chloride in water	L082-PL	С
BH03		W	18-88577	979022	С	Dissolved Organic Carbon in water	L037-PL	С
BH03		W	18-88577	979022	С	Dissolved Oxygen in water	L086-PL	С
BH03		W	18-88577	979022	С	Electrical conductivity at 20oC of water	L031-PL	С
BH03		W	18-88577	979022	С	Fluoride in water	L033B-PL	С
BH03		W	18-88577	979022	С	Metals in water by ICP-MS (dissolved)	L012-PL	С
BH03		W	18-88577	979022	С	Metals in water by ICP-OES (dissolved)	L039-PL	С
BH03		W	18-88577	979022	С	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	С
BH03		W	18-88577	979022	С	Nitrate as N in water	L078-PL	С
BH03		W	18-88577	979022	С	Nitrite as N in water	L082-PL	С
BH03		W	18-88577	979022	c	Oxygenates in water by HS-GC-MS	L052B-PL	С



BH03	W	18-88577	979022 c	Semi-volatile organic compounds in water	L102B-PL	С
BH03	W	18-88577	979022 c	Settleable Solids in water	L004-PL	С
BH03	W	18-88577	979022 c	Speciated EPA-16 PAHs in water	L102B-PL	С
BH03	W	18-88577	979022 c	Sulphate in water	L039-PL	С
BH03	W	18-88577	979022 c	Suspended solids in water	L004-PL	C
	W				LUU4-PL	•
BH03		18-88577	979022 c	TO - Chlorophenols in water	1 070 DI	С
BH03	W	18-88577	979022 c	TPH in (Water)	L070-PL	С
BH03	W	18-88577	979022 c	TPHCWG (Waters)	L070-PL	С
BH03	W	18-88577	979022 c	Tentatively identified compounds (SVOC) in water	L070-PL	С
BH03	W	18-88577	979022 c	Tentatively identified compounds (VOC) in water	L073B-PL	С
BH03	W	18-88577	979022 c	Total Phosphate as P in water	L082-PL	С
BH03	W	18-88577	979022 c	Total Phosphate in water	L082-PL	С
BH03	W	18-88577	979022 c	Total cyanide in water	L080-PL	С
BH03	W	18-88577	979022 c	Total oxidised nitrogen in water	L078-PL	С
BH03	W	18-88577	979022 c	Volatile organic compounds in water	L073B-PL	С
BH03	W	18-88577	979022 c	Volatile organic compounds in water extended	L073B-PL	С
BH03	W	18-88577	979022 c	pH at 20oC in water (automated)	L099-PL	С
BH05	W	18-88577	979023 c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	С
BH05	W	18-88577	979023 c	Alkalinity in Water	L082-PL	С
BH05	W	18-88577	979023 c	Ammoniacal Nitrogen as N in water	L082-PL	С
BH05	W	18-88577	979023 c	Chemical Oxygen Demand in Water (Total)	L065-PL	С
BH05	W	18-88577	979023 c	Chloride in water	L082-PL	С
BH05	W	18-88577	979023 c	Dissolved Organic Carbon in water	L037-PL	С
BH05	W	18-88577	979023 c	Dissolved Oxygen in water	L086-PL	С
BH05	W	18-88577	979023 c	Electrical conductivity at 20oC of water	L031-PL	0
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	•
BH05	W		979023 c			C
	l W	18-88577		Metals in water by ICP-OES (dissolved)	L039-PL	C
BH05		18-88577	979023 c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	С
BH05	W	18-88577	979023 c	Nitrate as N in water	L078-PL	С
BH05	W	18-88577	979023 c	Nitrite as N in water	L082-PL	С
BH05	W	18-88577	979023 c	Oxygenates in water by HS-GC-MS	L052B-PL	С
BH05	W	18-88577	979023 c	Semi-volatile organic compounds in water	L102B-PL	С
BH05	W	18-88577	979023 c	Settleable Solids in water	L004-PL	С
BH05	W	18-88577	979023 c	Speciated EPA-16 PAHs in water	L102B-PL	С
BH05	W	18-88577	979023 c	Sulphate in water	L039-PL	С
BH05	W	18-88577	979023 c	Suspended solids in water	L004-PL	С
BH05	W	18-88577	979023 c	TO - Chlorophenols in water		С
BH05	W	18-88577	979023 c	TPH in (Water)	L070-PL	С
BH05	W	18-88577	979023 c	TPHCWG (Waters)	L070-PL	С
BH05	W	18-88577	979023 c	Tentatively identified compounds (SVOC) in water	L070-PL	С
BH05	W	18-88577	979023 c	Tentatively identified compounds (VOC) in water	L073B-PL	С
BH05	W	18-88577	979023 c	Total Phosphate as P in water	L082-PL	С
BH05	W	18-88577	979023 c	Total Phosphate in water	L082-PL	С
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 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	0
BH08	W	18-88577	979024 C	Alkalinity in Water	L073B-PL L082-PL	C
				,		•
BH08	W	18-88577	979024 c	Ammoniacal Nitrogen as N in water	L082-PL	С
BH08	W	18-88577	979024 c	Chemical Oxygen Demand in Water (Total)	L065-PL	С
BH08	W	18-88577	979024 c	Chloride in water	L082-PL	С
BH08	W	18-88577	979024 c	Dissolved Organic Carbon in water	L037-PL	С



BH08	W	18-88577	979024 c	Dissolved Oxygen in water	L086-PL	С
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	
BH08	W		979024 C	70 7		C
		18-88577	0.00-	Semi-volatile organic compounds in water	L102B-PL	С
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	С
BH08	W	18-88577	979024 c	Sulphate in water	L039-PL	С
BH08	W	18-88577	979024 c	Suspended solids in water	L004-PL	С
BH08	W	18-88577	979024 c	TO - Chlorophenols in water		С
BH08	W	18-88577	979024 c	TPH in (Water)	L070-PL	С
BH08	W	18-88577	979024 c	TPHCWG (Waters)	L070-PL	С
BH08	W	18-88577	979024 c	Tentatively identified compounds (SVOC) in water	L070-PL	С
BH08	W	18-88577	979024 c	Tentatively identified compounds (VOC) in water	L073B-PL	С
BH08	W	18-88577	979024 c	Total Phosphate as P in water	L082-PL	С
BH08	W	18-88577	979024 c	Total Phosphate in water	L082-PL	С
BH08	W	18-88577	979024 c	Total oxidised nitrogen in water	L078-PL	С
BH08	W	18-88577	979024 c	Volatile organic compounds in water	L073B-PL	С
BH08	W	18-88577	979024 c	Volatile organic compounds in water extended	L073B-PL	С
BH08	W	18-88577	979024 c	pH at 20oC in water (automated)	L099-PL	С
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	С
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	С
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-NIS (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	, ,	L078-PL	c
BH12	W	18-88577	979025 c	Nitrate as N in water Nitrite as N in water	L082-PL	
BH12			979025 c			C
	W	18-88577		Oxygenates in water by HS-GC-MS	L052B-PL	С
BH12	W	18-88577	979025 c	Semi-volatile organic compounds in water	L102B-PL	С
BH12	W	18-88577	979025 c	Settleable Solids in water	L004-PL	С
BH12	W	18-88577	979025 c	Speciated EPA-16 PAHs in water	L102B-PL	С
BH12	W	18-88577	979025 c	Sulphate in water	L039-PL	С
BH12	W	18-88577	979025 c	Suspended solids in water	L004-PL	С
BH12	W	18-88577	979025 c	TO - Chlorophenols in water		С
BH12	W	18-88577	979025 c	TPH in (Water)	L070-PL	С
BH12	W	18-88577	979025 c	TPHCWG (Waters)	L070-PL	С
BH12	W	18-88577	979025 c	Tentatively identified compounds (SVOC) in water	L070-PL	С
BH12	W	18-88577	979025 c	Tentatively identified compounds (VOC) in water	L073B-PL	С
BH12	W	18-88577	979025 c	Total Phosphate as P in water	L082-PL	С
BH12	W	18-88577	979025 c	Total Phosphate in water	L082-PL	С
BH12	W	18-88577	979025 c	Total oxidised nitrogen in water	L078-PL	С
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		pH at 20oC in water (automated)	L099-PL	c
BH13	W	18-88577	979026		BTEX and MTBE in water (Monoaromatics)	L073B-PL	C
BH13	W	18-88577	979026		Alkalinity in Water	L082-PL	C
BH13	W	18-88577	979026		Ammoniacal Nitrogen as N in water	L082-PL	c
BH13	W	18-88577	979026		Chemical Oxygen Demand in Water (Total)	L065-PL	C
BH13	W	18-88577	979026		Chloride in water	L082-PL	C
BH13	l W	18-88577	979026		Dissolved Organic Carbon in water	L037-PL	c
BH13	W	18-88577	979026		Dissolved Oxygen in water	L086-PL	C
BH13	l W	18-88577	979026		Electrical conductivity at 20oC of water	L031-PL	c
BH13	W	18-88577	979026		Fluoride in water	L033B-PL	C
BH13	W	18-88577	979026		Metals in water by ICP-MS (dissolved)	L012-PL	c
BH13	W	18-88577	979026		Metals in water by ICP-OES (dissolved)	L039-PL	C
BH13	W	18-88577	979026		Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	C
BH13	W	18-88577	979026		Nitrate as N in water	L078-PL	c
BH13	W	18-88577	979026		Nitrite as N in water	L082-PL	c
BH13	W	18-88577	979026		Oxygenates in water by HS-GC-MS	L052B-PL	C
BH13	W	18-88577	979026		Semi-volatile organic compounds in water	L102B-PL	C
BH13	W	18-88577	979026		Settleable Solids in water	L004-PL	-
BH13	W	18-88577	979026		Speciated EPA-16 PAHs in water	L102B-PL	c
BH13	W	18-88577	979026		Sulphate in water	L039-PL	
BH13 BH13	W W					L039-PL L004-PL	С
BH13 BH13	W W	18-88577 18-88577	979026		Suspended solids in water	L004-PL	С
			979026		TO - Chlorophenols in water	1 070 DI	С
BH13	W	18-88577	979026		TPH in (Water)	L070-PL	С
BH13	W	18-88577	979026		TPHCWG (Waters)	L070-PL	С
BH13	W	18-88577	979026		Tentatively identified compounds (SVOC) in water	L070-PL	С
BH13	W	18-88577	979026		Tentatively identified compounds (VOC) in water	L073B-PL	С
BH13	W	18-88577	979026		Total Phosphate as P in water	L082-PL	С
BH13	W	18-88577	979026		Total Phosphate in water	L082-PL	С
BH13	W	18-88577	979026		Total oxidised nitrogen in water	L078-PL	С
BH13	W	18-88577	979026	-	Volatile organic compounds in water	L073B-PL	С
BH13	W	18-88577	979026		Volatile organic compounds in water extended	L073B-PL	С
BH13	W	18-88577	979026	С	pH at 20oC in water (automated)	L099-PL	С





Derek Daniels

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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:

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.





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	
			A					
A control Decree of the	_	Limit of detection	Accreditation Status					
Analytical Parameter (Water Analysis)	Units	mit	creditat Status					
(Water Allalysis)	66	혈역	ati					
			9					
•					•			
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/I	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 Phenois								
Total Phenois (monohydric)	//	1	ISO 17025	3.1	1.4	30	45	
Total Phenois (mononyunc)	μg/l		150 17025	3.1	1.4	30	43	
Speciated PAHs								
Naphthalene	μq/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	





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	ļ
Magnesium (dissolved)	mg/l	0.005	ISO 17025	21	39	190	310	ļ
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	I
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	ļ
TPH-CWG - Aliphatic >C12 - C16	μg/l	10	NONE	< 10	< 10	< 10	< 10	ļ
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	<u> </u>
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	<u> </u>
TPH-CWG - Aromatic >C5 - C7	110/1	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	1
TPH-CWG - Aromatic >C5 - C7 TPH-CWG - Aromatic >C7 - C8	μg/l 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 >C0 - C10 TPH-CWG - Aromatic >C10 - C12	μg/I μg/I	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C12 - C16	μg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C12 - C10	μg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C10 - C21 TPH-CWG - Aromatic >C21 - C35	μg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic > C35 - C44	μg/I	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	1
	rai.							





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 ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2,2-Dichloropropane	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	
Trichloromethane 1,1,1-Trichloroethane	μg/l μg/l	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
1,2-Dichloroethane	μg/I	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 1,1,1,2-Tetrachloroethane	μg/l	1	ISO 17025 ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
p & m-Xylene	μg/l μg/l	1	ISO 17025 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 1,2-Dibromo-3-chloropropane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
1,2,4-Trichlorobenzene	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0	
Hexachlorobutadiene	μg/I μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
-,-,	P9/1		100 1/023	` 1.0	` 1.0	` 1.0	` 1.0	





1001 Older No. FO-002713								
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	μq/l	1 1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trichlorobenzene	μg/I μg/I	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dichloromethane	μg/I	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	μ9/-		HOME	, 210	, , , , ,	1 110	1 2.0	
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	





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 Time Taken				18/06/2018 1420	18/06/2018 1400	18/06/2018 1540	18/06/2018 1600	
Time Taken				1420	1400	1540	1600	
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
(of S	ation					
SVOCs			_		<u> </u>			
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 Hexachloroethane	μg/l μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	
Nitrobenzene	μg/I μg/I	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 4-Chloroaniline	μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Hexachlorobutadiene	μg/l μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 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	
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 Acenaphthylene	μg/l	0.05	NONE ISO 17025	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	
Acenaphthene	μg/l 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 Bromophenyl phenyl ether	μg/l μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	
Hexachlorobenzene	μg/I μg/I	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	μg/l	0.03	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 Butyl benzyl phthalate	μg/l	0.01	ISO 17025 NONE	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01 < 0.05	
Butyi benzyi pritnalate Benzo(a)anthracene	μg/l μg/l	0.05	NONE ISO 17025	< 0.05 < 0.01	< 0.05	< 0.05	< 0.05	
Chrysene	μg/I μg/I	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	





1001 Older No. FO-002713								
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	-	-	-	-	





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





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

	T	. , , , ,			1
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





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
	IV analysis have been sayvied sut in our laboration			1	

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.

Iss No 18-89740-2 Riverside EfW 3765



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref
DS		W	18-89740	986256	С	Dissolved Oxygen in water	L086-PL
S DITCH		W	18-89740	986254	С	Dissolved Oxygen in water	L086-PL
US		W	18-89740	986255	С	Dissolved Oxygen in water	L086-PL
W DITCH		W	18-89740	986253	С	Dissolved Oxygen in water	L086-PL



Test Deviation code
c
c
c





Derek Daniels

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i2 Analytical Ltd.
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Croxley Green
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Herts,
WD18 8YS

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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:

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.





	Your	Order	No:	PO-0027	15
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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/I	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





Your Order No: PO-002715

Your Order No: PO-002/15								
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

 $[\]ensuremath{^{**}}$ 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				





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	I	1	I	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 Bromomethane	μg/l	1	ISO 17025 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 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
Trichlorofluoromethane	μg/l 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 1,2-Dichloroethane	μg/l	1	ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	μg/l μg/l	1	ISO 17025 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	< 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 Toluene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 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 < 1.0	< 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 p & m-Xylene	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 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 tert-Butylbenzene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
1,2,4-Trimethylbenzene	μg/l 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 1,2,3-Trichlorobenzene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
172/3 Memoropenzene	μ9/1		100 1/023	\ 1.U	` 1.0	` 1.0	` 1.0	` 1.0





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	ug/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0





Lab Sample Number	Sample Number					999458	999459	999460
Sample Reference				999456 BH02	999457 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) Accreditation Status Units								
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





Your Order No: PO-002715								
Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference	_		_	BH02	BH03	BH05	BH08	BH12
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				10/07/2018	10/07/2018	10/07/2018	10/07/2018	10/07/2018
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
SVOCs			<u>.</u>		•		•	
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 NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
Bis(2-chloroethoxy)methane	μg/l	0.05		< 0.05	< 0.05			
1,2,4-Trichlorobenzene Naphthalene	μg/l μg/l	0.03	NONE ISO 17025	< 0.05	< 0.05	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01
2,4-Dichlorophenol	μg/l μg/l	0.01	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 Azobenzene	μg/l	0.01	ISO 17025 NONE	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01 < 0.05	< 0.01 < 0.05
Bromophenyl phenyl ether	μg/l μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	μg/I μg/I	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	μg/l μg/l	0.03	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





Your Order No: PO-002715

Lab Sample Number				999456	999457	999458	999459	999460
Sample Reference				BH02	BH03	BH05	BH08	BH12
Sample Number	Sample Number				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) Accreditation Status Units Units								
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





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/I	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 Phenois											
Total Phenols (monohydric)	μg/l	1	ISO 17025	2.5	1.9	2.2					
Consideral PAUL											
Speciated PAHs		0.01	100 17005	. 0.01	. 0.01	. 0.01	I				
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 < 0.01	< 0.01 < 0.01	1				
Pyrene Ronzo(a)anthracono	μg/l	0.01	ISO 17025 ISO 17025	< 0.01 < 0.01	< 0.01	< 0.01	1				
Benzo(a)anthracene Chrysene	μg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	1				
Cnrysene Benzo(b)fluoranthene	μg/l μg/l	0.01	ISO 17025 ISO 17025	< 0.01	< 0.01	< 0.01	1				
Benzo(k)fluoranthene	μg/I μg/I	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	1				
Benzo(a)pyrene	μg/I μg/I	0.01	ISO 17025	< 0.01	< 0.01	< 0.01					
Indeno(1,2,3-cd)pyrene	μg/I μg/I	0.01	ISO 17025	< 0.01	< 0.01	< 0.01					
Dibenz(a,h)anthracene	μg/I μg/I	0.01	ISO 17025	< 0.01	< 0.01	< 0.01					
Benzo(ghi)perylene	μg/I μg/I	0.01	ISO 17025	< 0.01	< 0.01	< 0.01					
penzo(grii/pei yiene	μg/1	0.01	130 1/025	< U.U1	< U.UI	\ U.UI	<u> </u>				
Total PAH	1		,		1		1				
Total EPA-16 PAHs	μg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	<u> </u>				





Your Order No: PO-002715

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				

 $[\]ensuremath{^{**}}$ 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	





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		
		α.	Ac					
Analytical Parameter	⊆	Limit of detection	Accreditation Status					
(Water Analysis)	Units	ČĖ PĖ	dita					
		3 5	s tion					
V00-			_					
VOCs Chloromethane	ug/l	1	ISO 17025	< 1.0	. 1.0	.10	I	
Chloroethane	μg/l 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		
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 2,2-Dichloropropane	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0		
z,z-Dichloropropane Trichloromethane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 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		
1,2-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 ISO 17025	< 1.0	< 1.0	< 1.0		
Dibromomethane Bromodichloromethane	μg/l μg/l	1	ISO 17025	< 1.0 < 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		
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 ISO 17025	< 1.0	< 1.0	< 1.0		
1,2-Dibromoethane Chlorobenzene	μg/l 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		
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 Bromohenzene	μg/l	1	ISO 17025 ISO 17025	< 1.0	< 1.0	< 1.0		
Bromobenzene n-Propylbenzene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0		
2-Chlorotoluene	μg/I μg/I	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 1,4-Dichlorobenzene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0		
Butylbenzene	μg/I μg/I	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		





Your Order No: PO-002715								
Lab Sample Number	999461	999462	999463					
Sample Reference	BH13	W DITCH	S DITCH					
Sample Number	mple Number					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	ua/l	1	NONE	< 1.0	< 1.0	< 1.0		





Tour Order No: PO-002/15							
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	
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)	ma/l	0.1	NONE	< 0.10	< 0.10	< 0.10	





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	μq/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 < 0.05	< 0.05 < 0.05		
Nitrobenzene 4-Methylphenol	μg/l	0.05	NONE NONE	< 0.05	< 0.05	< 0.05		
Isophorone	μg/l 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	< 0.05		
2,4,6-Trichlorophenol 2,4,5-Trichlorophenol	μg/l μg/l	0.05	NONE NONE	< 0.05	< 0.05 < 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 Diethyl phthalate	μg/l	0.05	NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05		
4-Nitroaniline	μg/l μg/l	0.05	NONE 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 Fluoranthene	μg/l	0.05	NONE ISO 17025	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01		
Pyrene	μg/l μg/l	0.01	ISO 17025 ISO 17025	< 0.01	< 0.01	< 0.01		
Butyl benzyl phthalate	μg/I μg/I	0.01	NONE	< 0.05	< 0.05	< 0.05		
Benzo(a)anthracene	μg/I	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]	<u> </u>





Your Order No: PO-002715

1041 01461 11011 0 0027 23					-			
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 by the discrete analyser		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.(AI, 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

Iss No 18-92270-1 Riverside EfW 3765





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	olatile organic compounds in Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.		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	Suspended solids in water Determined gravimetrically with GFC filtration papers.		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
	IV analysis have been sayvied sut in our laboration			1	

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.

Iss No 18-92270-1 Riverside EfW 3765



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02		W	18-92270	999456	С	Dissolved Oxygen in water	L086-PL	С
BH03		W	18-92270	999457	С	Dissolved Oxygen in water	L086-PL	С
BH05		W	18-92270	999458	С	Dissolved Oxygen in water	L086-PL	С
BH08		W	18-92270	999459	С	Dissolved Oxygen in water	L086-PL	С
BH12		W	18-92270	999460	С	Dissolved Oxygen in water	L086-PL	С
BH13		W	18-92270	999461	С	Dissolved Oxygen in water	L086-PL	С
S DITCH		W	18-92270	999463	С	Dissolved Oxygen in water	L086-PL	С
W DITCH		W	18-92270	999462	С	Dissolved Oxygen in water	L086-PL	С











DRAINAGE STONE

ipping Area

for Unsuitable

July 2018 Report No 3765R001-2

Riverside EfW

Carried out for:

Hitachi Zosen Inova AG

TerraConsult

Riverside EfW

Date: July 2018

Report No 3765R001-2

Prepared for:



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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

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July 2018 3765R001-2

Riverside EfW

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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.

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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.

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A summary of the exploratory holes formed is listed in the following table.

Table 2: Sumi	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.

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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.

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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.

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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.

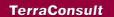
BS EN ISO 22476-3: 2005: Geotechnical investigation and testing - Field Testing - Part 3: Standard penetration test

6 **LICENCES**

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DRAWINGS

3765D001-1 Site Location Plan

3765D002-1 Exploratory Hole Location Plan 3765D003-1 Surface Water Sampling Locations

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APPENDICES

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APPENDIX A Exploratory Hole Records

Key sheet

Boreholes BH01 – BH06, BH08 – BH13, BH02A,

BH10A

Trial pits TP01, TP02, TP04 – TP06

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Exploratory Hole Key Sheet

TerraConsult

Undisturbed:

Driven tube sample UT Thin wall driven tube sample Pushed thin wall tube sample Pushed piston sample

Liner sample (from windowless or similar sampler), full recovery unless otherwise stated

CBR CBR mould sample **BLK**

Core sample (from rotary core) taken for laboratory testing

Disturbed:

Small sample В Bulk sample **AMAL** Amalgamated sample

Environmental:

Environmental soil sample FW Environmental water sample

Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that an attempt was made Comments:

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

In situ vane shear strength, peak (p) and remoulded (r), kPa ΗV Hand vane shear strength, peak (p) and remoulded (r), kPa 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)

Total Core Recovery, % **TCR** SCR Solid Core Recovery, % RQD Rock Quality Designation, %

lf 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:	DEPTH REMARKS:
GROUNDWATER:	DEPTH REMARKS:

Groundwater strike

EoS End of Shift SoS Start of Shift End of Borehole EoBH

Groundwater level after standing period

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.

Standpipe SPIE Standpipe piezometer

PPIE Pneumatic piezometer **EPIE** Electronic piezometer ΔP Access pipe

GMP Gas monitoring standpipe (xx) Internal diameter (mm)

ICF Biaxial inclinometer

ICM Inclinometer tubing for use with probe SLIP Slip indicator

Electronic settlement cell/gauge **ESET** Magnetic extensometer settlement point ETM

Rod extensometer

Project: Riverside EfW

Project No:

Client: Hitachi Zosen Inova AG

EXPLORATORY HOLE TYPE:

CF Cable percussion DP Dynamic probe DCP

Dynamic cone penetrometer НΑ Hand auger

Inspection pit OP Observation pit/trench Pavement core RC Rotary core RO Rotary open hole

SH Shaft

Reference

SNC Sonic (resonance) TP Trial pit/trench TRAV Traverse

WLS Windowless (dynamic) sample WS

Window (dynamic) sample

KEY SHEET

Sheet 1 of 1

TerraConsult

Bore	hol	e forn	nation	details												Location details:
Type:	F	From: 0.00 1.20	To: 1.20 31.38	Start da 03-04- 03-04-	ate: End date:	Crew: MF MF	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-04-18 05-04-18	V	'SS	Remarks: Hammer	ID: AR825 Er(%	b) 71	mE: 549433.37 mN: 180764.48 mAOD: 3.02 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description							& In Situ Te	1
	V	——————————————————————————————————————	2.97	ness)	ASPHALT.						1	Water	Casing	Depth	Type & No	Results/Remarks
			2.72	0.30	subrounded o	n sandy of mixed UND)	slightly silty GF lithologies. brown gravelly			_	A			0.50 0.50	PID ES	0.3 ppmv
Ш				(1.30)_	Gravel of sub	angular ium to c	to rounded fine oarse flint. Fair	e to coarse bri	ck and sub	rounded to	-	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
Ш			1.42	1.60			grey to light gre arse mixed litho				t :			1.50 1.60 2.00	PID D PID	0.2 ppmv 0.9 ppmv
Ш				(1.40)	(ALLUVIUM)						-			2.00	ES	
Ш		 		-							-	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 -	matter.	to light	brown CLAY.	Occasional da	ark brown f	ibrous orga	nic-			3.00	PID	0.4 ppmv
				(1.00) -	(ALLUVIUM)						-			3.50	PID	0.7 ppmv
			-0.98	4.00 -	Very soft to so (ALLUVIUM)	oft dark	brownish black	peaty CLAY.	Occasiona	l plant matt	er			4.00 4.00 4.00 - 4.45 4.45	PID ES UT D	0.7 ppmv
				(1.50)							-					
	▼ SP		-2.48	5.50 -	Loose dark gr (ALLUVIUM)	rey silty	micaceous fine	to medium S	AND			Dry	5.50	5.50 - 5.95 5.50 - 5.95	S D	N=3 (1,1/0,1,1,1)
				- -								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
—		ater e	ntries:	g: Seal	Diameter			Depth related		narks:			С	hiselling deta	ails:	ation: Tool:
	:к: і 50	5.50			ed: Dia (mm): 250 200 150	10 19	Casing: .00 10.00 .00 19.00 .38 29.50	8.00		narks: ntonite seal				From: to:	Dura	ition: 1001:
AGS Log is Scale	All de	eviations ser epths and re	enation of symble Key Sheet. Induced levels a DRAFT	re in metres.	Project: Project No Client:	o: 3765	rside EfW hi Zosen Inova	AG					E	xploratory pos	BH	



Borel	hole	e forr	nation	details	.											Location details:
Type: IP CP	F	rom: 0.00 1.20	To: 1.20 31.38	Start da 03-04- 03-04-	ate: End date: 18 03-04-18	Crew: MF MF	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-04-18 05-04-18	V	ss	Remarks Hammer	: ID: AR825 Er(%	s) 71	mE: 549433.37 mN: 180764.48 mAOD: 3.02 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick- ness)			Stratum	Description							& In Situ Te	_
					Loose dark g (ALLUVIUM)	rey silty	micaceous fine	e to medium S	AND			Water Dry	Casing 10.00	Depth 10.00 - 10.45 10.00 - 10.45	Type & No S B	Results/Remarks N=4 (1,1/1,1,1,1)
			-8.38	11.40	Dense to very GRAVEL of s (TAPLOW GR	ubangul	dark greyish b lar to rounded f MEMBER)	rown slightly s fine to coarse	andy sligh ⁱ flint.	tly silty		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)
			-11.58	14.60	Stiff to very st closely fissure micaceous. (LONDON CL	ed lamir	brownish grey nated occasiona	with occasiona ally slightly sa	al whitish g ndy CLAY.	grey streaks Occasiona	- - - - - - - - - -	Dry	14.50	14.50 - 14.76 14.50 - 14.95	C B	50 (12,13/50 for 115mm)
				-								Dry	16.00	16.00 - 16.45 16.00 - 16.45	S D	N=15 (3,3/3,4,4,4)
				(6.30)										17.50 - 17.95 17.95	UT 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
	c: F	Rose to			Diameter ed: Dia (mm): .60 250 200 150	Depth: 10 19	Casing: .00 10.00 .00 19.00 .38 29.50	Pepth related From: 17.00	To: Rer	marks: ntonite seal				chiselling deta From: to:		tion: Tool:
AGS Log is: Scale:	abbre All de	eviations se epths and re	e Key Sheet. educed levels a DRAFT	are in metres.	Project: Project No Client:	o: 3765	rside EfW ; chi Zosen Inova	a AG					E	xploratory pos	BH	



Boreho							T Division	I Book I I and	I D 31 D3	T						Location details:
Type: IP CP	9.0 1.2	0	To: 1.20 31.38	Start da 03-04- 03-04-	18 03-04-18	Crew: MF MF	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-04-18 05-04-18	Logge VSS VSS		Remarks	: ID: AR825 Er(%	b) 71	mE: 549433.37 mN: 180764.48 mAOD: 3.02 Grid: OSGB
Backfill/ Instal'n Water-	iķe	Legend	Level	Depth (thick-			Stratum	Description						Samples 8	& In Situ Te	esting
Bac	str	Leg	LCVCI	ness)				•				/ater	Casing	Depth	Type & No	Results/Remarks
				- - - -	Stiff to very st closely fissure micaceous. (LONDON CL	ed lami	brownish grey nated occasiona	with occasion ally slightly sa	al whitish ndy CLAY	grey streaks '. Occasional	ly :			20.50 - 20.95	UT	
Z			-17.88 -17.98	20.90 - 21.00	subrounded to coarse gravel (BLACKHEAT Firm dark gre	o round sized TH MEN y mottle	avelly silty fine to led fine to coars pockets of light MBER HARWIC ad light brownis	se black flint. (orangish brow H FORMATIC h grey CLAY	Occasiona n slightly N)	al medium to				20.95 21.00	D D	
	×	·×°	-18.98	22.00	Dense dark b subrounded to Occasional sa	lackish o round and size	grey slightly sa led fine to coars ed shell fragmen	ndy slightly si se flint. Rare nts.	Ity GRAVE			Ory	22.00	22.00 - 22.45 22.00 - 22.45	S B	N=19 (3,3/3,4,4,8)
	***	·×* ·×* ·×*		(1.95)	(BLACKHEA)	H ME	MBER HARWIC	H FORMATIC	on)							
	×	·×'	-20.93	23.95			ckish grey sand			ed to rounde		Ory	23.50	23.50 - 23.91 23.50 - 23.95	C B	N=50 (12,13/50 for 262mm)
	*	· × · › · × · · › · · × · · › · · × · · › · · × · · › · · × · · › · · · ·		(3.55)			Nbundant sand s					Ory	25.00	25.00 - 25.42 25.00 - 25.45	C B	N=50 (12,13/50 for 267mm)
	× × × × ×	· × · · · · · · · · · · · · · · · · · ·		-								Ory	26.50	26.50 - 26.90 26.50 - 26.95	C B	50 (6,6/50 for 245mm)
	× × × ×	·×· ·×· ·×· ·×·	-24.48	27.50 -	rounded fine	to coars	ckish grey slight se flint. Occasio MBER HARWIC	onal fine grave	el size she		• ‡	Ory	28.00	28.00 - 28.33 28.00 - 28.45	C B	50 (7,8/50 for 180mm
			-25.43 -25.68	28.45 _ 28.70 - -	medium flint. (UPPER (?) S Stiff to very st brown sand ir	Abunda SHELLY iff dark ofilled for	y gravelly CLAY ant shelly fragm 'CLAY (LAMBE grey slightly sa bssil root tracks 'CLAY (LAMBE	ents. Occasio ETH GROUP) ndy CLAY. Oc	nally lami) ccasional l	nated.				28.70	D	
				- - - -										29.50 - 29.95	UT	
	nst										W	ater/		29.95 Depth	Type & No	Results
Struck: 20.90	Ros		Casin	-	Diameter ed: Dia (mm):	Depth: 10	Casing: 0.00 10.00 0.00 19.00 1.38 29.50	Prom: 22.00	To: Re	s: emarks: lowing sand &	gravel			Chiselling deta From: to:		ation: Tool:
AGS A Log issu	abbreviat All depths	ions see s and rec	nation of symb Key Sheet. duced levels a DRAFT 1:50	ools and re in metres.	Project: Project No Client:	o: 376	erside EfW 5 chi Zosen Inova	ı AG					E	xploratory pos	BH	



Borehol	e for	mation													Locatio	n details:
Type: F	From: 0.00 1.20	To: 1.20 31.38	Start da 03-04-	te: End date: 03-04-18	Crew: MF MF	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-04-18 05-04-18	Logge VSS VSS	3	Remarks:	: ID: AR825 Er(%	6) 71	mE: mN: mAOD: Grid:	549433.37 180764.48 3.02 OSGB
er-	pus		Depth			Ott	December		<u> </u>				Samples	& In Situ Te		OGGD
Back Insta Wate	Lege	Level	ness)							W	Vater	Casing	Depth	Type & No		lts/Remarks
Backfill First Install	pueber 1	-28.36	(thick- ness) (2.68) _	brown sand ir	nfilled fo	Stratum grey slightly sa ssil root tracks CLAY (LAMBE	. TH GROUP))		ght greyish	-	Dry	31.00	Depth	1	Resu	Its/Remarks
Groundw Struck: F	Rose to		bols and are in metres.	Diameter ed: Dia (mm): 250 200 150 Project: Project No	Depth: 10. 19. 31. River	Casing: .00 10.00 .00 19.00 .38 29.50	Depth related From:		narks:		Vater		Depth thiselling deta From: to:	Dura	ation: Tool:	Results



Type: IP CP	Fi 0	e forn rom: 0.00 1.20	To: 1.20 32.70	Start d 04-04- 04-04-	ate: End date:	Crew: KG KG	Plant: Hand tools Dando 2000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 04-04-18 04-04-18	Logger: VSS VSS	Remarks	s: ID: SI03 Er(%)	64	Location details: mE: 549427.99 mN: 180724.99 mAOD: 2.44
≥ c		ص ا		Depth									Camples	& In Situ T	Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	(thick- ness)			Stratum	Description			Wate	er Casing	Depth	Type & No	Results/Remarks
		***	2.34 2.19	0.10 0.25	fine to coarse (MADE GRO) Orangish bro	n sandy mixed UND) wn sligl	v slightly silty GF lithologies. htly silty SAND a rse subangular t	and GRAVEL.	Sand is fir		À		0.50 0.50 0.50 - 0.80	PID ES	0.3 ppmv
		× · · · · · · · · · · · · · · · · · · ·		(1.75)									1.00 1.00 - 1.20	PID ES B2	0.000847 m/s 0.3 ppmv
		× · × · × · × · × · × · × · × · × · × ·		-							- Dry	1.50	1.50 - 1.95 1.50 1.50 1.50 1.50 - 1.95	C PID ES B3	N=8 (1,2/2,2,2,2) 0.2 ppmv
			0.44	2.00 -	black slightly	gravely	y to very closely CLAY. Gravel of tlets and relic ro	of subangular	t brownish of to rounded	grey mottled fine to coa	rse		2.00 2.00 2.00 2.00 - 2.20 2.00	PID D4 ES B5 VHP	0.6 ppmv 0.000018 m/s
				-									2.50 2.50 2.50 - 2.95	PID ES UT6	0.6 ppmv 8 (100%)
				(2.50)							- Dry	3.50	2.95 - 3.05 3.50 - 3.95 3.50 - 3.95 3.50	S D8 VHP	N=4 (1,0/1,1,1,1) 0.000007 m/s
	▼		-2.06	4.50 -	Very soft to so clay. Frequen (ALLUVIUM)	oft dark t rootle	brown peaty C ts and occasion	LAY. Occasion al wood fragr	nal pockets nents.	of light gre	y .		4.50 - 4.95 4.50 - 5.05 4.62 4.95 - 5.05	UT9 B11 W	9 (100%)
	Inst			_							Wate		Depth	Type & No	Results
			ntries: : Casin	g: Seal	Diameter ed: Dia (mm):	Depth:		Prom:		marks:		C	Chiselling deta From: to:		ation: Tool:
AGS Log iss Scale:	abbre All de SUE:	viations ser pths and re	ination of symble Key Sheet. duced levels a DRAFT 1:25	ools and re in metres.	Project: Project No Client:	o: 376	erside EfW 5 chi Zosen Inova	ı AG				E	Exploratory pos	BH	



Bore	ahole	e forr	nation	details	- ::											Location details:
Type	: F	rom: 0.00	To: 1.20	Start d	ate: End date:	Crew:	Plant: Hand tools	Barrel type:	Drill Bit: n/a	Logged: 04-04-18		gger: I	Remarks	:		mE: 549427.99
CP		1.20	32.70	04-04-		KG	Dando 2000 mk 2		n/a n/a	04-04-18			Hammer	ID: SI03 Er(%)	64	mN: 180724.99 mAOD: 2.44 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description						Samples 8	& In Situ Te	esting
⊢L. Ba ਜ਼	 ≥ g	Le Le		ness)	Very soft to se	oft dark	brown peaty Cl		nal pockets	of light are	v	Water	Casing	Depth	Type & No	Results/Remarks
				(1.30)			ts and occasion			or light gre	,					
					, LEC V 10 (VI)						1					
					-						-			5.35	W	
				-]						-					
					-						-	Dry	5.70	5.70 - 6.15	s	N=2 (1,0/1,0,0,1)
			-3.36	5.80	Very loose lig (ALLUVIUM)	ht grey	silty micaceous	fine to mediu	m SAND.		-			5.80	D12	
				(0.50)	, LEC V 10 (VI)						-			6.00 - 6.45	D13	
				(0.00)							-					
			-3.86	6.30	Very soft to so	oft verv	closely fissured	l laminated da	ırk grev CI	AY.	_					
		<u> </u>			Occasional sh micaceous sli	nells. O	ccasional plant	matter and ro	ots. Occasi	ional bands	of					
				-	(ALLUVIUM)	Jy 30	, Juli.				-					
					-						-					
]						-	Dry	5.70	6.90 - 7.35	S	N=6 (1,0/1,1,2,2)
				-	-						-					
		<u> </u>]											
					-						-			7.30	D14	
		<u> </u>		(2.40) -							<u>.</u>			7.50 - 7.95	UT15	18 (100%)
				(<u>-</u> .+0)]			1.50 - 1.50	3173	.0 (10070)
											1					
					-						-			7.95 - 8.05	D16	
		<u> </u>		-	-						-			7.85 - 8.U5	סויט	
											-					
					-						1					
<u>:H:</u>	SP	<u> </u>		_]						-			8.50	VHP	0.000007 m/s
					-											
			-6.26	8.70			lark reddish brov lant matter. (Dar				on :			8.70	D17	
				(0.50)	exposure to a		iani maller. (Dal	. readistr bit	Decome	o biack up	J.1					
				(5.55)_	(, (EEO V 101VI)						-	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 ex	tremel	y closely fissure	d dark greeni	sh grev (no	ssiblv)	_					
					glauconitic Cl	AY. Fr	equent sand size el of subangular	ed shell fragm	ents. Rare	mottling w	ith					
				-	(ALLUVIUM)	J = .				-	-			9.50 - 10.00	B19	
											-					
		<u> </u>		(4.00)							-					
				(1.30)	-						-					
Grou	Inst ndw	ater e	ntries:		Diameter	& casi	ina:	Depth related	l remarks:			Water	Casing	Depth hiselling deta	Type & No	Results
Struc	ck: I	Rose to	: Casin	g: Seal		Depth:		From:		narks:				From: to:		ation: Tool:
AGS		s: For expla eviations se epths and re	anation of symle e Key Sheet.	bols and are in metres	Project:		erside EfW						E	xploratory pos		
Log is	ssue	:	DRAFT		Project No Client:		5 chi Zosen Inova	AG							BH	
Scale	e:		1:25		3											Sheet 2 of 7



Bore	hole	e forr	nation	details												Location details:
Type: IP CP	F	rom: 0.00 1.20	To: 1.20 32.70	Start d: 04-04- 04-04-	ate: End date:	Crew: KG KG	Plant: Hand tools Dando 2000 mk 2	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 04-04-18 04-04-18	V	/SS	Remarks	ID: SI03 Er(%)		mE: 549427.99 mN: 180724.99 mAOD: 2.44 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick- ness)			Stratum [Description							& In Situ Te	_
8 -			-8.06	10.50 -	glauconitic CL dark blue. Ra (ALLUVIUM)	₋AY. Fro re grav	y closely fissured equent sand size el of subangular greyish brown sa	ed shell fragm to rounded fi	nents. Rare ne to coars	mottling w se flint.	ith	Water	Casing	Depth 10.50 - 10.95	Type & No	Results/Remarks N=16 (1,2/2,3,5,6)
				(1.00)	rounded fine I	to coars	se flint. Low cobb	ole content of	rounded fl	int.	-			10.50 - 10.95	B20	
		********	-9.06	11.50 -	Medium dens Gravel of sub fragments. (TAPLOW GF	angula	greyish brown gi r to rounded fine MEMBER)	ravelly silty fii to medium fl	ne to coars int. Freque	e SAND. nt shell	-	0.30	12.00	12.00 - 12.45 12.00 - 12.45	C B21	N=27 (2.4/4,6,8,9)
		x		(1.90)										12.50	VHP	0.000020 m/s
		x	-10.96 -11.36	13.40 (0.40)	(LONDON CL	.AY) iff lami	ely fissured occa nated dark brown ed shell fragmen	nish grey slig			- - - - - - - - - -			13.40 13.50 - 13.95	D22 UT23	49 (100%)
				- - - - - - -	(LONDON CL		as sion regineri						12.70	13.95 - 14.05	D24	N=22 (2.4/F.F.C.7)
Grow	Inst ndw:	ater o	ntries:		Diameter	& raci	na. Ir	Depth related	l remarke:			Water	13.70 Casing	15.00 - 15.45 Depth hiselling deta	Type & No	N=23 (3,4/5,5,6,7) Results
Struc 10.0	k: F 60	Rose to	: Casin 5 10.	50	ed: Dia (mm): 250 200 150	Depth: 10 19 32	Casing: 0.00 10.00 0.00 19.00 2.70 28.30	From:		narks:				From: to:	Dura	ation: Tool:
AGS Log is Scale	abbre All de	eviations se epths and re	e Key Sheet. Iduced levels a DRAFT 1:25	are in metres.	Project: Project No Client:	o: 376	erside EfW 5 chi Zosen Inova	AG					E	xploratory pos	BH	



$\overline{}$				details			T Blood	I Book of	I D 311 D3	I		I I			Location details:
Type: IP		rom: 0.00	To: 1.20	Start d	18 04-04-18	Crew: KG	Plant: Hand tools	Barrel type: n/a	Drill Bit: n/a	Logged: 04-04-18	Logger: VSS	Remark	S.		mE: 549427.99
CP		1.20	32.70	04-04-	18 09-04-18	KG	Dando 2000 mk		n/a	04-04-18	VSS	Hammei	ID: SI03 Er(%)	64	mN: 180724.99
															mAOD: 2.44
															Grid: OSGB
Backfill/ Instal'n	ater- trike	Legend	Level	Depth (thick-			Stratum	Description					Samples 8	& In Situ Te	esting
B ≅	≥ ∞	Le		ness)							Wat	er Casing		Type & No	Results/Remarks
					Stiff to very st	tiff lami and size	nated dark brow ed shell fragme	nish grey slig	htly sandy	CLAY.	1		15.00 - 15.45	D25	
					(LONDON CL	_AY)	ca sileli ilagillei	11.0.			1				
											1				
											1				
				-							-				
											1				
											}				
											1				
				-							-				
											-				
		_									1				
]						1				
		E.E]		16.50 - 16.95	UT26	62 (400%)
				_]		10.30 - 16.95	0120	62 (100%)
											-				
				(6.00)							1				
											†				
				_							_		16.95 - 17.05	D27	
											1				
											1				
]				
]				
				-							-				
											1				
											†				
											1				
											1				
				_							17.	70 13.70	18.00 - 18.45 18.00 - 18.45	S D28	N=31 (4,4/6,7,9,9)
											-				
											}				
				_]				
											-				
											1				
											‡				
				_							-				
		=									1				
											}				
		E.E]				
											1				
				-							-		19.50 - 19.95	UT29	81 (80%)
											1				
			4	40.0-							1				
		× ·×	-17.36	19.80	Very dense d	ark bla	ckish grey sand	y silty GRAVE	L of subrou	inded to	7				
		× ·× '			rounded fine	to coar	se black flint. Fr	equent shell f	ragments.				19.95 - 20.05	D30	
	Inst				-			D			Wat			Type & No	Results
			ntries: c: Casin	g: Seal	Diameter ed: Dia (mm):			Depth related From:		narks:			Chiselling deta		ation: Tool:
Juli	Г	10	Odoill	y. Ocai	250	10	0.00 10.00	1 10111.	io. Itel				. 10111. 10.	Dulk	
					200 150	19	9.00 19.00 2.70 28.30								
					130	52	20.00								
Ш		s: For expla	anation of symi	bols and	Project:	Rive	erside EfW					E	Exploratory pos	ition refere	ence:
AGS			e Key Sheet.		Project No								. ,,,,,,,	BH	
Log is			DRAFT 1:25		Client:		chi Zosen Inova	AG						ווע	Sheet 4 of 7
Scale			1.25												SHEEL 4 01 /



Type:	Fr	rom:	To:	Start d	ate: End date:	Crew:		Barrel type:	Drill Bit:	Logged:	Logge	r: F	Remarks	:		Location details: mE: 549427.99
IP CP		.20	1.20 32.70	04-04- 04-04-		KG KG	Hand tools Dando 2000 mk	n/a 2 n/a	n/a n/a	04-04-18 04-04-18	VSS VSS		Hammer	ID: SI03 Er(%) (64	mN: 180724.99 mAOD: 2.44 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description						Samples 8	& In Situ Te	esting
		. e s>		ness)	Von donos de	ark blac			l of oubro	undad ta	W	ater	Casing	Depth	Type & No	Results/Remarks
				- - - - - -	rounded fine t	to coars	ckish grey sandy se black flint. Fr //BER HARWICI	equent shell f	ragments.	inded to		.10	31.00	20.10 21.00 - 21.40 21.00 - 21.45	D31 C B32	50 (4,7/50 for 255mm)
				(3.70)								.10	22.50	22.50 - 22.88 22.50 - 22.95	C B33	50 (6,8/50 for 235mm)
			-21.06	23.50 -	subrounded to fragments.	o round	y gravelly silty fi led fine to coars /IBER HARWICI	e black flint. (Occasional	avel of shell		.10	24.00	24.00 - 24.38 24.00 - 24.45	С В34	50 (5,7/50 for 235mm)
		× × ×	-22.56	25.00							-				T 011	
Grour	Inst ndwa	ater e	ntries:		Diameter	& casi	ng:	Depth related	d remarks:		_ w	ater	Casing	Depth hiselling deta	Type & No	Results
	k: F		: Casin			Depth: 10 19	Casing: 0.00 10.00 0.00 19.00 2.70 28.30	From:		narks:				From: to:		ation: Tool:
AGS Log is	All dep	viations ser pths and re	nation of sym e Key Sheet. duced levels a	are in metres.	Project: Project No	o: 3765	rside EfW 5 chi Zosen Inova	AG					E	xploratory pos	ition refere	
Scale:	_		1:25													Silett 3 Ul 7



				details		T -										Location details:
Type: IP		rom:).00	To: 1.20	Start d		Crew: KG	Plant: Hand tools	Barrel type: n/a	Drill Bit: n/a	Logged: 04-04-18	Log		Remarks	:		mE: 549427.99
СР		.20	32.70	04-04-		KG	Dando 2000 mk		n/a	04-04-18	VS		Hammer	ID: SI03 Er(%)	64	mN: 180724.99
																mAOD: 2.44
<u> </u>											L.,					Grid: OSGB
Backfill/ Instal'n	ter- ike	Legend	Level	Depth (thick-			Stratum	Description						Samples	& In Situ Te	esting
Bac	Wa	Leg	FEAGI	ness)			Guatulli	Describuon			T	Water	Casing	Depth	Type & No	Results/Remarks
		× · × ·			Dark blackish	grey s	ilty GRAVEL of	subrounded to	rounded f	fine to medi	ium-					
		× · · · ·			black flint. (BLACKHEAT	TH MEN	MBER HARWIC	H FORMATIC	N)		1					
		×,							,		}					
		×· ^,									-					
		× °×,		_							4	0.10	25.50	25.50 - 25.90	С	50 (3,4/50 for 255mm)
		×°×,									1			25.50 - 25.95	B35	,
		×°×°,									1					
		×·×·			-						1					
		× ×)									- 1					
		·×·		-							-					
		^`']					
		×,														
		×·×'			_						-					
		×°×°,			-											
		×·×.		(3.10)	-						-					
		×·×		(00)												
		× ·×)			1						‡					
		(.×.)			-						-					
		× ; ; ;			-						1					
		×· ^,		_	-						7			27.00 - 27.45	B36	
		×·×°,		,	-						1					
		×°×,									1					
		×·×°									1					
		\times \times		•							-					
		. · · · · · · · · · · · · · · · · · · ·									3					
		^`']					
		×									}					
		ו ×														
		×·×°,		_							_					
		×.°×°	-25.66	28.10	0.155											
					Stiff to very st	tiff dark o rounc	grey extremely ded medium flin	closely fissur Occasional	ed CLAY. F sand sized	Rare gravel	of -					
					fragments.				Jana 0120a	Onon	1					
					(LOWER SHE	ELLY C	LAY (LAMBETH	H GROUP))			1					
				-	_						- 1			28.50 - 28.95	UT37	100 (30%)
		=			-						1					
					-						1					
					-		28.80 - 29.20	m: Weak laminated	d closely fissur	ed MUDSTONE	E. 1					
					-				,		7			28.95 - 29.05	D32	
		[-]		-	+						+			20.80 - 28.05	D32	
					-						H					
					1						4			29.20	D33	
					-						‡					
		H=			1						1					
		F_4		-	1						7					
					1						1					
				(3.40)							1					
				(3.40)												
C	Inst		n4u! ·		Diamort	0		Double !-!	d war	_		Water		Depth	Type & No	Results
			ntries: : Casin	g: Seal	ed: Dia (mm):			Depth related From:		narks:				From: to:		ation: Tool:
Suuci	к. Г	103C 10	. Casill	y. Jedi	250	10	0.00 10.00	1 10111.	io. Rei	naino.				i ioiii. IU.	Dula	auon. 1001.
					200 150	19	9.00 19.00 2.70 28.30									
						52										
	Notes	: For expla	nation of symle Key Sheet. duced levels a	ools and	Project:	Rive	erside EfW	I					F	xploratory pos	ition refere	ence:
AGS					Project No								-	, poo	BH	
Log is			DRAFT		Client:		chi Zosen Inova	a AG							ВΠ	
Scale:	:		1:25													Sheet 6 of 7



				details			T		T = =							Location details:
Type IP		rom: 0.00	To: 1.20	Start d		Crew: KG	Plant: Hand tools	Barrel type: n/a	Drill Bit: n/a	Logged: 04-04-18		gger: F /SS	Remarks	:		mE: 549427.99
CP		1.20	32.70	04-04-		KG	Dando 2000 mk		n/a	04-04-18			Hammer	ID: SI03 Er(%)	64	mN: 180724.99
																mAOD: 2.44
											Ь					Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description						Samples 8		_
Ω≃	> "			ness)	Stiff to your -	tiff dod	grey extremely	closely fice	-od CL AV -	Para arayal	of	Water 28.10	Casing 28.80	Depth 30.00 - 30.42	Type & No S	Results/Remarks 50 (6,7/50 for 265mm)
					subrounded t	o rounc	ded medium flin	t. Occasional	sand sized	shell	01 -	20.10	20.00	30.00 - 30.42	D34	50 (6,7/50 101 26511111)
		<u> </u>			fragments.	ELIVO	LAY (LAMBETH	L CBOLIB//			-					
		<u> </u>			(LOWER OF II	LLLIO	LAI (LAMBEII	101(001))			-					
					-						-					
											-					
					_						-					
					-						-					
					_						-					
				-	_						-					
					_						-					
				•]						-					
		<u> </u>									-					
			-29.06	31.50 -	Stiff to your -	tiff dod	greenish grey	andy aliabth.	gravely Cl	AV Crovel	of -			31.50 - 31.95	UT35	100 (50%)
					subrounded t	o round	ded fine to medi				01 -					
				(0 EF)	(UPNOR FOR	RMATIC	ON				-					
				(0.55)							-					
]						-			31.95 - 32.05	D36	
		×	-29.61	32.05	Very dense d	ark bro	wnish grey grav	elly silty fine t	to medium	SAND. Gra	vel -					
		×××		(0.35)	of subangular (UPNOR FOR	r to rou	nded fine to coa	arse flint. Occa	asional she	II fragments	3					
		××		(0.00))	VINIVI IC	νı ν				-					
		$\stackrel{\times}{\xrightarrow{\times}}$	-29.96	32.40			gravelly silty fin									
		××		(0.30)		round	ed fine to coars				-					
		× × ×	-30.26	32.70)											
			00.20	020	-		Borehole ends a	at 32.70m (Ref	usal)		-					
					-						-					
				-							-					
					-						-					
											-					
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	Inst			_								Water		Depth	Type & No	Results
			ntries:	ia. Soci	Diameter			Depth related					C	hiselling deta		ation: Tool:
Siruc	∠n. h	vose 10	: Casin	ıg: Seal	250	10	0.00 10.00	From:	To: Rer	marks:				From: to: 32.30 32.7		ation: 1001: 1:00 Californian
					200 150		9.00 19.00 2.70 28.30									
<u></u>																
AGS	Notes abbre All de	s: For expla eviations se opths and re	anation of symi e Key Sheet. educed levels a	bols and are in metres.	Project:		erside EfW						E	xploratory pos		
Log is	-		DRAFT		Project No Client:		5 chi Zosen Inova	AG.							BH	02
Scale	e:		1:25		Ollerit.	ıııld	OIII AUSCII IIIUVõ	.,,,								Sheet 7 of 7

Borehole Log TerraConsult Borehole formation details: Location details: Type: IP CP Barrel type: Drill Bit: Logged: Logger: mE: 549427.99 0.00 1.20 1.20 28.20 16-04-18 16-04-18 16-04-18 18-04-18 Hand tools Dando 2000 mk 2 KG mN: 180723.57 KG n/a n/a RO 30-04-18 30-04-18 Comacchio 305 Hammer ID: RHM1703006 Er(%) 82 mAOD: 2.10 PS Geobore S PCD RC 31.00 50.50 30-04-18 01-05-18 Comacchio 305 04-05-18 VSS Grid: OSGB Depth (thick-ness) Backfill/ Instal'n Legend Samples & In Situ Testing Water-strike Stratum Description Leve Water Casing Type & No Results/Remarks Tarmac (Driller's description) 1.90 0.20 (MADE GROUND) 1.80 Type 1 (Driller's description) (MADE GROUND) Brown SAND and GRAVEL (Driller's description) (ALLUVIUM) (1.70)0.10 2.00 Mottled grey peaty CLAY (Driller's description) (ALLUVĬŬM) (2.50)-2.40 4.50 PEAT (Driller's description) sile (ALLUVIUM) ماد عادی (1.40)ыk -3.80 5.90 Blue green CLAY with silt. (Driller's description) (ALLŪVIUM) (0.60)-4.40 6.50 Soft to firm grey peaty CLAY (Driller's description) (2.20)-6.60 8.70 PEAT (Driller's description) (ALLUVIUM) sik sik -7.20 9.30 Firm green blue gravelly CLAY. (Driller's description)

1	Inst									Water	Casing	Depth	Type & No	Results
≩roun	dwater er	ntries:		Diameter	& casing:		Depth relat	ed rema	arks:		(Chiselling de	tails:	
Struck	: Rose to:	Casing:	Sealed:	Dia (mm):	Depth:	Casing:	From:	To:	Remarks:			From: to	: Dura	ition: Tool:
				250 200 146	13.80 28.20 50.50	13.80 28.00 50.40	0.00	28.20	Cable percussion of prebore	pen hole	1			
400	Notes: For explar abbreviations see	Key Sheet.		Project:	Riversid	e EfW	•				E	Exploratory po	osition refere	ence:
	All depths and red	luced levels are	n metres.	D ! 4 M	- 0705									A

Log issue: DRAFT

1:50

Scale:

Project No: 3765

Hitachi Zosen Inova AG

(ALLUVIUM)

Client:

(1.10)

BH02A

Sheet 1 of 6

Borehole Log TerraConsult Location details: **Borehole formation details:** Type: IP CP Barrel type: Drill Bit: Logged: Logger: mE: 549427.99 0.00 1.20 1.20 28.20 16-04-18 16-04-18 16-04-18 18-04-18 Hand tools Dando 2000 mk 2 KG n/a mN: 180723.57 KG n/a n/a RO 30-04-18 30-04-18 Comacchio 305 Hammer ID: RHM1703006 Er(%) 82 mAOD: 2.10 PS Geobore S PCD RC 31.00 50.50 30-04-18 01-05-18 Comacchio 305 04-05-18 VSS Grid: **OSGB** Depth (thick-ness) Backfill/ Instal'n Legend Samples & In Situ Testing Water-strike Stratum Description Level Water Casing Type & No Results/Remarks Firm green blue gravelly CLAY. (Driller's description) (ALLŬVIUM) -8.30 10.40 Grey SAND and GRAVEL (Driller's description) (TAPLOW GRAVEL MEMBER) (3.20)-11.50 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) Water Casing Depth Type & No Results Depth related remarks: Diameter & casing: Chiselling details: Groundwater entries: Dia (mm): Depth: Rose to: Casing: Sealed: Casing: 13.80 13.80 10.40 3.20 10.40 250 200 28.20 28.00 50.50 50.40 146 es: For explanation of symbols and reviations see Key Sheet. Exploratory position reference: Project: Riverside EfW Project No: 3765 BH02A DRAFT Log issue: Client: Hitachi Zosen Inova AG Sheet 2 of 6 Scale: 1:50

Borehole Log TerraConsult Borehole formation details: Location details: Type: IP CP Barrel type: Drill Bit: Logged: Logger: mE: 549427.99 0.00 1.20 1.20 28.20 16-04-18 16-04-18 16-04-18 18-04-18 KG KG Hand tools Dando 2000 mk 2 mN: 180723.57 n/a n/a PS PS RO 30-04-18 30-04-18 Comacchio 305 Hammer ID: RHM1703006 Er(%) 82 mAOD: 2.10 30-04-18 RC Geobore S PCD VSS 31.00 50.50 01-05-18 Comacchio 305 04-05-18 Grid: OSGB Depth (thick-ness) Legend Samples & In Situ Testing Water-strike Stratum Description Level Water Casing Results/Remarks Depth Type & No Grey SAND (Driller's description) (8.00) -25.90 Stiff grey CLAY. With occational shells (Driller's description) (LOWER SHELLY CLAY (LAMBETH GROUP)) (3.00)Water Casing Depth/Core Run TCR SC RQD Results/remarks Depth related remarks: Groundwater entries: Diameter & casing: Chiselling details: Struck: Rose to: Casing: Sealed: Dia (mm): Depth: Casing: 13.80 13.80 250 28.20 50.50 200 28.00 146 50.40 Exploratory position reference: Project: Riverside EfW BH02A Project No: 3765 Log issue: DRAFT Client: Hitachi Zosen Inova AG Sheet 3 of 6 Scale: 1:50



oreh	Ole :	form	ation de	taile:							Location details:
ype:		om:	To:	Start da	ite: End date: Crew: Plant: Barrel type: Drill bit: Logger: Logg	ged:	Remarks	:			mE: 549427.99
IP CP RO RC	1 28	.00 .20 3.00 1.00	1.20 28.20 31.00 50.50	16-04- 16-04- 30-04- 30-04-	18 16-04-18 KG Hand tools n/a n/a n/a 18 18-04-18 KG Dando 2000 mk 2 n/a n/a n/a 18 30-04-18 PS Comacchio 305 n/a PCD VSS 04-0)5-18	Hammer	ID: RHM170300	6 Er(%	6) 82	mN: 180723.57 mAOD: 2.10 Grid: OSGB
£ ,	- e	рu		Depth				Samples 8		itu Te	esting
Instal'n	water- strike	Legend	Level	(thick- ness)	Stratum Description	Water	Casing	Depth/Core Run	TCR SCR RQD	lf	Results/remarks/ samples
			-28.90	31:88	Stiff dark brown mottled light grey sandy CLAY						31.08 - 31.27 D
			-29.10		(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		
		••••	-30.40 -30.50	32.50 - 32.60 - (0.30) - 32.90 -	Recovered as: dark grey fine to coarse subangular to rounded black flint GRAVEL Firm dark greyish green slighty sandy CLAY. Gravel is fine to coarse			32.50 - 33.00	100 n/a n/a		32.85 - 33.00 U
			-30.97	33.07	Subangular to rounded black and brown flint 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		
			-31.55 -31.65	33.65 33.75 (1.15)	Dark greyish green slightly sandy gravelly CLAY. Gravel is fine to coarse subangular to rounded black and dark brown flint Dark green mottled orangish brown clayey fine to medium SAND 34.00 - 34.90 m: AZCL	0.00	28.20	34.00 - 34.45 S	il/d		33.90 - 34.00 D N=50 (2,5/7,13,15,7
			-32.80	34.90	Dark green and bluish green clayey fine to medium SAND			34.00 - 35.50	40 n/a n/a		
											35.35 - 35.50 D
				(3.35)				35.50 - 37.00	57 n/a n/a		36.20 - 36.35 E
						0.00	28.20	- 37.00 - 37.34 S	23		50 (8,16/50 for 195
			-36.15 -36.25	38.25 38.35	Dark green fine to medium SAND Dark green slightly gravelly clayey fine to medium SAND. Gravel is fine			37.00 - 38.50	n/a n/a		38.25 - 38.35 [
			-36.40	(1.00)	to medium subangular to rounded black and dark brown flint Dark green slightly clayey fine to medium SAND			38.50 - 39.50	93 n/a n/a		
			-37.40	39.50	Dark greenish grey slightly gravelly very silty fine to coarse glauconitic SAND	28.20	39.50 - 40.00 -40.00 - 40.42	100 n/a n/a		39.35 - 39.50 [50 (5,10/50 for 265	
			-38.08	40.18	Dark green slightly clayey fine to medium SAND	0.00	20.20	S S			50 (5,10/50 10/ 205
1	Inst			-		Water	Casing	Depth/Core Run	TCR SCR RQD	If	Results/remarks
			entries: o: Casin	g: Seal	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:	•	ı	Flush details: Depth: 28.00 - 32.50 33.00 - 38.50		e: water water	Return: Colour: 100% grey 100% brown
	abbrev All dep	viations se oths and n	anation of syn ee Key Sheet. educed levels DRAFT 1:50	are in meters.	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG		E	exploratory pos			ence: 12A Sheet 4

TerraConsult

DU) [(HII	Ole	e LC	y g								leri	a	5	ons	uit
Boreh	ole	forma	ation de	etails:												Location	details:
Type: IP CP RO RC	0 1 28	om: .00 .20 3.00	To: 1.20 28.20 31.00 50.50	Start d 16-04- 16-04- 30-04- 30-04-	18 16-04-18 KG 18 18-04-18 KG 18 30-04-18 PS	: Plant: Hand tools Dando 2000 mk 2 Comacchio 305 Comacchio 305	n/a	Drill bit: n/a n/a PCD PCD	VSS VSS	04-05 04-05	5-18	Remarks: Hammer	: ID: RHM170300	ś) 82	mN: mAOD:	549427.99 180723.57 2.10 OSGB	
. اع ﴿	ا ه ا	Ę.		Depth				<u> </u>					Samples 8		itu Te	esting	
Backfill/ Instal'n	water- strike	Legend	Level	(thick- ness)		Stratum [Description			Ī	Water	Casing	Depth/Core Run	TCR SCR RQD	If		ts/remarks/ amples
				(1.17)						1			40.00 - 41.50	88 n/a n/a		41.00	-41.15 D
			-39.25 -39.45	11 55	Interlaminated dark Dark greenish grey			to medium	SAND	1			41.50 - 43.00	89 n/a n/a		42.55	-42.70 D
				_			42.80	- 42.85 m: NI 42.85	drilling distui - 43.00 m: A.	bed p	0.00	28.20	- 43.00 - 43.33 S				50 for 180m - 43.45 D
		× × × × × × × × × × × × × × × × × × ×	-41.30 -41.45	43.40 43.55	Dark greenish grey subrounded to roun Dark greyish brown Occasional dark gre (THANET FORMAT	ded black flint slightly silty fine ey sand infilled fo	to medium m	nicaceous	SAND.	7			43.00 - 44.50	93 n/a n/a		44.00	- 44.10 D
		X X X X X X X X X X X X X X X X X X X								1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			44.50 - 46.00	100 n/a n/a		45.50	- 45.60 D
		x		(6.95)				- 47.05 m: NI - 47.44 m: NI			0.00	28.20	-46.00 - 46.38 S 46.00 - 47.50	96 n/a n/a		46	50 for 235r 3.00 D - 47.15 D
		x x						- 49.18 m: NI			0.00	28.20	47.50 - 49.00 -49.00 - 49.32 S	100 n/a n/a		50 (9,13/	- 48.60 D 50 for 170n - 49.45 D
		× × × × × × × × × × × × × × × × ×		_									49.00 - 50.50	100 n/a n/a			
	Inst	××								- 1	Water	Casing	Depth/Core Run	TCR SCR	If	Resu	ilts/remarks
Groun	dwa		ntries: c: Casin	g: Seal	250 13 200 28	-	Depth related From to					F	lush details: Depth:	Тур		Return:	
AGS .og iss	abbrev All dep	viations se oths and re	anation of syn he Key Sheet. educed levels DRAFT 1:50	are in meters.	Project No: 376	erside EfW 55 achi Zosen Inova	AG					E	exploratory pos			ence:	Sheet 5



	hel-	fo	ation de	taile												Location details
pe:	Fr	om:	To:	Start date:		ew: Plant:	Barrel type:	Drill bit:	Logger:	Logged	d: R	emarks:				mE: 549427.9
P P	1	.00	1.20 28.20	16-04-18 16-04-18	16-04-18 K	G Dando 2000 mk	n/a 2 n/a	n/a n/a								mN: 180723.5 mAOD: 2.10
C		3.00 1.00	31.00 50.50	30-04-18 30-04-18	30-04-18 P 01-05-18 P			PCD PCD	VSS VSS	04-05-1 04-05-1		ammer	ID: RHM170300	ь Er(%	。) 82	Grid: OSGB
ΞΤ	<u> </u>	Þ		Depth			1	<u> </u>					Samples	& In S	itu Te	esting
IIIstal II	Water- strike	Legend	Level	(thick- ness)		Stratum	Description			W	Vater	Casing		TCR SCR RQD	If	Results/remarks/
1			-48.40	50.50	Bore	hole ends at 50.50 m (T	ermination reason	: Target depth)						NQD		50.50 D
				-						-						
				1						1						
				4						1						
				1						1						
				1						1						
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				1						1						
†	Inst			1						- V	Vater	Casing	Depth/Core Run	TCR SCR	lf	Results/remarks
1		ater o	entries:		Diameter & c	asing.	Depth related	l remarke:			. 4101		lush details:	RQD	<u> </u>	. Nosuitariemai NS
				g: Sealed:	Dia (mm): D	Depth: Casing: 13.80	From to:						Depth:	Тур	e:	Return: Colour:
					200	13.80 13.80 28.20 28.00 50.50 50.40										
					140	50.50 50.40										
_																
ij	Notes abbre	: For exp viations s pths and i	lanation of sym ee Key Sheet. reduced levels a	bols and are in meters.		iverside EfW					_	E	xploratory pos			
_			DRAFT		Project No: 3	/65								ᆛ	40	2 A



																n en en en en en en en en en en en en en
			nation To:	details		Cra	Dlant	Borrel 6	Delli Dir.	Loggadi	100-	. I -	Domor!			Location details:
Type IP CP		From: 0.00 1.20	1.20 31.00	Start d 11-04- 11-04-	18 11-04-18	Crew: MJ MJ	Plant: Hand tools Dando 3000 mk 2	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 11-04-18 19-04-18	VSS VSS	3	Remarks: Hammer	ID: SI08 Er(%)	74	mE: 549487.14 mN: 180720.48 mAOD: 3.40 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-		<u>'</u>	Stratum	Description	1	1				Samples	& In Situ Te	
∃ Bac	Wa	Leg	20401	ness)	Coors - ODA	/FI		·	arata		W	/ater	Casing	Depth	Type & No	Results/Remarks
				(0.50)	Coarse GRA (MADE GRO		d COBBLES of b	Drick and con-	crete.		1					
			2.90	0.50 -	Firm dark gre	y occa	sionally mottled	black slightly	gravely CL	AY. Gravel	of -			0.50 - 0.90 0.60	B1 PID	0.0 ppmv
			2.60	(0.30) 0.80	subangular to (MADE GRO	subro	unded brick.				1			0.60	ES	
				-	of subangula	r to sub	own occasionally round, fine to m	mottled blace edium brick a	k gravely C ind flint.	LAY. Grave		Dry	1.00	1.00 - 1.45 1.00	C PID	N=7 (1,2/2,1,2,2) 0.3 ppmv
				(1.50)	(MADE GRO	UND)					1			1.00 1.50 - 1.95	ES B2	
				(1.00)							=					
				-							- 1	Dry	2.00	2.00 - 2.45	С	N=10 (2,2/2,2,3,3)
			1.10	2.30			ottled dark brown		ntly sandy s	lightly grave	ely -			2.40	PID	0.0 ppmv
			0.70	(0.40) - 2.70	(MADE GRO	UND)	angular to subro]			2.40 2.50 - 2.95	ES B3	
	T				Occasional re	wnish o	grey occasionally	y spotted blad	ck slightly s	andy CLAY.	1			2.80 2.80	PID ES	0.0 ppmv
				(0.90)	(ALLUVIUM)											
			-0.20	3.60							_			3.50 - 3.95	UT1	
		<u> </u>	_		roots and wo	ody pla	t blackish grey C nt material. Occ	LAY. Abunda casional coars	ant rootlets. se gravel si	occasional ze pockets	of 🖠					
				-	light grey slig (ALLUVIUM)	ntiy sar	nay ciay.				- [Dry	4.00	4.00 - 4.45 4.00	S D1	N=7 (1,1/1,2,2,2)
				(1.80) -							1 .	Dry	4.00	4.45 - 4.90	S	N=7 (1,1/1,2,2,2)
				(50)										4.50 - 4.95	D2	
		<u> </u>		-							-			5.00 - 6.00	D3	
			-2.00	5.40	0	NIP										
		× ×		(0.40)	Grey silty SA (ALLUVIUM)	NU.					-			5.50 - 5.95	UT2	
			-2.40	5.80			grey slightly sa eaves). Occasio				nd-					
					size shell frag	gments		#00uy pi			-					
				-							=					
											1					
				-								Dry	7.00	7.00 - 7.45 7.00 - 7.45	S D4	SWP: 150 mm N=2 (0,0/1,0,0,1)
				-							1	Dry	7.00	7.45 - 7.90	S	N=4 (1,0/1,1,1,1)
				(4.00)							1					
				-							-					
											1					
	SP			-							-			8.50 - 8.95	UT3	15 (100%)
				_							1			9.00	D5	
											1			0.00		
				=							-					
		××>	-6.40	9.80	Dark yellowis	h grev	slightly sandy sli	ightly gravelly	SILT. Gra	vel is	_					
C	Inst	oto-	ntria								W	/ater	Casing	Depth	Type & No	Results
Struc	ck:	Rose to	ntries: o: Casin		, ,	Depth:	Casing:	Depth related From:		narks:				hiselling deta From: to:		ation: Tool:
10	.00	2.90	0 10.	00 13	250 200 150	14	9.00 9.00 4.00 14.00 1.00 26.00									
AGS	Note abbr All d	es: For expla eviations se epths and re	anation of sym e Key Sheet. educed levels a	bols and are in metres.	Project:		erside EfW						E	xploratory pos		
Log i	ssue	:	DRAFT		Project N Client:		5 chi Zosen Inova	AG							BH	
Scale	e:		1:50													Sheet 1 of 4



Type: IP CP	F	e forr rom: 0.00 1.20	To: 1.20 31.00	Start d 11-04- 11-04-	ate: End date: 18 11-04-18	Crew: MJ MJ	Plant: Hand tools Dando 3000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 11-04-18 19-04-18	Logg VS VS	ss	Remarks Hammer	rs: r 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-			Stratum	Description				Water	Casing	Samples 8		esting
ag u	S 60			ness)	Dark yellowis subangular to (ALLUVIUM)	ark yellowish grey slightly sandy slightly gravelly SILT. Gravel is bangular to subrounded fine to coarse of flint. LLUVIUM)								Depth 10.00 - 10.45 10.00 - 10.45	Type & No C B4	Results/Remarks N=33 (3,5/7,8,8,10)
		X X X X X X X X X X X X X X X X X X X		(3.40) -								3.60	11.50	11.50 - 11.95 11.50 - 11.95	C B5	N=34 (4,5/6,8,10,10)
		(*	-9.80	13.20	Occasional the	ick par ments	ured dark black tings of light gre	ish grey slight	ily sandy Cl ium SAND.	LAY. Rare sand	_	5.40	13.00	13.00 - 13.45 13.50	C D6	N=19 (4,4/4,4,5,6)
				- -	(LONDON CI	₋AY)					1	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%)
			-12.60	16.00 -		and size	nated dark brow ed shell fragme				d :			15.00 16.00 - 16.45	D7	
				(3.50)										17.50 - 17.95 18.00	UT5	95 (100%)
	∇		-16.10	19.50 -	Dense becon	ning ver	ry dense dark b ded fine to coars	lackish grey s	andy GRAN	/EL of		Dry	14.00	19.00 - 19.45 19.00 - 19.45	S D10	N=38 (4,6/7,9,10,12)
					fragments.	o round	aca mie to coals	o mil. Abull(Jun Sallu S	125U 31IUI	-	14.				
Grour	Inst ndw	ater e	ntries:		Diameter	& casi	ing:	Depth relate	d remarks:			Water	Casing	Depth hiselling deta	Type & No	Results
	k: F		: Casin			Depth:		From:		narks:				From: to:		ation: Tool:
AGS Log is: Scale:	abbre All de	eviations se epths and re	anation of symbol e Key Sheet. Educed levels a DRAFT 1:50	re in metres.	Project: Project N Client:	o: 376	erside EfW 5 chi Zosen Inova	a AG					E	xploratory pos	ition refere	



				details		0	Diameter	Damel to a	Daill Dit.	I		I r				Location details:
Type: IP CP	0.	om: .00 .20	To: 1.20 31.00	Start d 11-04- 11-04-	18 11-04-18	Crew: MJ MJ	Plant: Hand tools Dando 3000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 11-04-18 19-04-18	VSS VSS		Remarks Hammer	: ID: SI08 Er(%)	74	mE: 549487.14 mN: 180720.48 mAOD: 3.40
≥ ∈		ъ		Depth										Samples	ln Citu Ta	Grid: OSGB
Backfill/ Instal'n	strike	Legend	Level	(thick- ness)			Stratum	Description			10	ater	Casing	Depth Samples &	& In Situ Te	Results/Remarks
	4			<u> </u>	subrounded t fragments.	o round	ry dense dark bl led fine to coars	se flint. Abund	dant sand s	EL of ized shell	-	.90	20.50	20.50 - 20.95	С	N=43 (4,6/9,10,10,14)
	5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			-	(BLACKHEAI	I A IWIE	IDER HARWIC	H FORWATIC	JIN.			.90	20.30	20.50 - 20.95	B6	14-45 (4,0/5,10,10,14)
				(5.00)							3	.30	22.00	22.00 - 22.45 22.00 - 22.50	C B7	N=43 (5,7/8,10,12,13)
			-21.10	24.50 -							1	.90	23.50	23.50 - 23.94 23.50 - 23.95	C B8	50 (4,6/50 for 285mm)
	,	×××	-21.10	24.50			velly silty fine to led fine to coars				-					
		× × × × × × × × × × × × × × × × × × ×		(1.10)	fragments.		MBER HARWIC				_ 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	and sand size	shell f	ly fissured lamir ragments. LAY (LAMBETH	_	ey CLAY. Al	bundant she	ells-			26.00	D11	
				(1.90)										26.50 - 26.95	UT6	
			-24.10	27.50 -	Stiff to very s	tiff extre	emely closely fis	sured lamina	ted dark bro	ownish grey				27.00	D12	
	-			(1.50)			Occasional sai LAY (LAMBETH		ragments.		20	0.00	26.00	28.00 - 28.45 28.00 - 28.45	S D13	N=38 (4,6/7,9,10,12)
			-25.60	29.00 -	Stiff dark gree	enish qı	rey mottled dark	orangish bro	wn sliahtly	gravelly						
	-			(1.60)		nitic CL ck flint.	AY. Gravel is							29.50 - 29.95	UT7	
	Inst			(1.60)							-	ater	Casing	Depth	Type & No	Populés
Groun		iter e	ntries:		Diameter	& casi	ng:	Depth related	d remarks:		Į VV	акег	· -	hiselling deta		Results
Struck	: R	ose to	: Casin	g: Seal		Depth:	Casing: 0.00 9.00 1.00 14.00 1.00 26.00	From:		narks:				From: to:		ation: Tool:
AGS Log iss	All dept	riations ser oths and re	nation of symi e Key Sheet. duced levels a	re in metres.	Project: Project No	o: 376	erside EfW 5 chi Zosen Inova	ı AG					E	xploratory pos	ition refere	03
Scale:			1:50													Sheet 3 of 4



				مانمه ام											1	n deteller
Type: IP CP	Fr 0 1	rom: 0.00 1.20	To: 1.20 31.00	Start da 11-04- 11-04-	ate: End date: 18 11-04-18	Crew: MJ MJ D	Plant: Hand tools ando 3000 mk 2	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 11-04-18 19-04-18	Logger: VSS VSS		s: r ID: SI08 Er(%)	74	mE: mN: mAOD: Grid:	549487.14 180720.48 3.40 OSGB
Backfill/ Instal'n	/ater- trike	Legend	Level	Depth (thick-			Stratum [Description					Samples		esting	
	W 8	P P	-27.20	30.60 (0.40)	Stiff dark gree sandy glauco coarse of blac (UPNOR FOR Very dense d	nitic CLA\ ck flint. RMATION		ubangular to	subrounde	d fine to	10.0	-		S D14 D15		ilts/Remarks 9/10,12,13,15
			-27.60	31.00	rounded fine (UPNOR FOR	to coarse	black flint.	,,o, o	0. 000.0		1		31.00	D16		
				- - -		Во	orehole ends at	31.00m (Ref	usal)							
				-												
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	Inst			- - -							Wat	ter Casing	Depth	Type & No		Results
Grou		ater e	ntries:		Diameter			Depth related			1 ***		Chiselling deta	ails:		
Struc	C F	Rose to	o: Casin	ıg: Seal	ed: Dia (mm): 250 200 150	Depth: 9.00 14.00 31.00	14.00	From:	To: Rer	narks:			From: to:	Dur	ation: Tool:	
AGS .og is			anation of sym te Key Sheet. educed levels a		Project: Project No		de EfW					E	Exploratory pos	BH		
Scale:			1:50		Client:	Hitachi	Zosen Inova	AG								Sheet 4 of 4

Bore	hole	e forn	nation	details	:										Location details:
Type: IP CP		rom: 0.00 1.20	To: 1.20 30.90	Start da 11-04- 11-04-	18 11-04-18	Crew: KG KG	Plant: Hand tools Dando 2000 mk 2	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 11-04-18 18-04-18	Logger: VSS VSS	Remarks	s: r ID: SI03 Er(%)	64	mE: 549477.07 mN: 180679.14 mAOD: 1.81 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum F	Description		<u></u>			Samples	& In Situ Te	esting
Ba	» įš	Ž,		ness)	Dark oronaish	hrom			SAND C	ravel of	Wate	er Casing	Depth	Type & No	Results/Remarks
			1.41	(0.40)	subangular to (MADE GROU	subrou JND) irk grey rick an	n gravelly clayey und fine to coarso sightly gravelly d rare glass.	e brick, flint a	and rare as	ohalt.			0.30 0.30 0.50 - 0.80 0.70 0.70 1.00 - 1.20	PID ES B1 PID ES B2	0.0 ppmv 0.0 ppmv
			0.51	1.30	Soft dark grey (ALLUVIUM)	mottle	ed black CLAY. O	ccasional roo	otlets.		-		1.30 1.50 1.50 1.50 - 1.95	D3 PID ES UT4	0.0 ppmv 20 (90%)
• • <u>•</u> • •	SP			· '-							Dry		1.95 - 2.05 2.00 - 2.45	D5	N=0 (1,0/0,0,0,0)
			-0.69	(0.50)			reddish brown o			al roots an	Dry d Dry		2.45 - 2.90 2.50 - 2.95 2.50 - 2.95	S S D6	N=4 (1,0/1,1,1,1) N=0 (1,0/0,0,0,0)
		te alte alte a te alte alte a	-1.19	3.00 -	Soft dark brow	sional	black mottled ps roots and woody of light grey CLA	plant materi			Dry	/	3.00 - 3.45 3.00	D7	N=1 (1,0/0,1,0,0)
	•	alle a le alle alle a le alle alle a		_ - -	(ALLUVIUM)	Shoto (ng.n. groy OLA	••					3.50 - 3.95	UT8	11 (100%)
		alle a le alle alle a le alle alle a		(2.00)									3.95 - 4.05	D9	
		ance a to alto alto al to alto alto al		- - - -							- Dry	3.00	4.50 - 4.95 4.50 - 4.95	S D10	N=1 (1,0/0,1,0,0)
		× × × × × × × × × × × × × × × × × × ×	-3.19	5.00 -	Very loose da (ALLUVIUM)	rk grey	silty clayey fine	to medium S	AND.		Dry	3.00	4.95 - 5.40 5.00	S D11	N=3 (1,0/1,0,1,1)
		7)(° 7) (* 7)(° (* 7)	-3.79	5.60			black mottled ps				=				
		6 alfa alfa al 6 alfa alfa al	-4.49	(0.70) _ 6.30	gravel size po (ALLUVIUM)	ckets o	of light grey CLA	ri.					6.00 - 6.45	UT12	9 (100%)
				-			grey CLAY. Abusional roots and			onal with			6.45 - 6.55	D13	
				- - -							- Dry	<i>(</i>	7.00 - 7.45		N=4 (1,0/1,0,1,2)
				(3.10)							- Dry	y 7.00	7.50 - 7.95 7.50 - 7.95	S D14	N=4 (1,0/1,0,1,2)
		 		(3.10) . - - -							_ Dry	7.00	7.95 - 8.40	S	N=8 (1,1/2,2,2,2)
				- - - -									8.50	D15	
				<u>-</u>									9.00 - 9.45	UT16	29 (100%)
		× · × · ,	-7.59	9.40	Medium dens subrounded fi (TAPLOW GF	ne to c		tly silty GRA\	/EL of suba	angular to			9.45 - 9.55	D17	
Grow	Inst ndw:	ater o	ntries:		Diameter	& raci	na. Ir	Depth related	l remarke:		Wate	-	Depth Chiselling deta	Type & No	Results
Struc			: Casin			Depth:	Casing: 0.40 9.40 8.50 13.50 0.90 26.00	From:		narks:			From: to:		ition: Tool:
AGS Log is	abbre All de	eviations see epths and re	nation of symbolic Key Sheet. duced levels a	ols and re in metres.	Project: Project No	: 376	erside EfW 5 chi Zosen Inova	AG				ł	Exploratory pos	BH	04
Scale			1:50												Sheet 1 of 4



			nation	Start da		0	Diameter	Damel &	Dail Dit	I I amanda		I D			Location details:
Type: IP CP	(rom: 0.00 1.20	To: 1.20 30.90	11-04- 11-04-	18 11-04-18	Crew: KG KG	Plant: Hand tools Dando 2000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 11-04-18 18-04-18	Logger: VSS VSS	Remark	s: r ID: SI03 Er(%)	64	mE: 549477.07 mN: 180679.14 mAOD: 1.81 Grid: OSGB
<u></u> =	i e	Pu		Depth									Samples	& In Situ Te	
Backfill/ Instal'n	Wate	Legend	Level	(thick- ness)			Stratum	Description			Wate	er Casing		Type & No	Results/Remarks
		* * * * * * * * * * * * * * * * * * *		(2.10)	Medium dens subrounded fi (TAPLOW GF	ine to c		htly silty GRA	VEL of suba	angular to	- 2.40	0 10.50	10.50 - 10.95 10.50 - 10.95	C B18	N=26 (3,4/4,6,7,9)
		× ^ > × · × · × · × · · × · · · · · · · · ·	-9.69	11.50 -	Medium dens is subangular (TAPLOW GF	to sub	yellowish brown rounded fine to MEMBER)	n gravelly fine coarse flint.	to coarse \$	SAND. Gra	vel-) 12.00	12.00 - 12.45 12.00 - 12.45	C B19	N=24 (2,3/4,6,6,8)
			-11.49 -11.99	13.30 (0.50)	to medium SA (LONDON CL	AND. AY) ely fiss ell fragn	y sandy CLAY. ured laminated nents.				14.9	0 13.50	13.30 13.50 - 13.95 13.50 - 13.95 13.95 - 14.05	D20 S UT21 D22	N=25 (2,4/5,6,6,8) 100 (100%)
				(2.95)									15.00 - 15.45	D23	
			-14.94	16.75	micaceous Cl	LÁY. O and siz	ured laminated ccasional <5 m e shell fragmen	m white fine s	and infilled		ns		16.50 - 16.95 16.95 - 17.05	UT24 D25	89 (100%)
	∇		-16.79	(1.85)							- Dry	13.50	18.00 - 18.45 18.00 - 18.45	S D26	N=30 (4,5/6,7,8,9)
		*	.50	(1.90)	subrounded to shell fragmen	o round ts.	velly silty fine a ded fine to coars MEBER HARWI	se black flint.	Occasional		2.30	0 19.50		C B28	N=42 (2,4/7,9,12,14)
		× × ×									-				
Grow	Inst ndw	ater o	ntries:		Diameter	& casi	ina:	Depth relate	d remarke:		Wate		Depth Chiselling deta	Type & No	Results
	k: I		: Casin			Depth:		From: 16.00	To: Rer	marks: ntonite seal			From: to:		ation: Tool:
AGS Log is Scale	All de	eviations se epths and re	anation of symble Key Sheet. educed levels a DRAFT 1:50	re in metres.	Project: Project No Client:	o: 376	erside EfW 5 chi Zosen Inova	a AG				1	Exploratory pos	BH	



00			Oic	(9								1611			
Boreh	ole f	form	nation	details	 S:										Locatio	n details:
Type: IP CP	Fror 0.0 1.2	m: 0	To: 1.20 30.90	Start d 11-04- 11-04-	ate: End date: -18 11-04-18	Crew: KG KG	Plant: Hand tools Dando 2000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 11-04-18 18-04-18	Logger VSS VSS		rks: ner ID: SI03 Er(%)	64	mE: mN: mAOD: Grid:	549477.07 180679.14 1.81 OSGB
Backfill/ Instal'n Water-	strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting	
Bac			FCACI	ness)				·			Wa	ter Casi	ng Depth	Type & No	Resu	lts/Remarks
	× > × × × × × × × × × × × × × × × × × ×	<	-18.69	20.50 -	subrounded to shell fragment (BLACKHEAT Dark blackish fine to coarse Occasional co undertake SP	o rounders. H MEM grey sa black to bble six	relly silty fine an ed fine to coars MEBER HARWII andy slightly silt flint. Occasiona ze pockets of g to material 'blow MEBER HARWII	CH FORMAT y GRAVEL of I to abundant rey gravelly C wing' up bore	Occasional ION) Subrounde Shell fragm CLAY. (Una hole).	I sand size ed to roundenents.	d :		21.00 - 21.45	B29		
	^ · · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		(4.80) -									22.50 - 22.95	B30		
	******	·× ·> ·× ·>		-									24.00 - 24.45	B31		
	***		-23.49	25.30	Abundant she	ll fragm	mely closely fiss nents. LAY (LAMBETH		ed dark gre	y CLAY.	7.2	20 25.4	25.30 25.40 - 25.82 25.50 - 25.95	D32 S D33	50 (5,7/5	60 for 275mm)
				(2.50)												
	* * * * * * * * * * * * * * * * * * * *		-25.99 -26.44	27.80 (0.45) ⁻ 28.25 (1.45) ₋	CLAY. Occasi (LOWER SHE Stiff to very sti CLAY. Occasi	onal re LLY CL ff lamin onal sa	mely closely fis dic root tracks. LAY (LAMBETH lated dark greyi and size shell fr LAY (LAMBETH	I GROUP)) ish brown mo agments.			1	30 25.5	50 28.50 - 28.95	S	N=46 (6	,7/9,11,12,14)
	nst		-27.89	29.70	Stiff to very sti		greenish grey (lic root tracks.	glauconitic) s	lightly sand	y CLAY.	Wa	ter Casi	ng Depth	Type & No	F	Results
Ground	dwate				Diameter			Depth relate			1	1	Chiselling det	ails:	1	
			: Casin		led: Dia (mm): 250 200 150	9 13	Casing: .40 9.40 .50 13.50 .90 26.00	From: 21.00		narks: wing sand &	gravel		From: to: 24.10 24.		ation: Tool: 1:00 Califo	ornian
AGS Log iss Scale:	abbreviati All depths	ions see s and red	nation of symb Key Sheet. duced levels a DRAFT 1:50	re in metres.	Project: Project No Client:	: 3765	rside EfW ; chi Zosen Inova	AG					Exploratory pos	BH	04	Sheet 3 of 4



_`	•	• • •	0.0		9												
Bore	hole	e forr	nation	details	3:											Locatio	n details:
Type:	Fi	rom:	To:	Start d	ate: End date:		Plant:	Barrel type:	Drill Bit:	Logged:	Logge		marks:			mE:	549477.07
IP CP	0	0.00 1.20	1.20 30.90	11-04- 11-04-	18 11-04-18	KG	Hand tools Dando 2000 mk 2	n/a 2 n/a	n/a n/a	11-04-18 18-04-18	VSS VSS			: SI03 Er(%)	34	mN:	180679.14
CP	'	1.20	30.90	11-04-	13-04-16	NG L	Januo 2000 mk 2	2 11/a	II/a	10-04-10	vss	Па	mmer iD	. SIUS EI(%) (04	mAOD:	1.81
																Grid:	OSGB
																	0000
Backfill/ Instal'n	ater- irike	Legend	Level	Depth (thick-			Stratum [Description			L			Samples 8	& In Situ Te	esting	
B s	≥ ts	Le		ness)							W	ater C	Casing	Depth	Type & No	Resu	lts/Remarks
					Stiff to very s	tiff dark g	reenish grey (glauconitic) s	ightly sand	y CLAY.]						
				(1.10)	Occasional in (UPNOR FOR	nnea relia RMATION	c root tracks. N)				}						
		<u> </u>		-]`		•				-						
			20.00	20.00							-						
			-28.99 -29.09	30.80 30.90	Very dense d	ark browi	nish grey slight	tly sandy clay	ey GRAVE	L of	7						
				_	Subrounded to	o rounae RMATION	d fine to coars	e black filnt.			74						
						В	Borehole ends a	t 30.90m (Ref	usal)		_{-1						
				-							4						
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				_							7						
					1						1						
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C	Inst		m4u!		Diagrat	0 6==1	I.	Domath and 1-4	d war		W	ater C	Casing	Depth	Type & No	1	Results
			ntries: : Casin	g: Seal	Diameter ed: Dia (mm):		g: [Depth related From:		narks:				selling deta		ition: Tool:	
Struc	л. Ի	vose (C	. casin	y. seal	250	9.4	10 9.40	FIUIII.	io. Ken	idi NS.			-	om. to:	Dura	OII. 100f:	
					200	13.5	50 13.50										
					150	30.9	90 26.00										
		v Fa-: 1	natio	hala a													
AGS	abbre All de	 ⊢or explantions se epths and re 	nation of symi e Key Sheet. duced levels a	ous and are in metres.	Project:		side EfW						Exp	loratory pos			
Log is	_		DRAFT		Project No			4.0							BH	υ4	
Scale			1:50		Client:	Hitach	ni Zosen Inova	AG									Sheet 4 of 4

Boro	holo	for	mation	details	<u></u>											Location details:
Type:		om:	To:	Start d		Crew:	Plant:	Barrel type:	Drill Bit:	Logged:	Loa	ger:	Remarks:			mE: 549532.61
ĬΡ	0	.00	1.20	10-04-	-18 10-04-18	DW	Hand tools	n/a	n/a	10-04-18	VS	ss			· · · · · · · · · · · · · · · · · · ·	mN: 180668.51
CP WLS		.20 7.50	27.50 33.30	10-04- 16-04-		DW PS	Dando 2000 Comacchio 305	n/a WLS	n/a	18-04-18 23-04-18				ID: AR1926 Er(' ID: RHM17030(mAOD: 1.81
															(,,,	Grid: OSGB
		_									Т					
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick- ness)			Stratum	Description						•	& In Situ Te	
1 13		 >>>>>		11000)	Light orangish	n brown	gravelly clayer	v SAND Gra	vel is suha	ngular to	-	Water	Casing	Depth	Type & No	Results/Remarks
							oarse brick, co				s F			0.30	ES	
				(0.90)			ndant rootlets.				B			0.30		
					(MADE GRO	UND)			0.20 i	n: Plastic shee	et.					
			0.91	0.90	-											
			0.71	1.10	Soft dark grey (ALLUVIUM)	y mottle	ed black CLAY.	Occasional ro	otlets.					1.00	ES	
			0.56	1.25		vnish gi	rey mottled blad	ck organic CL	AY. Occas	ional rootle	ets.					
				_	(ALLUVIUM)						_4	Dry	1.50	1.50 - 1.95	s	N=3 (1,0/1,1,0,1)
ı					brown CLAY.		y closely fissure	ed dark grey n	nottled ligh	t orangish		Í		1.50 - 1.95	D	
ı					(ALLUVIUM)	00000	ioriai rootioto.				1					
ı				(1.55)	-						1					
ı											1					
				-	1						- 1					
		H_=	0.00	0.00	1						1			0.00		
			-0.99	2.80			brown and red				-			2.80	D	
		مالد م د مالد	-1.19	3.00 -			Occasional roots brown on expo		material. D	Oark reddish	h 🚪			3.00 - 3.45	UT	4 (0%) NR
ı		e sile			(ALLUVIUM)		•				A					
		alta a ta alta		=		wn pseu	udofibrous PEA	.T.			- 4					
		316 3 6 316			(ALLUVIUM)											
		د عاد ماد م			-						4					
ı		316									-					
ı		alla si		(2.50)							1					
ı		te alte alte a		-	-						1	Dry	4.50	4.50 - 4.95 4.50 - 4.95	S	N=1 (1,0/0,0,1,0)
		e alea alea a												4.00 - 4.00		
ı		د عاد عاد ع		_							4					
ı		e sile			-						- 1					
ı		alta a ta alta									1					
ı			-3.69	5.50 -		y clayey	y fine to mediur	n SAND. Occ	casional ro	ots and	1			5.50	D	
				(0.50)	rootlets. (ALLUVIUM)						-					
ı		- / (N)	-4.19	6.00 -	,	oft dark	brown organic	CLAY. Abund	dant rootles	sts.	-			6.00 - 6.45	UT	5 (100%)
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	(50)				(TAPLOW GF	×AVEL İ	ivi⊏ivi¤EK)				-					
T.	Inst	*			1						-	Water	Casing	Depth	Type & No	Results
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cale			1:50													Sheet 1 of 4

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Columber Columber	Type:	F	rom:	To:	Start da	ate: End date:							Remarks	3:		
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CAPLOW GRAVEL MEMBER)	-			-10.19	12.00	Dark yellowisl	h brow	n gravelly fine to	coarse SAN	ID. Gravel	is subangu	Dry	12.00			N=14 (3,4/4,3,4,3)
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Total Contro					-	size shell frag	ments.	. Rare light grey				d i				
Total Tota					- - -									15.00 - 15.45	UT	32 (100%)
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8 = \$	s σ	<u> </u>		ness)	Stiff very clo	selv fiss	sured laminated	dark grev slic	ihtly sandy	micaceous	Wate	er Casing	Depth	Type 8	No Res	sults/Remarks
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			-21.19	(1.50)	black flint. A	bundan	ine to coarse GF it shell fragments MBER HARWIC	3.	Ü	rounded			22.45 22.50	B D		
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			-24.44	26.25	shells and sa	and size	inated dark grey s shell fragments CLAY (LAMBET (i.	sional to a	bundant			27.00 - 27.50	B		
					-								27.13 - 27.28			
				(2.75)				27.		Becomes sand		27.50	27.50 - 29.00	78 n/a n/a	27.8	27.50 D 8/50 for 240mr 84 - 28.00 U 00 - 28.22 U
			-27.19 -27.59 -27.74 -27.89	29.00 - (0.40) 29.40 29.55 29.70	(LOWER SH Stiff to very s fragments ar	Stiff lami	/ CLAY. Abunda CLAY (LAMBET C inated black mot ss. Occasional s	GROUP)) tled light grey hell fragmen	nents. 29.20 - 29.40 r / CLAY. Fr	- 29.00 m: AZC	2.00	29.00	29.00 - 29.42 S	100 n/a	29.0	7/50 for 275mi 00 - 29.45 D 50 - 29.60 D
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Columb C				(0.40)							13			30.50 - 30.90	n/a		
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32 days 3 no 3 no 3 no 3 no 3 no 3 no 3 no 3 n		-			flint.	, 0					A				n/a		
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This Committee is a state of the control of the con			•		and red flint				JOUI 00 01 0	WEE OF B	idok			31.30 - 32.00			
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Roreh	ole	form	nation	details											Location details:
Type: PC IP CP	Fr 0	om: .00 .00 .00	To: 0.35 1.20 37.50	Start da 11-06- 11-06- 11-06-	ate: End date: -18 11-06-18 -18 11-06-18	Crew: MJ MJ MJ	Plant: Pavement corer Hand tools Dando 3000 mk	n/a	Drill Bit: n/a n/a n/a	Logged: 11-06-18 11-06-18 14-06-18	Logger: DG DG DG	Remarks	: ID: Sl08 Er(%)	74	mE: 549496.44 mN: 180754.63 mAOD: 3.18 Grid: OSGB
Instal'n Water-	strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ To	esting
Ins	str	××××	LCVCI	ness)	CONCRETE			•			Wate	r Casing	Depth	Type & No	Results/Remarks
			2.83	(0.35) 0.35 (0.75)	(MADE GROU Dark brown vo angular to rou black slag, wo	JND) ery gra inded, t	velly slightly cla fine to coarse of ax 50 mm long),	yey fine to co	te and flint	. Occasional			0.50 0.50 0.60 - 0.90	PID ES B1	16.5 ppmv
. :			2.08	1.10		brown (gravelly sandy (1.00 1.00	PID D1	23.2 ppmv
				(1.70)_		gments	meter). Rare gla				- Dry	1.40	1.50 - 1.95 1.50 1.50 1.50	C PID D2 ES	N=2 (1,1/1,0,0,1) 14.5 ppmv
				-							Dry	1.40	1.50 - 1.95 2.00 2.00 2.00 2.45 - 2.90 2.45 - 3.00	B2 PID D3 ES C	132.2 ppmv N=4 (1,1/1,1,1,1) 4.3 ppmv
	▾		0.38	2.80	Soft greenish (ALLUVIUM)	grey m	nottled brown Cl	LAY.					2.50 3.00 3.00	PID PID D4	4.6 ppmv
				(1.00)									3.00	ES	
	▼	alis a is alis alis a is alis	-0.62	3.80	Spongy dark (ALLUVIUM)	brown p	pseudo-fibrous l	PEAT.					4.00	D5	
	,	alia a is alia alia a is alia alia a		(1.70)									4.50 - 4.90 4.50 - 4.95	UT1 B4	20 (0%) NR
	,	t alte alte a t alte alte a		- - :							Dry	5.00	5.00 - 5.45 5.00 - 5.45	S D6	N=4 (1,1/1,1,1,1)
			-2.32	5.50 -	Soft dark grey (ALLUVIUM)	peaty	CLAY. Peat is d	dark brown ps	eudo-fibrou	JS.					
	¥	π ₂₀₀	-2.82	6.00 -	Dark grey slig (ALLUVIUM)	htly silt	ty fine SAND.						6.00 - 6.40	B5	
				- - - -							3.20	6.50	6.50 - 6.95 6.50 - 6.95	S D7	N=2 (1,0/1,0,1,0)
											3.90	8.00	8.00 - 8.45 8.00 - 8.45	S D8	N=10 (1,2/2,2,3,3)
				(5.30)							- 4.20	9.50	9.50 - 9.95 9.50 - 9.95	S D9	N=16 (2,2/3,3,4,6)
	_{Inst}	ater er	ntries:		Diameter	& casi	ng:	Depth related	d remarks	:	Wate		Depth Chiselling det	Type & No ails:	Results
	: R		: Casin			Depth: 5	Casing: 5.00 5.00 1.10 14.10 3.00 28.00 7.00 37.00	From:		marks:			From: to:	Dura	ation: Tool: 11:00 Californian
AGS og iss	All dep	viations see oths and red	nation of symb Key Sheet. duced levels a DRAFT 1:50	are in metres.	Project: Project No	o: 3765	erside EfW 5 chi Zosen Inova	ı AG				E	Exploratory pos	sition refere	



				deteile											Location details
Туре:	F	rom:	To:	details Start d	ate: End date:	Crew:		Barrel type:	Drill Bit:	Logged:	Logger	Remark	s:		Location details: mE: 549496.44
PC IP CP		0.00 0.00 0.00	0.35 1.20 37.50	11-06- 11-06- 11-06-	18 11-06-18 18 11-06-18	MJ MJ	Pavement core Hand tools Dando 3000 mk	r n/a n/a	n/a n/a n/a	11-06-18 11-06-18 14-06-18	DG DG DG		r ID: SI08 Er(%)	74	mN: 180754.63 mAOD: 3.18 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ To	esting
Bat	⊤ st Ķ	Le		ness)	Dork are: =!'-	hth:"					Wa	ter Casing	Depth	Type & No	Results/Remarks
Bac	(51) SP(51)	669 X	-8.12 -8.22		CALLUVIUM) Dark grey slig flint with low c to 100 mm dia (TAPLOW GR	htly sa obble e meter; AVEL avelly angula AVEL	ty fine SAND. PEAT. Fibres are ndy subangular content. Sand is). MEMBER) slightly silty fine ar, fine to coars MEMBER) brownish grey	e of woody ma to rounded fires coarse. Cobb m: Becoming grey	ne to coars bles are su wish brown fine	to coarse sand	- 4.6	20 12.00 12.00	11.00 - 11.45 11.00 - 11.45 11.50 - 12.00	S D10 B6 C B7	Results/Remarks N=16 (1,3/3,4,4,5) 11/06/2018 00:00:00 12/06/2018 00:00:00 N=12 (2,3/3,3,3,3)
Groui	Inst		ntries:	(7.10)	Diameter	& casi	ina:	Depth related	d remarks:	:	Dr	y 19.00	16.00 - 16.95 17.50 - 17.95 18.00 19.00 - 19.45 19.00 - 19.95	S D13 UT3 UT3 D14 S D15	N=23 (3,4/5,5,6,7) 100 (100%) N=16 (2,3/3,4,4,5)
			ntries: : Casin	g: Seal	ed: Dia (mm):	& casi Depth:		Depth related From:		marks:			Chiselling deta		ation: Tool:
3do					300 250 200 150	14 28 37	5.00 5.00 4.10 14.10 3.00 28.00 7.00 37.00		101						
AGS	All de	eviations see epths and re	nation of symb e Key Sheet. duced levels a	re in metres.	Project: Project No		erside EfW 5						Exploratory pos		
Log is			DRAFT		Client:		chi Zosen Inova	a AG						BH	
Scale			1:50												Sheet 2 of 4



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Borel	hole	forn	nation	details	::										Location details:
Type: PC IP CP	Fr 0	rom: 0.00 0.00 0.00	To: 0.35 1.20 37.50	Start di 11-06- 11-06- 11-06-	ate: End date: 18 11-06-18 18 11-06-18	Crew: MJ MJ MJ	Plant: Pavement core Hand tools Dando 3000 mk	n/a	Drill Bit: n/a n/a n/a	Logged: 11-06-18 11-06-18 14-06-18	Logger: DG DG DG	Remark	s: r ID: Sl08 Er(%)	74	mE: 549496.44 mN: 180754.63 mAOD: 3.18 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
Bac	str	Leg	Level	ness)				·			Wate	er Casing	Depth	Type & No	Results/Remarks
		×			Stiff to very s (LONDON C		brownish grey RMATION)	CLAY. Occasi	onal light	grey silt trace	es		20.50 - 20.95	UT4	100 (100%)
	abla	×	-17.92	21.10	Dark greyish	black s	andy subrounde	ed to rounded	, fine to co	oarse GRAVE	- - - :L -		21.00	D16	
				-	Occasional v fragments.	ery san	o coarse. Abund dy layers and p	ockets with gr	avel sized				21.50 - 21.90	B8	
				- - - -	(BLACKHEA	IH MEN	MBER - HARWI	CH FORMATI	ON)		4.9	22.00	22.00 - 22.45 22.00 - 22.45	C B9	N=19 (1,2/3,3,6,7)
				- -											
				- - - -							4.10 3.40			C B10	50 (2,4/50 for 240mm) 13/06/2018 00:00:00
				(6.10)											
				- - - -							4.0	25.00	25.00 - 25.38 25.00 - 25.45	C B11	50 (3,7/50 for 231mm)
											5.2	0 26.50	26.50 - 26.88 26.50 - 26.95	C B12	50 (2,4/50 for 235mm
			-24.02	27.20	coarse grave sand.	sized	ated dark grey shell fragments. EDS - LAMBET	. Abundant pa			to -				
				(2.00)							- Dry	28.00	28.00 - 28.45 28.00 - 28.50	S D17	N=39 (4,5/7,9,11,12)
			-26.02	29.20			c CLAY. Abunda	ant greenish g	rey clay fi	lled fossil			29.20	D18	
		×— ×— ×—	-26.22	29.40	Very stiff darl	TTLED greyis	BEDS - LAMBI h brown slightly grey silt filled fo	sandy CLAY.	Sand is fi	ine grained. black organi			29.50 - 29.95	UT5	100 (100%)
Groun	Inst	ater o	ntries:		Diamoto	& cael	na:	Denth related	d romarks	e·	Wate		1	Type & No	Results
	c: F	Rose to	: Casin	-	Diameter ed: Dia (mm): 300 250 200 150	Depth:	Casing: 5.00 5.00 14.10 3.00 28.00 7.00 37.00	Prom:		emarks:			Chiselling deta From: to:		ation: Tool:
AGS Log is: Scale:	abbre All de SUE:	viations se pths and re	nation of symi e Key Sheet. duced levels a DRAFT 1:50	re in metres.	Project: Project N Client:	o: 376	erside EfW 5 chi Zosen Inova	ı AG					Exploratory pos	BH	



_ `	•	• • •	0.0	(9								1611			
Bore	hole	forr	nation	details):										Locatio	n details:
Type: PC IP CP	Fr 0 0	rom: 0.00 0.00 0.00	To: 0.35 1.20 37.50	Start d 11-06- 11-06- 11-06-	ate: End date: 18 11-06-18 18 11-06-18	Crew: MJ MJ MJ	Plant: Pavement core Hand tools Dando 3000 mk	n/a	Drill Bit: n/a n/a n/a	Logged: 11-06-18 11-06-18 14-06-18	Logger: DG DG DG	Remarks	s: ID: SI08 Er(%)	74	mE: mN: mAOD: Grid:	549496.44 180754.63 3.18 OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ T	esting	
Bac	Wa str	Leg	Level	ness)				•			Wate	er Casing	Depth	Type & No	Resul	s/Remarks
				(2.00)	Occasional g mottling. Occ	reenish asional	h brown slightly grey silt filled fo sand sized she BEDS - LAMBI	ossil rootlets t Il fragments.	racks and		- Dry	30.00	30.00	D19 S	50 (0.42)	50 for 83mm)
			-28.22	31.40	pockets and I Occasional s	inear tra	e SAND. Occas aces. Greenish ed shell fragmer BEDS - LAMBR	silt traces (ponts.	ssible infill	organic ed burrows).		30.00	31.00 - 31.45	D20	30 (6,127	50 101 6311111
			-29.62	32.80									32.50 - 32.95 32.80	UT6	100) (60%)
			-23.02	-	gravelly sand	y CLĂY and is f RMATIC	ey, blueish gree . Gravel is subre ine to coarse. DN) 32.90 m: Slightly gre	ounded to rou	inded, fine	to coarse of			33.00	B13		
				(2.90)							4.00		34.00 - 34.45 34.00 - 34.50 34.00	C B14		10/26,24,0,0 018 00:00:00
			-32.52	35.70	Greenish gre (UPNOR FOI		sh green and br N)	own mottled s	silty clayey	fine SAND.	4.30	35.00	35.50 - 35.86 35.50 - 35.95	C B15	50 (9,10/5	50 for 215mn
			-34.32	37.50 -		D	orehole ends at 3	27.50m /Torgot	(donth)		3.70	37.00	37.00 - 37.31 37.00 - 37.50 37.00 - 37.50	S B16 D22	50 (10,14/	50 for 160mi
				-		Di	and and are	vviii (Taiyel	. sopui)							
	Inst	4.5.			Diam 1			Danish 1 1	d mass:		Wate		Depth	Type & No	F	esults
	c R	Rose to	ntries: o: Casin		300 250 200 150	Depth: 5 14 28 37	Casing: 5.00 5.00 1.10 14.10 3.00 28.00 5.00 37.00	Depth related From:		: marks:			From: to: 33.00 33.60 34.0	Dur. 40 0 00 0	ation: Tool: 01:00 Califo 01:00 Califo	
AGS Log is Scale:	abbrev All dep	viations se pths and re	anation of sym the Key Sheet. educed levels a DRAFT 1:50	are in metres.	Project: Project No Client:	o: 3765	rside EfW 5 chi Zosen Inova	AG				E	Exploratory pos	BH	06	Sheet 4 of 4



Type: From: To: Start date: End date: Crew: Plant: Barrel type: Drill Bit: Logged: Logger: Remarks: mE IP 0.00 1.20 03-04-18 03-04-18 DW Hand tools n/a n/a 03-04-18 VSS Hammer ID: AR1926 Er(%) 74 CP 1.20 31.00 03-04-18 DW Dando 2000 n/a n/a 10-04-18 VSS Hammer ID: AR1926 Er(%) 74	
P	
ASPHALT. 1.12 0.20 (0.40) 0.72 0.86 0.72 0.86 0.72 0.86 0.72 0.86 0.72 0.86 0.73 0.86 0.74 0.86 0.75 0	OD: 1.32
ASPHALT. 1.12 0.20 (0.40) 0.72 0.86 0.72 0.86 0.72 0.86 0.72 0.86 0.72 0.86 0.73 0.86 0.74 0.86 0.75 0	g
1.2 0.20 (0.40) (0.40) (0.40) 0.72 Dark brown gravely slightly sity fine to coarse SAND with medium cobble content. Gravel is fine to coarse angular to subround of brick, concrete, coccasional slag and ceramic tile. Cobbles are angular to subangular of prick. (MADE GROUND) Very soft to soft extremely closely fissured dark grey mottled dark greyish brown CLAY. Rare rootlets. (ALLUVIUM) 1.50 1.50 - 1.95 S 1.50 - 1.95 D 1.00 ES Dry 1.50 1.50 - 1.95 S 1.50 - 1.95 D 1.00 ES 1.50 - 1.95 D 1.00 ES 1.50 - 1.95 D 1.00 ES 1.50 - 1.95 D 1.00 ES Dry 1.50 1.50 - 1.95 S 1.50 - 1.95 D 1.50 1.50 1.50 D 1.50 1.50 1.50 D 1.50 1.50 1.50 D 1.50 1.50 1.5	Results/Remarks
Comparison of the composed woods of the co	0.4 ppmv
(3.10) (3.10) (3.10) (3.10) (3.10) Very soft dark brown highly decomposed woody PEAT. Occasional amorphous wood fragments and relic roots. (ALLUVIUM) Very soft laminated dark brownish grey occasionally mottled dark grey CLAY. Occasional wood fragments. Occasional sand sized shell (ALLUVIUM) A.50	0.6 ppmv
Very soft dark brown highly decomposed woody PEAT. Occasional amorphous wood fragments and relic roots. (ALLUVIUM) Very soft to soft laminated dark brownish grey occasionally mottled dark grey CLAY. Occasional wood fragments. Occasional sand sized shell (ALLUVIUM) To the state of the st	N=4 (1,1/1,1,1,1)
Very soft dark brown highly decomposed woody PEAT. Occasional amorphous wood fragments and relic roots. (0.55) Very soft dark brown highly decomposed woody PEAT. Occasional amorphous wood fragments and relic roots. (ALLUVIUM) Very soft dark brown highly decomposed woody PEAT. Occasional amorphous wood fragments and relic roots. (ALLUVIUM) Very soft to soft laminated dark brownish grey occasionally mottled dark grey CLAY. Occasional wood fragments. Occasional sand sized shell fragments. (ALLUVIUM) A.50 4.50 - 4.95 D	
very soft dark brown highly decomposed woody PEAT. Occasional amorphous wood fragments and relic roots. (ALLUVIUM) Very soft to soft laminated dark brownish grey occasionally mottled dark grey CLAY. Occasional wood fragments. Occasional sand sized shell (ALLUVIUM) The soft dark brown highly decomposed woody PEAT. Occasional amorphous wood fragments amorphous wood fragments amorphous wood fragments amorphous wood fragments. Occasionally mottled dark grey CLAY. Occasional wood fragments. Occasional sand sized shell (ALLUVIUM) 4.50	5 (100%)
Very soft to soft laminated dark brownish grey occasionally mottled dark grey CLAY. Occasional wood fragments. Occasional sand sized shell fragments. (ALLUVIUM) 4.50 4.50 - 4.95 5 Dry 4.50 - 4.95 9 1.50 - 4.95 9	
6.00 - 6.45 UT	N=4 (1,2/1,1,1,1)
	7 (100%)
6.45 D Control of the control of	N=5 (1,1/1,2,1,1)
9.00 - 9.45 UT	12 (100%)
Type & No Groundwater entries: Diameter & casing: Depth related remarks: Chiselling details:	Results
Struck: Rose to: Casing: Sealed: Dia (mm): Depth: Casing: From: To: Remarks: From: to: Duration:	Tool:
Notes: For explanation of symbols and abbreviations see Key Sheet. Log issue: DRAFT Scale: 1:50 Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG	



Bore	hole	e forr	nation	details												Location details:
Type:	F	rom: 0.00 1.20	To: 1.20 31.00	Start da 03-04- 03-04-	ate: End date:	Crew: DW DW	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-04-18 10-04-18	V	/SS	Remarks Hammer	: ID: AR1926 Er(%	%) 74	mE: 549559.32 mN: 180559.36 mAOD: 1.32 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description						Samples 8	& In Situ Te	esting
H	s σ			ness)	Medium dens	e dark o	greyish brown s	•	silty fine to	coarse		Water	Casing	Depth 10.00	Type & No W	Results/Remarks
		***********		- - - - - - - -		ubangul	ar to rounded f		,		-	Dry	10.50	10.50 - 10.95 10.50 - 10.95	C B	N=8 (1,2/3,2,1,2)
				(3.50)								Dry	12.00	12.00 - 12.45 12.00 - 12.45	C B	N=12 (3,3/4,3,2,3)
		X	-12.18 -12.63	13.50 - (0.45) 13.95 _	coarse GRAV pocket of soft (TAPLOW GF Medium dens	EL. Gradark gradark gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark between BL. Gradark gradark between BL. Gradark gradark between BL. Gradark gradark gradark gradark between BL. Gradark gradark between BL. Gradark gradark between BL. Gradark gradark gradark gradark gradark gradark gradark between BL. Gr	MEMBER) prownish grey of d fine to coarse	ular to rounded	I flint. Rare	cobble siz	- - -	Dry	13.50	13.50 - 13.95 13.50 - 13.95	C B	N=14 (3,5/4,3,4,3)
0 0	SP		-14.18	15.50	Stiff to very st medium sand (LONDON CL	. Occas	grey CLAY. Oo sional shell fraç	ccasional thick gments.	lamination	s of fine to		Dry	15.00	15.00 - 15.45 15.00 - 15.45	C B	N=13 (5,4/3,3,4,3)
				- - - - - - - -							-			16.50 - 16.95	UT	27 (100%)
				(5.00)							- - - - - - - - -			18.00 - 18.45	UT	27 (100%)
				- - - - -							-			19.50 - 19.95	UT	45 (100%)
Grou	Inst ndw	ater e	ntries:		Diameter	& casir	ng:	Depth related	d remarks:			Water	Casing	Depth hiselling deta	Type & No	Results
			c Casin		ed: Dia (mm): 250 200 150	Depth: 10. 20. 31.	Casing: .00 10.00 .50 20.50 .00 28.00	From: 17.50		narks:				From: to:	Dura	tion: Tool:
AGS Log is Scale	abbre All de	eviations se epths and re	enation of symle Key Sheet. educed levels a DRAFT	are in metres.	Project: Project No Client:	o: 3765	rside EfW rhi Zosen Inova	a AG					E	xploratory pos	BH	



				details			T =	T	I ==			1			Location details:
Type: IP CP	9.00 1.20	0	To: 1.20 31.00	Start d: 03-04- 03-04-	-18 03-04-18	Crew: DW DW	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-04-18 10-04-18	VSS VSS		s: r ID: AR1926 Er(%	%) 74	mE: 549559.32 mN: 180559.36 mAOD: 1.32
ي ء ≦		p p		Depth									Samples	& In Situ Te	Grid: OSGB
Backfill/ Instal'n	strike	Legend	Level	(thick- ness)			Stratum	Description			Wa	ter Casing		Type & No	Results/Remarks
_	•		-19.18	20.50 -	medium sand (LONDON CL	. Occa .AY)	grey CLAY. Oc sional shell frag y dense dark bl	ments.			of		20.50	D	
				- - - - - - -	subrounded to fragments.	o round	ed fine to coars	e flint. Occas	sional sand			y 21.00	21.00 - 21.45	С	N=38 (5,7/9,9,10,10)
	· 在 《 · · · · · · · · · · · · · · · · ·			-							- Dr	y 22.50	22.50 - 22.95	С	N=45 (5,8/10,10,11,14)
				(6.50)							- Dr	y 24.00	24.00 - 24.45	С	N=45 (6,10/9,11,11,14)
	1、 高、 1、 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										- Dr	y 25.50	25.50 - 25.92	С	50 (6,11/50 for 275mm)
	X S X S X	<	-25.68	27.00 - (0.90)	subrounded to shell fragmen	o round ts.	y gravelly silty fi ed fine to coars IBER HARWICI	e black flint. A	Abundant sa		Dr	y 27.00	27.00 - 27.30	С	50 (5,12/50 for 155mm)
			-26.58	27.90	Stiff to very st (LOWER SHI	iff dark ELLY CI	grey laminated LAY (LAMBETH	CLAY. Frequo	ent shell fra	gments.	- Dr	y 28.50	28.50 - 28.95	С	N=38 (6,8/8,10,10,10)
				(3.10)							-				
Groun	nst	or c	trico		Diameter	& coo!	na:	Depth related	1 remarks		Wa	- 1	Depth Chiselling deta	Type & No	Results
	Ros		Casin			Depth: 10 20	Casing: .00 10.00 .50 20.50 .00 28.00	From:		narks:			From: to:		ation: Tool:
AGS Log iss Scale:	abbreviati All depths	ions see s and red	ation of symbol Key Sheet. uced levels a DRAFT	re in metres.	Project: Project No Client:	o: 3765	rside EfW 5 chi Zosen Inova	AG				E	Exploratory pos	BH	



	•	•	0.0	L	9								1611			
Bore	hole	for	nation	details	:										Locatio	n details:
Type: IP CP	Fr 0	rom: 0.00 .20	To: 1.20 31.00	Start da 03-04- 03-04-	te: End date: 18 03-04-18	Crew: DW DW	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 03-04-18 10-04-18	Logger VSS VSS		s: r ID: AR1926 Er('	%) 74	mE: mN: mAOD: Grid:	549559.32 180559.36 1.32 OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description				•	Samples	& In Situ T	esting	
Bac	Wa	Leg	Level	ness)							Wa	_		Type & No		ilts/Remarks
		==		-	Stiff to very s (LOWER SH	tiff dark (ELLY CL	grey laminated AY (LAMBETH	CLAY. Freque GROUP))	ent shell fra	agments.	. Di	ry 28.00	30.00 - 30.42	S	50 (6,12	/50 for 265mm
				-							1					
				-							1					
			-29.68	31.00			Borehole ends a	at 31.00m (Ref	usal)							
				-												
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	Inst										Wa	ter Casing	Depth	Type & No		Results
			ntries: c: Casin	g: Seal	Diameter ed: Dia (mm):		ng: Casing:	Depth related		marks:			Chiselling deta		ation: Tool:	
Gu UC	n. P	(USE (o. Casin	y. Seal	250 200 150	10. 20. 31.	00 10.00 50 20.50	i ioiii.	io. Rel	пакъ.			i ionii. (O:	Dur	adon. 100E	
	Notes	: For expli	anation of symb	ools and	Project:	River	side EfW						Exploratory pos	sition refere	ence:	
AGS oa is	All de		e Key Sheet. educed levels a		Project N	o: 3765							. , , , , ,	BH		
cale			1:50		Client:	Hitac	hi Zosen Inova	AG								Sheet 4 of 4



orehol	- f	mation												Location details:
Гуре: F IP (From: 0.00 1.20	To: 1.20 31.39	Start da 04-04-04-04-04-04-	ate: End date: -18 04-04-18	Crew: MJ MJ	Plant: Hand tools Dando 3000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 04-04-18 16-04-18	Logger: VSS VSS	Remarks Hammer	: ID: SI08 Er(%)	74	Location details: mE: 549400.00 mN: 180660.00 mAOD: 1.66 Grid: OSGB
Instal'n Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ To	esting
8 = S %	××××	1.56	0.10	ASPHALT.						Water	Casing	Depth	Type & No	Results/Remarks
		1.36 1.26	0.10	MADE GROUP Pinkish brown fine to coarse MADE GROUP	n sandy mixed UND)	slightly silty GF lithologies. ntly silty SAND				_A		0.25 0.25 0.50 0.50 0.60 - 1.00	PID ES PID ES B1	0.2 ppmv 0.3 ppmv
*			- - :	(MADE GROUND Soft to firm e	UND) extremel	to subrounded	ed dark grey r	nottled ora				1.00 1.00 1.20	PID ES D1	0.6 ppmv
			(2.80)	grey gleying. (ALLUVIUM)	sionai da	ark brown fibroi	us organic ma	tter. Occa	asionai iignt	-		1.50 - 1.95	UT1	12 (100%)
SP			· · · · · · · · · · · · · · · · · · ·									2.00	D2	
			- - - -							- Dry	2.00	2.50 - 2.95 2.50 - 2.95	S D3	SWP: 225 mm N=1 (0,0/0,1,0,0)
		-1.54	3.20			blackish brown				Dry Y.	2.00	2.95 - 3.40	S	N=2 (1,0/1,0,1,0)
			_ - -			roots and wood on exposure to		ark reddis	h brown	1		3.50 - 3.95	UT2	12 (100%)
			<u>-</u> - -									4.00	D4	
			-							- Dry	4.00	4.50 - 4.95 4.50 - 4.95	S D5	SWP: 375 mm 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 so Occasional or (ALLUVIUM)	rganic n	grey mottled binaterial.	lack CLAY. O	ccasional	roots.	Dry	6.00	7.00 - 7.45 7.00 - 7.45	S D7	SWP: 450 mm 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 o	rev ver	y sandy slightly	silty slightly o	lavev GP	AVFI Grave	-				
Inst	* * * * · * · ·									Water		Depth	Type & No	Results
Struck: I			g: Seal	Diameter ed: Dia (mm):	Depth: 9 14	Casing: 0.00 9.00 0.00 14.00 0.39 28.00	From: 8.00	To: Re	emarks: entonite seal			Chiselling details From: to:		ation: Tool:
AGS Note abbru All do og issue cale:	eviations se epths and re	anation of symb ee Key Sheet. educed levels ar DRAFT 1:50	ols and re in metres.	Project: Project No	o: 3765	rside EfW 5 chi Zosen Inova	a AG				E	exploratory pos	sition refere	



		Oic		U											
Boreho	e forr	nation	details) :											Location details:
İP	From: 0.00 1.20	To: 1.20 31.39	Start da 04-04- 04-04-	18 04-04-18	Crew: MJ MJ	Plant: Hand tools Dando 3000 mk	Barrel type: n/a 2 n/a	Drill Bi n/a n/a	it: Logged: 04-04-18 16-04-18	V	/SS	Remarks Hammer	: ID: SI08 Er(%) 7	74	mE: 549400.00 mN: 180660.00 mAOD: 1.66 Grid: OSGB
Backfill/ Instal'n Water- strike	Legend	Level	Depth (thick-			Stratum	Description						Samples 8	& In Situ Te	esting
Ba N. W.	e Le		ness)	D d. d					DAVEL O	1	Water	Casing	Depth	Type & No	Results/Remarks
			(1.70)		to subro	sandy slightly unded fine to d EMBER)		ciayey Gi	RAVEL. Grav	/ei - - - - - - - - - -	3.00	10.00	10.00 - 10.45 10.00 - 10.45	C B2	N=31 (3,4/6,7,9,9)
		-9.84	11.50	Dense dark o subangular to (TAPLOW GF	subrour	orown gravelly nded fine to co EMBER)	fine to coarsoarse flint.	e SAND.	. Gravel is		2.90	11.50	11.50 - 11.95 11.50 - 11.95	C B3	N=35 (3,5/7,8,9,11)
		-11.94	(2.10)	Ctiff dark broad	unioh arg	ey sandy CLAY	/ Para shall	fragmon	to	- - - - - -	3.40	13.00	13.00 - 13.45 13.00 - 13.45	C B4	N=27 (4,5/5,6,7,9)
			- - - - -	(LONDON CL		ey sanuy CLAT	. Kare srieii	iragmen	is.	-			14.00 - 14.45 14.50	UT5 D9	80 (100%)
			(3.70)								14.10	14.00	15.50 - 15.95 15.50 - 15.95	S D10	N=24 (2,4/5,5,6,8)
		-15.64	17.30	subrounded to	o rounde ockets of	rey slightly sar d fine to coars dark grey CLA EMBER)	e black flint.			-			17.00 - 17.45 17.50 17.50 - 18.00	UT6 D11 B5	100 (100%)
	*	-16.74	18.40	Very dense d (TAPLOW GF		nish grey silty EMBER)	fine ot mediu	m SAND).		2.10	18.50	18.50 - 18.92 18.50 - 18.95	S D12	50 (2,3/50 for 275mm)
	××	-18.14	19.80	Dense becom	ning verv	dense dark bl	ackish grev s	andy silt	ty GRAVEL of	- F -					
Inst	×.··		_				J - , -	,			Water	Casing	Depth	Type & No	Results
Struck:	Rose to	o: Casin		250 200 150	Depth: 9.0 14.0 31.3	Casing: 00 9.00 00 14.00 39 28.00	Depth relate From: 18.00	To: I 27.00	ks: Remarks: Redrilled due t overnight	o san	nd ingres	ss	hiselling deta	Dura	ition: Tool:
AGS All of Log issue Scale:	reviations se depths and re	anation of symble Key Sheet. educed levels at DRAFT 1:50	ois and re in metres.	Project: Project No Client:	o: 3765	side EfW ni Zosen Inova	AG					E	xploratory pos	BH	



Borol	hole	form	nation	dotaile	<u>.</u>											Location details:
Type: IP CP	Fr 0	rom: 0.00 .20	To: 1.20 31.39	Start d: 04-04-04-04-04-04-	ate: End date:	Crew: MJ MJ	Plant: Hand tools Dando 3000 mk 2	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 04-04-18 16-04-18	Logg VS VS	s	Remarks Hammer	: ID: SI08 Er(%)	74	mE: 549400.00 mN: 180660.00 mAOD: 1.66 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum [Description						Samples	& In Situ Te	esting
Bac	st W	,		ness)	Dansa bacam	ing ver	y dense dark bla		andy eilty G	DAVEL of		Water 1.80	Casing 20.00	Depth 20.00 - 20.45	Type & No	Results/Remarks N=49 (2,4/4,9,16,20)
				-		round	led fine to coarse					2.20	21.50	20.00 - 20.45 21.50 - 21.95 21.50 - 21.95	B6 C B7	N=44 (3,5/8,9,13,14)
				(7.50)								2.10	23.00	23.00 - 23.38	С	50 (6,9/50 for 225mm)
			-25.64 -26.04	27.30 (0.40) - 27.70	Rare lignified	fragme										
			-20.04		Stiff to very st relic root track		brownish grey n	nottled dark b	orown sand	y CLAY. R	4	19.60		28.00 - 28.38		50 (5,7/50 for 235mm)
				(2.55) -							1	19.60	28.00	29.00 - 29.38	S	50 (5,7/50 for 235mm)
	Inst	ator -	ntries:		Diameter	2 occ:	ng: Ir	Depth related	d romarks:		,	Water	Casing	Depth Chiselling deta	Type & No	Results
	c R	Rose to	: Casin			Depth:	Casing: 0.00 9.00 14.00 14.00 .39 28.00	From: 24.00	To: Ren	narks: wing sand &	grave	ıl		From: to:	Dura	tion: Tool:
AGS Log is: Scale:	abbrev All dep	viations se pths and re	enation of symbol e Key Sheet. Educed levels a DRAFT 1:50	re in metres.	Project: Project No Client:	3765	rside EfW 5 chi Zosen Inova	AG					E	xploratory pos	BH	



Borah	nole	for	nation	details	· • • • • • • • • • • • • • • • • • • •											Locatio	n details:
Type: IP CP	Fr 0	rom: 0.00 .20	To: 1.20 31.39	Start da 04-04- 04-04-	ate: End date: 18 04-04-18	MJ	Plant: Hand tools Dando 3000 mk 2	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 04-04-18 16-04-18	Log VS VS	ss	Remarks Hammer	: ID: SI08 Er(%)	74	mE: mN: mAOD: Grid:	549400.00 180660.00 1.66 OSGB
Backfill/ Instal'n Water-	rike -	Legend	Level	Depth (thick-			Stratum	Description						Samples	& In Situ Te	esting	
Ba	st.	Le.		ness)	Stiff to very et	iff dark	brownish grey r		rown sand	v CLAY P		Water	Casing	Depth	Type & No	Resu	ts/Remarks
			-28.59		relic root trac	ks. enish gr	rey slightly sand	y (glauconitic	gravelly C	-				30.50 - 30.95	UT8	100) (100%)
			-29.34	31.00 -	Dark orangish	n brown	gravelly fine to arse black flint.	coarse SANE). Gravel is	s subround	ed -			31.00 31.00 - 31.30	D16 B11		
			-29.73	31.39	to rounded iii		Borehole ends a	t 31.39m (Refu	usal)		_						
				-													
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				- - :							-						
				- - -							1						
	Inst										-	Water	Casing	Depth	Type & No		Results
Groun	dwa		ntries:		Diameter			Depth related					С	hiselling deta	ails:		
Struck:	: R	kose to	o: Casin	g: Seal	ed: Dia (mm): 250 200 150	9 14	Casing: 9.00 9.00 9.00 14.00 9.39 28.00	From:	To: Ren	narks:				From: to:	Dura	ation: Tool:	
AGS Log iss Scale:	abbrev All dep	viations se pths and re	anation of symble Key Sheet. educed levels a DRAFT 1:50	are in metres.	Project: Project No Client:	o: 3765	rside EfW 5 chi Zosen Inova	AG					E	xploratory pos	BH	09	Sheet 4 of 4



			nation												Location details:
Type: IP CP	0	om: .00 .20	To: 1.20 33.41	Start d 07-04- 07-04-	48 07-04-18	Crew: MF MF	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 07-04-18 13-04-18	Logger VSS VSS	Hamme	s: r ID: AR825 Er(% r ID: AR825 Er(%		mE: 549434.00 mN: 180646.08 mAOD: 1.30 Grid: OSGB
Backfill/ Instal'n Water-	strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
Bac	str	Feg	Level	ness)			Stratum	Description			Wa	ter Casing	Depth	Type & No	Results/Remarks
			0.90	0.05 (0.35) 0.40	fine to coarse	n sandy mixed	slightly silty GF	RAVEL of suba	angular to s	ubrounded	1		0.20 0.20	PID ES	0.5 ppmv
				- - - -	(MADE GRO) Very soft to somatter. (ALLUVIUM)	UND) oft dark	grey CLAY. Oo	ccasional dark	brown fibro	ous organic	<u></u>		0.80 0.80 1.00	PID ES VHP	0.2 ppmv No infiltration
		 		- - -							- Di	y 1.50	1.50 - 1.95 1.50 - 1.95	S D	N=4 (1,1/1,1,1,1)
				(3.30)									2.00	VHP	No infiltration
•	▼			- - -									2.50 3.00 - 3.45	D	3 (100%)
			-2.40	3.70							-		2.30 0.40		3 (13370)
			-2.40	3.70	Very soft to so woody plant r (ALLUVIUM)		brownish grey	CLAY. Occasi	onal roots,	rootlets and			4.00	VHP	No infiltration
				-							Dı	y 4.50	4.50 - 4.95 4.50 - 4.95	S D	N=2 (1,0/1,0,1,0)
				(2.75)											
				<u>-</u>									6.00 - 6.45	UT	8 (100%)
			-5.15	6.45		rk brow	brown organic nish grey CLAY fragment.				ed				
				- -				7.50 <u>-8.00</u>	m: Occasional	shell fragments	Dı	y 7.50	7.50 - 7.95 7.50 - 7.95	S D	N=1 (1,0/0,1,0,0)
				(3.15)											
				<u>-</u>									9.00 - 9.45 9.00	UT VHP	12 (100%) No infiltration
	∇ _	 × × × ×	-8.30	9.60	Dark greyish rounded flint.	brown s	sandy silty fine	to coarse GRA	AVEL of sub	oangular to	<u>-</u>		9.50	D	
Groun	Inst dwa	ater e	ntripe		Diameter	& caei	na.	Depth related	l remarke:		Wa		Depth Chiselling deta	Type & No	Results
	: F		: Casin			Depth: 10 16	Casing: .00 10.00 .50 16.50 .41 29.50	From: 8.50		narks:			From: to:		ation: Tool:
AGS Log iss Scale:	All de	viations see pths and re	nation of symbolic Key Sheet. duced levels a DRAFT	ols and re in metres.	Project: Project No Client:	o: 3765	rside EfW ; chi Zosen Inova	ıAG				I	Exploratory pos	BH	



Borel	hole	forr	nation	dotaile												Location details:
Type: IP CP	Fr 0	rom: 0.00 .20	To: 1.20 33.41	Start d 07-04- 07-04-	ate: End date: 48 07-04-18	Crew: MF MF	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 07-04-18 13-04-18	V	iss l	Remarks Hammer Hammer	: ID: AR825 Er(% ID: AR825 Er(%) 71) 71	mE: 549434.00 mN: 180646.08 mAOD: 1.30 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick- ness)			Stratum	Description						Samples 8		T
ш —		1 ·×· ·×· ·×· ·×· ·×· ·×· ·×· ·×· ·×· ·×		-	Dark greyish rounded flint. (ALLUVIUM)	brown s	andy silty fine	to coarse GRA	WEL of sub	pangular to	-	Water	Casing	Depth 10.50 - 10.95 10.50 - 10.95	Type & No S B	Results/Remarks N=44 (5,7/11,11,12,10)
				(3.90)							-	Dry	12.00	12.00 - 12.45 12.00 - 12.45	S B	N=50 (3,8/13,12,13,12)
	1	× × × × ×		- - -							-			13.00	VHP	No infiltration
	∇		-12.20	13.50 -	Firm to stiff da fragments. (LONDON CL		sandy CLAY. (Occasionally la	aminated. F	Rare shell	-	Dry	13.50	13.50 - 13.95 13.50 - 13.95 14.00	S B	N=19 (3,3/4,4,5,6)
				(3.40)										15.00 - 15.45	UT	20 (100%)
			-15.60	16.90	Dark blackish coarse black	grey sa flint. Od	andy silty GRA\ ccasional shell	/EL of subroui fragments.	nded to rou	inded fine t	to	Dry	16.50	16.50 - 16.95 16.50 - 16.95	S UT	N=33 (11,6/6,9,8,10) 34 (100%)
				-							-	Dry	18.00	18.00 - 18.45 18.70	C	N=41 (6,8/9,9,12,11)
		× × × × × × × × × × × × × × × × × × ×									-	Dry	19.50	19.50 - 19.88 19.50 - 19.95	C B	50 (6,18/50 for 225mm)
	Inst Idwa	ater e	ntries:	_	Diameter	& casi	ng:	Depth related	l remarks:			Water	Casing	Depth hiselling deta	Type & No	Results
	k: F	Rose to 3.00	o: Casin 0 13.	50		Depth: 10 16 33	Casing: .00 10.00 .50 16.50 .41 29.50	From:		narks:				From: to:	Dura	tion: Tool:
AGS Log is: Scale:	abbre All dep	viations se pths and re	enation of symble Key Sheet. educed levels a DRAFT 1:50	re in metres.	Project: Project No Client:	o: 3765	rside EfW s chi Zosen Inova	ı AG					E	xploratory pos	BH	



Type: IP CP	Fr 0	om: .00 .20	To: 1.20 33.41	Start d 07-04 07-04	ate: End date: -48 07-04-18	Crew: MF MF	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 07-04-18 13-04-18	Logge VSS VSS	s l		: ID: AR825 Er(% ID: AR825 Er(%		Location details: mE: 549434.00 mN: 180646.08 mAOD: 1.30 Grid: OSGB
Backfill/ Instal'n Water-	strike	Legend	Level	Depth (thick-			Stratum	Description						Samples 8	& In Situ Te	esting
Ba	st w	e l		ness)	Dark blackish coarse black	grey sa flint. O	andy silty GRA\ ccasional shell	/EL of subrou	nded to rou	inded fine to		Vater	Casing	Depth	Type & No	Results/Remarks
				(9.90)				21.00 - 23.00	0 m: Abundant	shell fragments		Dry	21.00	21.00 - 21.38 21.00 - 21.45	C B	50 (8,16/50 for 225mm)
				-								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 26.20	C B	50 (5,15/50 for 225mm)
			-25.50	26.80 -	laminated. Oc	casiona	casionally mottl ally very closely ed fine to medi	/ fissured. Occ	casionally li	sionally gnite. Rare		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 -28.00	28.90 _ (0.40) _ 29.30 _	coarse black clay. Stiff to very st	flint. Oo	ndy clayey GRA ccasional grave greenish grey i Gravel of subi	el sized pocket	ts of dark g	reenish gre	to_y			29.00	D	
	Inst										- V	Vater	Casing	Depth	Type & No	Results
Ground	dwa		ntries: o: Casin	ıg: Seal	Diameter ed: Dia (mm):	Depth: 10 16	Casing: .00 10.00 .50 16.50 .41 29.50	Depth related From:		narks:			С	chiselling deta From: to:	ils:	ation: Tool:
AGS Log iss Scale:	All dep	viations secoths and re	enation of symle Key Sheet. Educed levels a DRAFT 1:50	are in metres.	Project: Project No Client:	o: 3765	rside EfW s chi Zosen Inova	ı AG					E	xploratory pos	ition refere	



Poleliole Fo	3				10111		IISUIL
Borehole formation details:						Lo	cation details:
Type: From: To: Start date: IP 0.00 1.20 07-04-48 CP 1.20 33.41 07-04-48	End date: Crew: Plant: 07-04-18 MF Hand tools 11-04-18 MF Dando 2000	Barrel type: Drill Bit: n/a n/a n/a n/a	Logged: Logger: 07-04-18 VSS 13-04-18 VSS	Hammer II	D: AR825 Er(%) 7 D: AR825 Er(%) 7	mE 1 1 mN	549434.00 I: 180646.08 AOD: 1.30
He La La La La La La La La La La La La La	Stratum	Description			Samples & Ir	Situ Testin	g
			Wat	- 1		ype & No	Results/Remarks
Barrier Strick Market Strick M	iff to very stiff dark greenish grey indy gravelly CLAY. Gravel of subtrack flint.	Description mottled light orangish brogrounded to rounded fine to	wn slightly Dr	y 30.00		ype & No	
Inst			Wat			ype & No	Results
		Depth related remarks: From: To: Rem	iarks:	Ch	iselling details rom: to:		Tool:
	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova	a AG		Ex	ploratory positio	n reference	

Borehole Log TerraConsult Location details: **Borehole formation details:** Type: IP CP Barrel type: Drill Bit: Logged: Logger: mE: 549436.47 0.00 1.20 27.00 32.90 39.90 1.20 27.00 16-04-18 16-04-18 16-04-18 19-04-18 MJ MJ Hand tools Dando 2000 mk 3 mN: 180645.96 n/a n/a 23-04-18 24-04-18 24-04-18 25-04-18 PS PS PS 30-04-18 30-04-18 RC Comacchio 305 Geobore S PCD Hammer ID: RHM1703006 Er(%) 82 mAOD: 1.22 WLS 39.90 n/a PCD Comacchio 305 WLS VSS RC 26-05-18 27-04-18 Geobore S 30-04-18 VSS OSGB 50.71 Comacchio 305 Depth (thick-ness) Legend Samples & In Situ Testing Water-strike Stratum Description Level Water Casing Results/Remarks Type & No Type 1 (Driller's description) (0.30) (MADE GROUND) 0.92 0.30 Soft grey CLAY (Driller's description) (ALLŬVÍUM) (3.70)-2.78 -PEAT (Driller's description) (ALLUVIUM) sik. , ale ale, : sile sile (1.50)الله عادة عادة عادة sik -4.28 5.50 Soft grey peaty CLAY (Driller's description) (ALLŪVIUM) (3.50)-7.78 Grey SAND and GRAVEL. Gravels consist of flint (Driller's description) (ALLUVIUM)

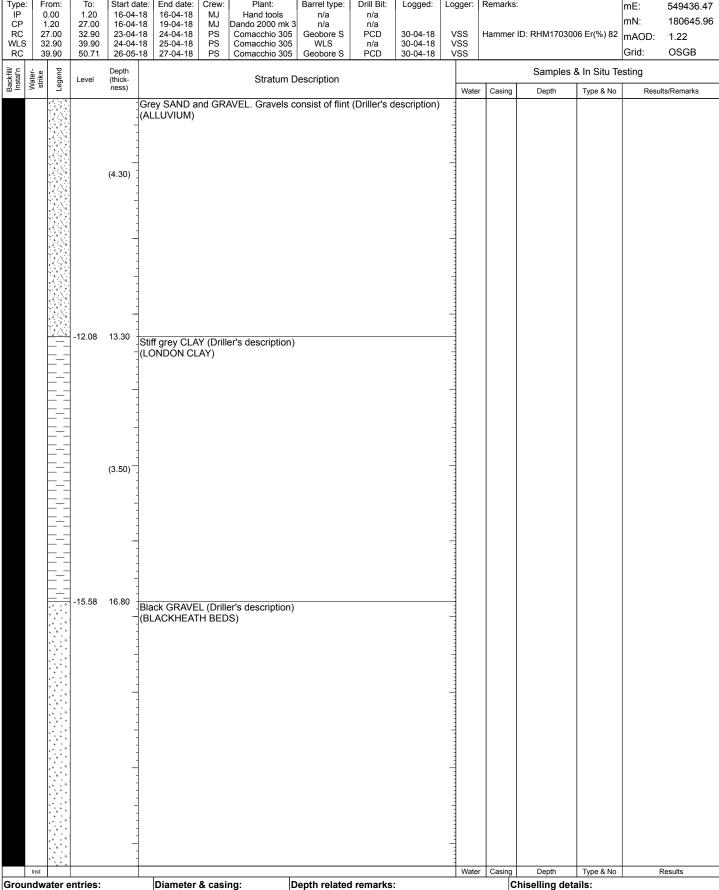
	Inst										Water	Casing	g Depth	Type & No	Results
Grou	ndv	vater en	tries:		Diameter	& casing:		Depth relat	ed rema	arks:			Chiselling det	ails:	
Struc	k:	Rose to:	Casing:	Sealed	: Dia (mm):	Depth:	Casing:	From:	To:	Remarks:			From: to:	Dura	tion: Tool:
9.	00	3.10	3.10		250 200 146	14.00 27.00 50.40	14.00 27.00 50.00	0.00	27.00	Cable percussion of prebore	pen hole	•			
AGS		reviations see I	ation of symbols Key Sheet.		Project:	Riversid	e EfW						Exploratory pos	sition refere	ence:
AUS	All		uced levels are in	metres.	Project No	: 3765								RH1	Λ

Log issue: Scale: 1:50

Client: Hitachi Zosen Inova AG DI IU/

Sheet 1 of 6

Borehole Log TerraConsult Borehole formation details: Location details: Type: IP CP Barrel type: Drill Bit: Logged: Logger: mE: 1.20 27.00 16-04-18 16-04-18 16-04-18 19-04-18 MJ MJ Hand tools Dando 2000 mk 3 n/a n/a mN: n/a Comacchio 305 Geobore S PCD Hammer ID: RHM1703006 Er(%) 82 VSS WLS



	Inst										Water	Casing	Depth	Ty	ype & No	Results
Grou	undv	water er	ntries:		Diameter	& casing:		Depth rela	ted rem	arks:		C	Chiselling	details	s:	
Stru	ck:	Rose to:	Casing:	Sealed:	Dia (mm): 250 200 146	Depth: 14.00 27.00 50.40	Casing: 14.00 27.00 50.00	From:	To:	Remarks:			From:	to:	Durat	tion: Tool:
AGS			nation of symbols Key Sheet.		Project:	Riversid	e EfW					E	Exploratory	•	n refere	

Log issue: DRAFT

1:50

Scale:

Project No: 3765

Client: Hitachi Zosen Inova AG

BH₁₀A Sheet 2 of 6



Proceedings Process	BO	or	en	Ole) LC	og										ler	ra	3 C	O	ms	uit
Proc. 1.70	Bore	hole	e fori	nation	details	s:													L	_ocatior	n details:
Dec 20.00 20.00 10.00												Logged:	Lo	gger: I	Remarks	3:					549436.47
M.S. 350 500 204-41 24-34-18 18 Connection 308 Connection	CP	1	.20	27.00	16-04-	-18	19-04-18	MJ	Dando 2000 mk	: 3 n/a	n/a	30-04-18	V	/ss	Hammer	· ID: RHM1703	006 E	Er(%) 8			
Simple & No. 10 Story Story	WLS	3	2.90	39.90	24-04-	-18	25-04-18	PS	Comacchio 30	5 WLS	n/a	30-04-18	V	/SS				(,	"		
Stack GRAVEL (Differ's description) Glack CHAPEATH BED'S) 1(10.00) Staff gary CLAY (Drifer's description) Staff gary Gary (Drifer's description) Staff gary Gary					Depth											Samples	s & Iı	n Situ	Test	ting	
(19.00) Sall grey CLAY (Chiller's description) Sall grey CLAY (Chiller's description) Sall grey CLAY (Chiller's description) Sall back mortied light grey occasional extremely dosely flasured lightlic CLAY (100) 27.80 flasored skylogendy mineral years 28.93 20.00 Sall box sery stiff dark brown occasionally dark grey sandy mineral years 27.10 20.00 Sall box sery stiff dark brown occasionally dark grey sandy mineral years 27.31 - 27.63 U 27.31 - 27.63	Back	Wat	Lege	Level					Stratum	Description				Water	Casing	Depth	Т	ype & N	lo	Result	s/Remarks
25.59 26.80 Soff groy CLAY (Driller's description) 27.31 - 27.63 U 27.31										1)			-								
25.59 28.50 Stiff grey CLAY (Oritier's description) 26.78 37.60 Stiff black montiled light grey occasional extremely closely fissuared lignanc CLAY 27.60 Records algebra seasy and mero Joans 27.00 - 28.40 To the control of the control occasionally dark grey sandy microcoaus 27.18 28.40 Stiff Light grey occasional mother occasionally dark grey sandy microcoaus 27.18 28.40 Stiff light grey occasional mother occasionally dark grey sandy microcoaus 27.18 28.40 Stiff light grey occasional mother occasionally dark grey sandy microcoaus 27.18 28.40 Stiff light grey occasional mother occasional mothe					-]`			,												
25.59 28.50 Stiff grey CLAY (Oritier's description) 26.78 37.60 Stiff black montiled light grey occasional extremely closely fissuared lignanc CLAY 27.60 Records algebra seasy and mero Joans 27.00 - 28.40 To the control of the control occasionally dark grey sandy microcoaus 27.18 28.40 Stiff Light grey occasional mother occasionally dark grey sandy microcoaus 27.18 28.40 Stiff light grey occasional mother occasionally dark grey sandy microcoaus 27.18 28.40 Stiff light grey occasional mother occasionally dark grey sandy microcoaus 27.18 28.40 Stiff light grey occasional mother occasional mothe					_	-							-								
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Stiff to very stiff dark brown occasionally dark grey sandy micaceaus 26.98 28.20 27.18 28.40 NIDD - Possibly grey gravelly CLAY, recovered as firm subrounded to rounded black flint GRAVEL. (0.85) Stiff dark greenish grey slightly gravelly sandy CLAY, Gravel is subangular to subrounded fine to medium of black flint. 28.68 29.99 NIDD - Possibly gravelly CLAY washed out, recovered as subangular to subrounded fine to coarse GRAVEL of flint Groundwater entries: Diameter & casing: Diameter & casing: Depth related remarks: Chiselling details: From: to: Duration: Tool: Project: Riverside EfW Exploratory position reference:					` ′				2	7.60 m: Becomes	slightly sandy a	and rarely ligni	tic			27.00 - 28.4	0 n	/a			
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NIDD - Possibly grey gravelly CLAY, recovered as firm subrounded to rounded black flint GRAVEL. 28.40 - 29.90 59				-26.98	28.20	CLA	Y .					icaceaus									
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subrounded fine to coarse GRAVEL of flint S 29.90 - 30.35 D				20.00	` '	1								2.00	27.00	20.00 00 1	_			E0 (E 40/=	0 for 400 ··· ·
Inst Water Casing Depth/Core Run TCR SCR If Results/remarks				-∠ช.68	_						vered as s	ubangular t	0 –	2.40	27.00				'		
Inst Water Casing Depth/Core Run Tork Sort If Results/remarks						Jubi	i ouriaca iii		odisc of the	L OI IIIII											
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MBN and according and according to the contract of the contrac		abbre	eviations se	e Kev Sheet.			Project:	Rive	erside EfW	<u> </u>					E	Exploratory p	ositio	on refe	eren	ce:	
Log issue: DRAFT DITUA		All de	pths and r	educed levels DRAFT			•	: 376	5							. 71					
Scale: 1:50 Client: Hitachi Zosen Inova AG Sheet 3 of 6	1 -					0	Client:	Hita	chi Zosen Inov	a AG							_		•		Sheet 3 of 6

orol-	ala f	fo	tion d	taile:							Location details
ype:		om:	tion de	Start da	te: End date: Crew: Plant: Barrel type: Drill bit: Logger: Logg	ed: F	Remarks:				Location details: mE: 549436.47
IP CP RC VLS RC	0. 1. 27 32	.00 .20 .00 .90	1.20 27.00 32.90 39.90 50.71	16-04- 16-04- 23-04- 24-04- 26-05-	18 16-04-18 MJ Hand tools n/a n/a n/a 18 19-04-18 MJ Dando 2000 mk 3 n/a n/a n/a 18 24-04-18 PS Comacchio 305 Geobore S PCD VSS 30-04 18 25-04-18 PS Comacchio 305 WLS n/a VSS 30-04	I-18 H	Hammer	ID: RHM170300	6 Er(%	6) 82	mN: 180645.96 mAOD: 1.22 Grid: OSGB
al'n	e e	pue	Laurel	Depth	Stratum Description		1	Samples 8		itu Te	
Instal'n Water-	strike	Legend	Level	(thick- ness)	Stratum Description	Water	Casing	Depth/Core Run	TCR SCR RQD	lf	Results/remarks/ samples
			-29.71 -29.78 -30.03	31.25	Stiff to firm dark greyish green slightly gravelly very sandy CLAY. Gravel s subangular to subrounded fine of flint. Stiff dark greyish green very sandy CLAY/ clayey sand.			29.90 - 31.40	67 n/a n/a		31.30 - 31.40 D
	4		-30.18 -31.30		Dark yellowish green mottled dark greyish green and occasional light brown very sandy CLAY/ very clayey SAND. 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		
	-		01.00		Stiff to firm dark greyish green slightly gravelly very sandy CLAY. Gravel is subangular to subrounded fine of flint.						00.00.00.00
			-31.68	32:98_	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			32.80 - 32.90 D 50 (4,7/50 for 260mi 32.90 D
			-32.48	33.70	Green clayey SAND/ sandy CLAY. Sand is fine to medium glauconitic. With rare gravel.			32.90 - 34.40	84 n/a n/a		
				Ì							34.30 - 34.40 D
			-33.18	34.40	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		
			-34.68	(1.50)		2.00	07.00	35.40 - 35.90	n/a 0 n/a n/a		50 /7 0/F0 f
		x; ^; x; x; x; x; ==========================	-35.13	35.90	Dark greenish grey slightly silty fine to medium SAND. Dark greenish grey clayey fine to medium SAND.	2.00	27.00	35.90 - 36.30 S 35.90 - 36.90	100 n/a n/a		52 (7,9/52 for 250n 35.90 D 36.00 - 36.20 D
				(3.05)				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, 38.40 - 38.85 D
			-38.18	39.40	Cuit to the second of the seco			38.40 - 39.90	100 n/a n/a		39.00 - 39.10 D
		=	-38.48	(0.30) = 39.70	Stiff to very stiff greenish grey very sandy CLAY.						
			-30.40	(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		
		<u> </u>		(1.10)					n/a TCR		
Ir	nst					Water	Casing	Depth/Core Run	SCR RQD	lf	Results/remarks
			ntries: : Casin	g: Seal	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:		[lush details: Depth: 27.00 - 35.90 39.90 - 50.40		e: water water	Return: Colour: 100% blue 100% grey
0.0	abbrev All dep	riations se oths and re	anation of symeter Key Sheet. aduced levels: DRAFT		Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG		E	xploratory pos			once: OA Sheet 4



Type: From: To: Start date: End date: Crew: Plant: Barrel type: Drill bit: Logger: Logged: Remarks: mE mN mA n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	N: 180645.96 AOD: 1.22 id: OSGB
IP	N: 180645.96 AOD: 1.22 id: OSGB ng Results/remarks/ samples 40.50 - 40.60 D
CP 1.20 27.00 16-04-18 19-04-18 MJ Dando 2000 mk 3 n/a n/a 27.00 32.90 23-04-18 24-04-18 PS Comacchio 305 Geobore S PCD VSS 30-04-18 30-04-18 MJ Dando 2000 mk 3 n/a VSS 30-04-18 MJ Dando 2000 mk 3 n/a VSS 30-04-18 MJ Dando 2000 mk 3 n/a VSS 30-04-18 MJ Dando 2000 mk 3 n/a VSS 30-04-18 MJ Dando 2000 mk 3 n/a VSS 30-04-18 MJ Dando 2000 mk 3 n/a VSS 30-04-18 MJ Dando 2000 mk 3 n/a NJ Dando 2000 mk 3 Dan	AOD: 1.22 id: OSGB ng Results/remarks/ samples 40.50 - 40.60 D
WLS 32.90 39.90 50.71 24-04-18 25-04-18 PS Comacchio 305 Geobore S PCD VSS 30-04-18 30-04-18 Samples & In Situ Testing Water Casing Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run Tork Rod If Depth/Core Run In/a Not Depth/Core Run In/a N	Results/remarks/ samples 40.50 - 40.60 D
Samples & In Situ Testin Water Casing Depth/Core Run Roo If Dark greenish grey slightly gravelly clayey fine to medium SAND with Occasional sand sized shell fragments. Gravel is rounded fine to medium Dark greenish prown very silty fine to coarse SAND. Occasional micaceous grains.	Results/remarks/ samples 40.50 - 40.60 D
Stratum Description Water Casing Depth/Core Run TCR SCR If 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. Dark greenish grey slightly gravelly clayey fine to medium of black flint. Dark greenish prown very silty fine to coarse SAND. Occasional micaceous grains.	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. Dark greyish brown very silty fine to coarse SAND. Occasional micaceous grains.	40.50 - 40.60 D 0 (8,14/50 for 150mm)
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. Dark greyish brown very silty fine to coarse SAND. Occasional micaceous grains.	0 (8,14/50 for 150mm)
Jark greenish grey slightly gravely clayey fine to medium SAND with occasional sand sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments occasional and sized shell fragments. Gravel is rounded fine to medium occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragments occasional and sized shell fragme	
of black flint. Dark greyish brown very silty fine to coarse SAND. Occasional micaceous grains.	
micaceous grains.	
(THANET FORMATION)	41.40 41.00 B
41.40 - 42.90 n/a n/a	
	43.40 - 43.50 D
1 42.90 - 44.40 n/a	
	0 (9,15/50 for 170mm)
	44.40 - 44.85 D
	44.90 - 45.00 D
44.40 - 45.90 n/a	
(9.81)	
	46.40 - 46.50 D
100 ds.90 - 47.40 n/a	
	0 (9,11/50 for 175mm)
	47.40 - 47.85 D
	47.90 - 48.00 D
93 47.40 - 48.90 n/a	
n/a	
	49.40 - 49.50 D
48.90 - 50.40 93 48.90 - 50.40 n/a	
n/a	49.90 D
	0 (8,16/50 for 160mm)
Inst Water Casing Depth/Core Run SCR If ROD	50.40 - 50.85 D Results/remarks
Groundwater entries: Diameter & casing: Depth related remarks: Flush details:	
250 14.00 14.00	Return: Colour:
200 27.00 27.00 146 50.40 50.00	
Notes: For explanation of symbols and abbreviations see Key Sheet. AGS Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in meters.	
Log issue: DRAFT Project No: 3765)A
Scale: 1:50 Client: Hitachi Zosen Inova AG	Sheet 5 of 6



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oreho	ole 1	form	ation de	tails:												Location	on details
ype: IP CP RC VLS RC	0. 1. 27 32	om: .00 .20 7.00 2.90	To: 1.20 27.00 32.90 39.90 50.71	Start date 16-04-18 16-04-18 23-04-18 24-04-18 26-05-18	16-04-18 19-04-18 24-04-18 25-04-18	PS C	Plant: Hand tools ando 2000 mk 3 comacchio 305 comacchio 305 comacchio 305	Geobore S WLS	Drill bit: n/a n/a PCD n/a PCD	VSS VSS VSS	30-04-18 30-04-18 30-04-18	Remarks	: ID: RHM170300	6 Er(%	%) 82	mE: mN: mAOD: Grid:	549436.4 180645.9 1.22 OSGB
				Depth	1 2. 04.10	. 5 0		•					Samples			esting	
Water-	strik	Legend	Level	(thick- ness)			Stratum [Description			Wate	er Casing	Depth/Core Run	TCR SCR RQD	If	Re	sults/remarks samples
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1	İ	O. 1.5.	-49.49	50.71	В	orehole end	ds at 50.71 m (Te	ermination reason	: Target depth)								
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	nst	ator c	ntrios		Diameter °	cacina	. -	Jonth relate:	d romanica		Wate		Depth/Core Run	SCR RQD	If	Re	esults/remarks
			ntries: o: Casing	g: Sealed	Diameter &	Depth:	Casing:	Depth related From to					Depth:	Тур	oe:	Return	: Colour:
					250 200	14.00 27.00	14.00 27.00										
					146	50.40	50.00										
1	Notes:	For expl	anation of sym	bols and	Project:	Riversio	de EfW					E	Exploratory pos	sition	refere	ence:	
	All dep		e Key Sheet. educed levels a	are in meters.	Project No:											0A	\
ile:			1:50		Client:	Hitachi	Zosen Inova	AG					•			J	Sheet



			nation												Location details:
Туре		rom:	To:	Start d		Crew:		Barrel type:	Drill Bit:	Logged:	Logger	Remark	s:		mE: 549477.76
IP CP		0.00 1.20	1.20 34.10	27-03- 27-03-		KG KG	Hand tools Dando 2000 mk	n/a 2 n/a	n/a n/a	27-03-18 29-03-18	VSS VSS	Hamme	r ID: SI03 Er(%)	64	mN: 180565.97
													` ,		mAOD: 1.28
															Grid: OSGB
ءِ ∈ِ	٠	рį		Depth		•	•						Samples	& In Situ Te	estina
Backfill/ Instal'n	Water- strike	Legend	Level	(thick-			Stratum	Description				-	1		_
- B	- "	××××		ness)	ASPHALT.						Wa	ter Casing	Depth	Type & No	Results/Remarks
				(0.30)	(MADE GRO	UND)					1				
			0.98	0.30			gravelly fine to	coarse SAND	with mediu	m cobble			0.30 - 0.60	B1	
			0.68	(0.30) _	content. Grav	el of ar	ngular to subang	gular fine to co	oarse red a		-		0.50	ES	
			0.00	0.00	brick. Occas		ıbangular aspha	alt and concre	te cobbles		A		0.70 - 1.00	B2	
				_			. Occasional mo	ottling black bi	own of org	anic matter.			1.00	ES	
\cdot \vdash \cdot				(0.80)	Occasionally	slightly	sandy. Rare fin	e to medium	gravel of su	brounded t	o -		1.10	D3	
					rounded flint. (ALLUVIUM)						-				
l:H:1			-0.22	1.50 -	. ,	oft dark	greyish brown	neaty CLAY F	Frequent bl	ack plant	— Dı	y 1.20	1.50 - 1.95	S	SWP: 450 mm
					matter and re			pouty OLIVI. I	requent bi	ack plant	-		1.50 - 1.95	D4	N=0 (0,0/0,0,0,0)
					(ALLUVIUM)						1				
ŀH:,				_							7				
ľДil				(1.60)							1				
l:H:1		<u> </u>		-							1		2.50 - 2.95	UT5	6 (100%)
$ \cdot $		H									1				
											1		205 205	De	
:H:		3/4 3	-1.82	3.10					DE 4=				2.95 - 3.05 3.10 - 3.40	D6 B7	
ŀΠ·I		alla a			Very soft dark (ALLUVIUM)	greyis	h brown highly	decomposed	PEAT.		1				
: :		ماد م ماد		-							- Di	y 3.20	3.50 - 3.95	s	SWP: 450 mm
$ \cdot $		એહ ક										, 5.20	3.50 - 3.95	D8	N=0 (0,0/0,0,0,0)
□		د ماد ماد م									-				
ŀ.H.;															
$[\cdot \square \cdot]$		8 18 8 8 8 8 8									1				
		316 3 6 316									1				
$\cdot + :$		회사 최		(2.90)							7		4.50 - 4.95	UT9	7 (90%)
		د ماد ماد م									1				
[:H:l		to silto		_							4		4.95 - 5.05	D10	
[·[]·]		alka a ka alka									1				
		ماد م ماد									-				
\mathbb{H}^{1}	_	એહ ક		-							-				
	T	د ماد ماد م									-		5.73	W1	
[:H:		a sila	-4.72	6.00 -								y 6.00	6.00 - 6.45		SWP: 450 mm
[·∏·]			-4 .12	0.00 -			rish brown slight				Di	y 0.00	6.00 - 6.45 6.00 - 6.45	S D11	N=0 (0,0/0,0,0,0)
: :					Occasional m (ALLUVIUM)	iottiing	dark brown/blac	k plant matte	i. Kare root	S.	-				
ĿH:1		F +		-	, , , , , , , , , , , , , , , , ,						-]				
[∐											1				
[:H:											1				
$[\cdot \square \cdot]$				_							7				
: :											1				
ŀ:H:1				-							- Di	y 7.20	7.50 - 7.95	s	N=1 (1,0/0,0,1,0)
ŀ·∏·Ì											1	.	7.50 - 7.95	D12	(, , , , , , , , , , , , , , , , , , ,
[:.H:\											-				
$ \cdot +1$		-		-							-				
ľДil				(4.50)							-				
l:H:1															
$ \cdot $				-]				
:H:\											-				
. ∐•	SP	-		_							- Di	y 8.90	9.00 - 9.45	s	N=4 (1,0/0,1,1,2)
											1		9.00 - 9.45	D13	
											1				
		H.H		-							7				
											1				
	Ц	-									1			To 0.11	
Gran	Inst	ator o	ntries:		Diameter	& coc:	na:	Depth relate	d romarko:		Wa		Depth Chiselling deta	Type & No	Results
			c Casin	g: Seal				From:		narks:			From: to:		ation: Tool:
Jul	υι ι . Γ	.000 10	. Jasiii	₃ . Ocai	250	10	0.00 10.00	1 10111.	10. 1101				. 10111. 10.	Duit	uccon. 1001.
					200	21	1.40 21.40								
					150	33	3.45 34.10								
.			natiof	olo or d											
AGS	abbre All de	 For explantions seepths and re 	anation of symb e Key Sheet. educed levels a	re in metres.	Project:		erside EfW						Exploratory pos		
Log is	-		DRAFT		Project No									BH	11
Scale			1:50		Client:	Hita	chi Zosen Inova	AG							Sheet 1 of 4



Borel	hole	forr	nation	details	.											Location details:
Type: IP CP	Fr 0.	om: .00 .20	To: 1.20 34.10	Start di 27-03- 27-03-	ate: End date:	Crew: KG KG	Plant: Hand tools Dando 2000 mk 2	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 27-03-18 29-03-18	Log VS VS	SS	Remarks Hammer	: ID: SI03 Er(%) 6	64	mE: 549477.76 mN: 180565.97 mAOD: 1.28 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum [Description					1	Samples 8		
		-	-9.22	ness)	Occasional m (ALLUVIUM) Medium dens	e dark	rish brown slightl dark brown/black brownish grey go pangular to round MEMBER)	k plant matter	Rare root	S.	S	Dry	Casing	Depth 10.50 - 10.95 10.50 - 10.95	S B14	Results/Remarks N=18 (2,3/4,4,4,6)
			-10.72	(1.50) - 12.00 -	Medium dens rounded fine t (TAPLOW GF	o coars		[,] sandy GRA\	/EL of suba	angular to		3.20	12.00	12.00 - 12.45 12.00 - 12.45	C B15	N=20 (2,3/4,5,5,6)
											1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	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 dens rounded fine t (TAPLOW GF	o coars		andy GRAVE	L of suban	gular to		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}	ater e	ntries:		Diameter	& casi	ing:	Depth related	l remarks:			Water	Casing	Depth hiselling deta	Type & No	Results
Struck 10.6	c: R	Rose to 5.73	o: Casin 3 10.4	40		Depth: 10 21		From:		narks:				From: to:	Dura	ation: Tool:
AGS Log is: Scale:	abbrev All dep SUE:	viations se oths and re	anation of symble Key Sheet. educed levels a DRAFT 1:50	re in metres.	Project: Project No Client:	: 376	erside EfW 5 chi Zosen Inova	AG					E	xploratory pos	ition refere	



Type: IP CP	Fro 0.	om: .00 .20	To: 1.20 34.10	Start d 27-03-27-03-	ate: End date:	Crew: KG KG	Plant: Hand tools Dando 2000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 27-03-18 29-03-18	Logger: VSS VSS	Remark	s: r ID: SI03 Er(%)	64	Location details: mE: 549477.76 mN: 180565.97 mAOD: 1.28 Grid: OSGB
Backfill/ Instal'n	strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
Bac	str	, Lec		ness)				-			Wat	er Casing	Depth	Type & No	Results/Remarks
	4		-19.52	20.80	rounded fine t (TAPLOW GR) Medium dens	e beco	MEMBER ming very dense	e dark greyish			- 0.9	0 21.00	21.00 - 21.45 21.00 - 21.45	C B21	N=25 (4,5/5,6,7,7)
	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			- - -							- 0.1	0 22.50	22.50 - 22.95 22.50 - 22.95	C B22	N=21 (2,3/4,4,5,8)
				(5.50)							0.1	0 24.00	24.00 - 24.33 24.00 - 24.45	C B23	50 (6,9/50 for 180mm)
	4		-25.02	26.30	Stiff to very st Occasionally l	iff dark aminal	grey extremely ted. Frequent sh	closely to clo nells.	sely fissure	ed CLAY.			25.50 - 25.95 26.30	B24 D25	
	-			(2.10)									27.00 - 27.45 27.45 - 27.55	UT25	100 (80%)
			-27.12	28.40	1		10 m: Weak MUDSTO ish grey slightly ded medium to c			•		30 26.50	28.20 28.20 - 28.40 28.50 - 28.95 28.50 - 28.95	D27 B28 S D29	N=37 (2,3/5,7,12,13)
	Inst			(2.20) -							Wat	er Casing	g Depth	Type & No	Results
Groun		ater e	ntries:		Diameter	& casi	ng:	Depth related	d remarks:		,		Chiselling deta		
Struck	: R	Rose to	: Casin	g: Seal	ed: Dia (mm): 250 200 150	10 21	Casing: 0.00 10.00 1.40 21.40 3.45 34.10	From: 20.40	To: Ren 21.40 Ber	marks: ntonite seal			From: to:	Dura	ation: Tool:
AGS Log iss Scale:	All dep	viations se oths and re	enation of symile Key Sheet. Induced levels a DRAFT 1:50	re in metres.	Project: Project No Client:	: 376	erside EfW 5 chi Zosen Inova	AG					Exploratory pos	BH	



Boreh	مام	forn	nation	details	· · · · · · · · · · · · · · · · · · ·											Location details:
Type: IP CP	Fr. 0. 1.	rom: .00 .20	To: 1.20 34.10	Start d 27-03- 27-03-	ate: End date: -18 27-03-18	KG	Plant: Hand tools Dando 2000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 27-03-18 29-03-18	\	/SS	Remarks Hammer	: ID: SI03 Er(%)	64	mE: 549477.76 mN: 180565.97 mAOD: 1.28 Grid: OSGB
Backfill/ Instal'n Water-	trike	Legend	Level	Depth (thick-			Stratum	Description						Samples	& In Situ Te	esting
ਲ 드 >	, σ	ٽ + -		ness)	Very stiff dark	browni	ish grey slightly		gravely C	LAY. Grave	el of	Water	Casing	Depth 30.00 - 30.45	Type & No UT30	Results/Remarks 100 (80%)
	-	· · · · · · · · · · · · · · · · · · ·	-29.32	30.60	subrounded to fragments. Dense becom	o round	y dense blackis led fine to coars	coarse flint. Oo	ccasional s	hell	-	-		30.45 - 30.55 30.60	D31 D32	
		× × × × × × × × × × × × × × × × × × ×		- - - - -							-	0.50	31.50	31.50 - 31.95 31.50 - 31.95	C B34	N=44 (3,4/6,8,13,17)
				(3.50)							-	0.10	33.00	33.00 - 33.42 33.00 - 33.41	C B35	50 (4,7/50 for 265mm)
	:	×·×,	-32.82	34.10			Borehole ends a	at 34 10m (Refi	ıcal)		_					
				- - -				(,		-					
											-					
				- - - -							-					
				- - - -							-	-				
				- - -							-	-				
				-							-	-				
				- - - -							-	-				
				- - - -							-	-				
				-							-	-				
	nst											Water	Casing	Depth	Type & No	Results
			ntries: : Casin	g: Seal	Diameter	Depth: 10 21	Casing: 0.00 10.00 .40 21.40 3.45 34.10	Prom:		narks:				From: to: 33.80 34.	Dura	ation: Tool: 1:00 Californian
AGS Log iss	abbrev All dep	viations secoths and re	anation of symbol e Key Sheet. Induced levels a DRAFT 1:50	are in metres.	Project: Project No	o: 3765	rside EfW 5 chi Zosen Inova	a AG					E	exploratory pos	ition refere	



			nation	details Start d		0	Diametr	Damel to a	Dail Dia		1	D			Location details:
Type: IP CP	(rom: 0.00 1.20	To: 1.20 30.00	27-03 27-03	-18 27-03-18	Crew: MJ MJ	Plant: Hand tools Dando 3000 mk	Barrel type: n/a 2 n/a	Drill Bit: n/a n/a	Logged: 27-03-18 29-03-18	Logger: VSS VSS	Remarks	: ID: SI08 Er(%)	74	mE: 549429.90 mN: 180577.09 mAOD: 1.04 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
Bac	Wa	Fe	Level	ness)			Ottatum	Description			Wate	r Casing	Depth	Type & No	Results/Remarks
Н			0.84	0.20	ASPHALT. (MADE GRO								0.20 - 0.50	B1	
			0.54	(0.30) 0.50 -			wnish grey occa Y. Gravel of sub						0.40	ES	
					flint and angu	lar to s	subangular brick	. Rare pieces	of rubber n	natting.	A		0.60 - 1.00	B2	
Н				-			sionally mottled	light orangish	brown CLA	Y. Occasion	na <u>l</u>		1.00	ES	
				(1.50)	(ALLUVIUM)						-				
				-	- - -						Dry	1.00	1.50 - 1.95 1.50 - 1.95	S D1	SWP: 225 mm N=1 (0,0/0,1,0,0)
											-		1.50 - 1.95		14-1 (0,0/0,1,0,0)
		is siles	-0.96	2.00 -			n highly decomp						2.00 2.00	D2 W1	
		alka al ka alka			gravel sized p (ALLUVIUM)	ockets	s of dark grey cla	ay. Occasiona	I relic roots		1				
		alk a k alk alk a		-	-						-		2.50 - 2.95	UT1	
П	•	s als]				
		e alte alte a		-	-						-		3.00	D3	
П		e alte alte a		(2.00)	-							2.00	2.50 2.05		OM/D: 200
		e alte alte al e alte		(3.00)							- Dry	3.00	3.50 - 3.95 3.50 - 3.95	S D4	SWP: 300 mm N=1 (0,0/0,0,1,0)
Н		2016 2016 2016		_	1										
Н		sile si e sile									-				
		alka a ka alka									1		4.50 - 4.95	UT2	
Н		alka a ka alka									-		4.50 - 4.55	012	
Н		alk a k alk	-3.96	5.00 -									5.00	D5	
Н				(0.50)	gravel sized	ockets	c brown slightly s of light orangis	h brown fine t			1				
Н			-4.46	5.50 -	Abundant reli (ALLUVIUM)	c roots	, rootlets and pl	ant matter.			Dry	5.00	5.50 - 5.95	s	SWP: 450 mm
					Very soft light	t brown	ish grey CLAY. roots and plant	Occasional po	ockets of da	irk brown			5.50 - 5.95	D6	N=0 (0,0/0,0,0,0)
Н				-	(ALLUVIUM)						-				
Н				(1.25)]				
		<u> </u>		-							-				
Н			-5.71	6.75	Very soft very	/ closel	y fissured light b	prownish grey	slightly sar	ndy CLAY.	=				
				_			ted with plant m				-		7.00 - 7.45	UT3	
											1				
					-						-		7.50	D7	
					1						1				
				-							=				
				(3.25)	-						1	0.00	0.50.005		OMD: 005
				•							- Dry	8.00	8.50 - 8.95 8.50 - 8.95	S D8	SWP: 225 mm N=1 (0,0/0,1,0,0)
				_											
					-						‡				
				-							1				
					1						1				
	Inst		-8.96	10.00	-						Wate	r Casing	Depth	Type & No	Results
	ndw		ntries:		Diameter			Depth related			1	 	hiselling deta	ails:	1
Struc 10.		Rose to	c: Casing	-	led: Dia (mm): 250 200 150	2	Casing: 9.00 9.00 0.50 20.50 0.00 30.00	From:	To: Rer	narks:			From: to:	Dura	ation: Tool:
AGS	Note:	s: For expla	nnation of symb e Key Sheet. duced levels a	ools and	Project:		erside EfW	l				E	xploratory pos		
Log is			DRAFT		Project No Client:		5 ichi Zosen Inova							BH	12
Scale	:		1:50		Oller It.	ппа	LOSEII IIIOVA	170							Sheet 1 of 3



Boro	hole	o form	nation	details												Location details:
Type:	F	rom:	To:	Start d	ate: End date:	Crew:		Barrel type:	Drill Bit:	Logged:			Remarks	:		mE: 549429.90
IP CP	0	0.00 1.20	1.20 30.00	27-03- 27-03-		MJ MJ	Hand tools Dando 3000 mk 2	n/a	n/a n/a	27-03-18 29-03-18	V	'SS	Hammer	ID: SI08 Er(%)	74	mN: 180577.09 mAOD: 1.04 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description			-			Samples 8	& In Situ Te	
Ba	st. Ķ	ĽĚ		ness)					217			Water	Casing	Depth	Type & No	Results/Remarks
		× × × × × × × × × × × × × × × × × × ×		-	Medium dens GRAVEL. Gra (TAPLOW GF	ivel of s	yellowish grey g subangular to su MEMBER)	ravelly slightl ibrounded find	y silty very e to coarse	sandy flint.		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 -		subrou	yellowish grey s unded flint to coa MEMBER)			e SAND an	d -	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 dens SAND. Grave (TAPLOW GF	l of sub	yellowish grey g angular to subro MEMBER)	ravelly slightly	y silty fine to coarse flin	to coarse nt.						
		× × · · · · · · · · · · · · · · · · · ·		- - - - -								Dry	14.95	14.50 - 14.95 14.50 - 14.95	C B6	N=21 (2,2/4,5,6,6)
		X X X X X X X X X X X X X X X X X X X		-								Dry	16.45	16.00 - 16.45 16.00 - 16.45	C B7	N=23 (3,3/4,5,7,7)
		X X		(6.85)								Dry	17.95	17.50 - 17.95 17.50 - 17.95	C B8	N=17 (2,3/3,4,5,5)
		X X X X X X X X X X X X X X X X X X X		- - -								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
Grou		ater e	ntries:		Diameter		ng:	Depth related	d remarks:					hiselling deta		1
Struc			: Casin		ed: Dia (mm): 250 200 150	20	Casing: 0.00 9.00 0.50 20.50 0.00 30.00	From: 19.00	To: Ren 21.00 Ber	narks: ntonite seal				From: to:	Dura	ition: Tool:
AGS Log is Scale	abbre All de	eviations se epths and re	enation of symi e Key Sheet. duced levels a DRAFT 1:50	re in metres.	Project: Project No Client:	3765	rside EfW 5 chi Zosen Inova	AG					E	xploratory pos	BH	



Specific Total Section Secti	Bore	hole	e for	nation	details												Location	n details:
Company Comp	Type:	F	rom:	To:	Start d	ate: End date:								Remarks	:			549429.90
Back Back														Hammer	ID: SI08 Er(%)	74		180577.09
Second Content Seco															(,		mAOD:	1.04
Adolum dense dark yellowish grey greekly slightly saifty for locarses (ALC) (CARCO CARSON CAR	<u></u>																Grid:	OSGB
A Section dense dark yellowing tops gravely slightly salfy fine to coarse (Int. Coarse fine). 19.26 29.99 39 A Convey of submaples to subcrounded the to coarse fine). (1.20) 10.00 CSCRAVEL MELMERS). (1.20) 29.96 20.55 20.65 C C 20.55 20.65 C B 10 C Trunded fine to coarse fine). (2.50) 29.50 20.50 B 10 Dark yellowish grey slightly sandy slightly silly GRAVEL of subrounded to brounded fine to coarse fine). (4.50) 29.50 20.50 B 10 Dark yellowish grey slightly sandy slightly silly GRAVEL of subrounded to brounded fine to coarse fine). (4.50) 29.50 20.50 B 10 Dark yellowish grey slightly sandy slightly silly GRAVEL of subrounded to brounded fine to coarse fine). (4.50) 29.50 20.50 B 10 Dark yellowish grey slightly sandy slightly silly GRAVEL of subrounded to brounded fine to coarse fine). (4.50) 29.50 20.50 B 10 Dark yellowish grey slightly sandy slightly silly sandy slightly gravely slightl	ckfill/ stal'n	ater- rike	gend	Level				Stratum	Description						Samples 8	& In Situ Te	esting	
AND. Graved of submoduled fine to coarse flint. (120) 20 46 21:50 Dark yellowish grey sightly sandy slightly sendy GRAVEL of subrounded to rounded fine to coarse flint. (Unable to undertake SPTs due to material Tourided fine to coarse flint. (Unable to undertake SPTs due to material Tourided fine to coarse flint. (Unable to undertake SPTs due to material Tourided fine to coarse flint. (Unable to undertake SPTs due to material Tourided fine to coarse flint. (Unable to undertake SPTs due to material Tourided fine to coarse flint. (Unable to undertake SPTs due to material Tourided fine to coarse flint. (Unable to undertake SPTs due to material Tourided fine to coarse flint. (Unable to undertake SPTs due to material Tourided fine to coarse flint.) (4.50) 23.07 -29.07 ** Absolute flint f	B E	≥ g	e e		ness)	NA - di d				- ''t - 6'			Water	Casing	Depth	Type & No	Result	s/Remarks
Medium directors one black-sting grey slightly sainty GRAVEL of subrounded 1 to counsed fine to coarse finit. (1 20] 20.60 21.50 Dark yellowish grey slightly sainty slightly slight			××	40.00									1					
To rounded fine to coarse flint. 20				-19.26	20.30	(TAPLOW GF	RAVEL	MEMBER)	ightly sandy (PAVEL of	subrounda		Dry	20.95	20 50 - 20 95	C	N=30 (3	4/6 6 8 10)
23.50 - 23.50 B12 24.95 26.00 Sulff very closely fissured thinly to thickly laminated dark blackish grey motived light greyish brown CLAY. 25.00 - 25.40 B13 25.00									igitily salidy c	JI W LL OI	Subrouriuc		1 5.,	20.00			55 (5	,,0,0,10,
1.5 1.5					(1.20)								-					
1.5 1.5													-					
1.5 1.5				00.40	04.50								-					
22.00 - 22.40 B11			×·×,	-20.46	21.50 -]					
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Notes: For explanation of symbols and abbreviations see Key Sheet. Project: Riverside EfW Exploratory position reference:		Notes abbre All de	s: For explications se	anation of sym e Key Sheet. educed levels	bols and are in metres	1 -								E	xploratory pos			
Log issue: DRAFT Project No: 3765						-			40							BH	12	
ICIIENT: HITACHI ZOSEN INOVA AG	Scale	:		1:50		Client:	HITA	uii ∠osen inova	AG									Sheet 3 of 3



Bore	hole	forn	nation	details	»:											Location details:
Type: IP CP	Fr 0 1	rom: 0.00 0.20	To: 1.20 32.00	Start da 06-04- 06-04-	ate: End date: 18 06-04-18	Crew: DW DW	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 06-04-18 17-04-18	Logge VSS VSS		emarks:	ID: AR1926 Er(ʻ		mE: 549501.99 mN: 180611.01 mAOD: 1.45 Grid: OSGB
Backfill/ Instal'n	Water- strike	Legend	Level	Depth (thick-			Stratum	Description						•	& In Situ Te	
ш = <u> </u>	- "		1.40	ness)	ASPHALT.						Wa H	ater	Casing	Depth	Type & No	Results/Remarks
			1.35 1.25 0.85	0.10 0.20 (0.40) 0.60 (0.40)	MADE GROU Light grey slig line to coarse MADE GROU CONCRETE.	htly silty . Grave JND)	y SAND and G I is angular to s							0.50 0.60 0.70	PID PID ES	1.3 ppmv 5.9 ppmv
			0.45	1.00 -	Sand is fine to concrete. Cob	n and li coarse bles are	ight grey SAND e. Gravel is sub e angular to su	oangular fine to	coarse of		1			1.00 1.20	PID ES	0.6 ppmv
				(1.50)	to coarse. Gra wood, metal w (MADE GROU	oft dark avel is fi vire, pla JND)	grey to black vine to coarse coastic, glass and	oncrete. Occa ceramic tile. F	sional fragr lydrocarbo	nents of n odour.	e .)ry	1.50	1.50 - 1.95 1.50 - 1.95	S D	N=0 (1,0/0,0,0,0)
			-1.05	2.50 -	CLÁY. Occas (ALLUVIUM) Very soft to so Occasional ro becomes dark	ional ro oft dark otlets, r	blackish brown oots and wood on exposure to	nal black plan n mottled reddi ly material. Da	t material.	organic CLA				2.50 3.00 - 3.45	D UT	3 (100%)
				(1.50)	(ALLUVIUM)											
		alk a k alk alk a k alk alk a k alk alk a k alk alk alk alk	-2.55	4.00 -	Very soft dark (ALLUVIUM)	brown	amorphous PE	EAT. Occasion	al woody n	naterial.	- D)ry	4.50	4.50 - 4.95 4.50 - 4.95	S D	N=1 (0,0/0,0,1,0)
		alk a k alk alk a k alk alk a k alk alk a k alk alk a k alk alk a		(2.50)										6.00 - 6.45	UT	8 (100%)
		te alte alte a te alte alte a	-5.05	6.50			grey CLAY. Oons with plant m			ly material.						
	SP			(2.90)							- D)ry	7.50	7.50 - 7.95 7.50 - 7.95	S D	N=2 (1,1/0,1,0,1)
			-7.95	9.40	Madium dans	a dark (orangish brown	a grev sandy c	avev CPA)	VEL of				9.00 - 9.45	UT	12 (100%)
		× × × × × × × × × × × × × × × × × × ×		(1.10)		subrou	inded fine to co		ayey OrtA	VEE OI	-			9.80	D	
Grou	Inst Idwa	ater ei	ntries:		Diameter	& casir	ng:	Depth related	l remarks:		Wa	ater	Casing C	Depth hiselling deta	Type & No	Results
			: Casin		ed: Dia (mm): 250 200 150	Depth: 10 19 32	Casing: .00 10.00 .00 19.00 .00 32.00	From: 8.00	To: Ren 10.00 Ber	narks: ntonite seal				From: to:		ation: Tool:
AGS Log is	abbrer All dep	viations see oths and re	nation of symb e Key Sheet. duced levels a DRAFT 1:50	ools and re in metres.	Project: Project No Client:	: 3765	rside EfW s chi Zosen Inova	a AG					E	xploratory pos	BH	



		•••	0.0	L	9										onsuit
Boreh	ole	forn	nation	details	s:										Location details:
Type: IP CP	Fro 0.0 1.2	m: 00	To: 1.20 32.00	Start d 06-04- 06-04-	ate: End date:	Crew: DW DW	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 06-04-18 17-04-18	Logger: VSS VSS	Remark	s: r ID: AR1926 Er(%	%) 74	mE: 549501.99 mN: 180611.01 mAOD: 1.45 Grid: OSGB
Backfill/ Instal'n Water-	strike	Legend	Level	Depth (thick-			Stratum	Description					Samples	& In Situ Te	esting
Bac Inst	str	Leg	Level	ness)							Wate	er Casing	Depth	Type & No	Results/Remarks
	* a × * a × * * a · * * a · a ·		-9.05	10.50 -	subangular to (TAPLOW GF	Subrou RAVEL N e dark y	rellowish grey sparse flint.	parse flint.			Dry	10.50	10.50 - 10.95 10.50 - 10.95	C B	N=3 (1,0/1,0,1,1)
	二甲基二甲基二甲基二甲基二甲基二甲基二甲			(3.50)				_	12.80 - 14.00	0 m: Very sandy	Dry	/ 12.00	12.00 - 12.45 12.00 - 12.45	СВ	N=14 (2,3/4,3,4,3)
	\$. \$. \$. \$. \$. \$. \$. \$. \$. \$.		-12.55	14.00 -	Stiff laminated subrounded f	ne to m	rey slightly gra edium flint.	velly CLAY. (Gravel is sul	pangular to	Dry	13.50	13.50 - 13.95 13.50 - 13.95 14.00	C B	N=15 (3,4/3,4,4,4)
	4			-									15.00 - 15.45	UT	20 (100%)
	4			(4.70)									16.50 - 16.95	UT	34 (100%)
			-17.25	18.70	Dense dark b	lackish s	grey slightly sa arse black flin'	indy slightly cl	ayey GRAV	EL of	Dry	/ 18.00	18.00 - 18.45 18.70	С	N=35 (6,8/8,9,9,9)
	× · · × · · × · · ×	· × · · · · · · · · · · · · · · · · · ·		-	subrounded i	ne to cc	arse Diack IIIII	i.			- Dry	19.50	19.50 - 19.95 19.50 - 19.95	C B	N=34 (4,7/8,9,9,8)
Ground	nst dwa1	er o	ntries.		Diameter	& casir	na:	Depth relate	d remarke:		Wate		Depth Chiselling deta	Type & No	Results
			: Casin	g: Seal			Casing: 00 10.00 00 19.00	From: 18.00		narks:			From: to:		ation: Tool:
AGS 2 Log issu Scale:	abbrevia All depth	ations see	nation of symb Key Sheet. duced levels a DRAFT 1:50	re in metres.	Project: Project No Client:	3765	side EfW hi Zosen Inova	a AG				I	Exploratory pos	BH	



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Boreh	ole	forn	nation	details):											Location details:
Type: IP CP	Fro 0.	om: 00 20	To: 1.20 32.00	Start d 06-04- 06-04-	ate: End date:	Crew: DW DW	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 06-04-18 17-04-18	Logge VSS VSS		emarks ammer	: ID: AR1926 Er(%	%) 74	mE: 549501.99 mN: 180611.01 mAOD: 1.45 Grid: OSGB
Backfill/ Instal'n	strike	Legend	Level	Depth (thick-			Stratum	Description						Samples	& In Situ Te	esting
Bac	str	Leg	FCACI	ness)	Darrie	lacti i		·		/E1 - r	w	ater	Casing	Depth	Type & No	Results/Remarks
		× × × × × × × × × × × × × × × × × × ×		(4.80)	subrounded fi	ine to co	grey slightly sar oarse black flint			shell fragments	;. [Òry	21.00	21.00 - 21.45 21.00 - 21.45	C B	N=37 (5,8/8,10,9,10)
	***************************************	× × × × × × × × × × × × × × × × × × ×		-							+ - [Эry	22.50	22.50 - 22.95 22.50 - 22.95	C B	N=20 (4,5/5,5,6,4)
	2 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -	* * * * * * * * * * * * * * * * * * *	-22.05	23.50 -	Dense dark b subrounded t fragments.	lackish o round	grey gravelly sil ed fine to coars	Ity fine to coa e black flint.	rse SAND. Abundant s	Gravel is shell)ry	24.00	24.00 - 24.45 24.00 - 24.45	C B	N=37 (6,8/8,10,9,10)
	***************************************	X X X X X X X X X X X X X X X X X X X		(2.70)								Òry	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 st shell fragmen		nated dark grey	CLAY. Abund	dant shells	and sand s	-)ry	27.00	26.20 27.00 - 27.37 27.00 - 27.45	D S D	40 (6,7/40 for 220mm)
				(2.80)								Dry	28.50	28.50 - 28.86	S	50 (7,9/50 for 210mm)
			-27.55	29.00 -	Stiff to very st Rare lignite.	iff extre	mely closely fis	sured black n	nottled light	grey CLAY				28.50 - 28.95 29.00	D D	
	Inst		-28.55	30.00							-	ater	Casing	Depth	Type & No	Results
Groun		ter e	ntries:		Diameter	& casi	ng:	Depth related	d remarks:	<u> </u>	vv	atel		hiselling deta		Results
Struck	: R	ose to	: Casin	g: Seal	ed: Dia (mm): 250 200 150	10 19	Casing: .00 10.00 .00 19.00 .00 32.00	From:	To: Ren	narks:				From: to:	Dura	tion: Tool:
AGS Log iss Scale:	abbrevi All dept	iations see ths and re	nation of symb Key Sheet. duced levels a DRAFT 1:50	re in metres.	Project: Project No Client:	o: 3765	rside EfW 5 chi Zosen Inova	AG					E	xploratory pos	BH	



				detelle											1	
Type: IP CP	Fr 0	e forn rom: .00 .20	To: 1.20 32.00	Start da 06-04- 06-04-	ate: End date: 18 06-04-18	Crew: DW DW	Plant: Hand tools Dando 2000	Barrel type: n/a n/a	Drill Bit: n/a n/a	Logged: 06-04-18 17-04-18	Logger VSS VSS		s: · ID: AR1926 Er(⁹	%) 74	mE: mN: mAOD:	549501.99 180611.01 1.45
<u></u>		рı		Depth									Samples	& In Situ To	Grid: estina	OSGB
Backfill/ Instal'n	wate	Legend	Level	(thick- ness)			Stratum	Description			Wa	ter Casing		Type & No	_	ılts/Remarks
				-	Stiff to very st CLAY. Grave Occasional sh	l is subrou	unded to roun	greyish greer ded fine to co	n slightly sa parse of bla	andy gravelly ack flint.	, DI			S D		/50 for 255mm
	▼		-30.55	32.00 -		Вс	orehole ends a	t 32.00m (Ref	usal)				32.00	D		
				- - - - - - - -												
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				-]					
	Inst										Wa			Type & No		Results
	c R		ntries: Casin) 32.		Diameter ed: Dia (mm):		Casing: 0 10.00 0 19.00	Depth related From:		: marks:			Chiselling deta From: to:		ation: Tool:	
AGS Log iss	sue:		enation of symbol e Key Sheet. Induced levels a DRAFT 1:50		Project: Project No Client:		de EfW Zosen Inova	AG				E	Exploratory pos	sition refere		Sheet 4 of 4

• • •	•	'	LUg					acci	
ogge	nnel: d by: ed by		VSS DD	Equipment & methods: Method: Mechanically excavated Plant: JCB 3CX	Dimensions: Width: 0.70 Length: 2.50 Orientation:	mE: mN: mAOD:	ates & level: 549422.11 180759.13 2.95	Dates: Start: End: Logged:	25/04/2018 25/04/2018 25/04/2018
	Ι.			Shoring: n/a	Bearing =	Grid:	OSGB	malaa e la Citu T	notina
ackfill/ nstal'n	Water- strike	Legend	Level & Depth (Thickness)	Stratum Descri	ption		Depth	nples & In Situ T	Results
			2.80 0.15 - 2.65 0.30 - 2.45 0.50 -	ASPHALT. (MADE GROUND) Pinkish brown slightly silty sandy GRAVEL. Sand coarse subangular to subrounder of mixed lithold (MADE GROUND) Dark yellowish brown fine to coarse SAND. (MADE GROUND) Dark orangish brown fine to coarse SAND. (MADE GROUND)	d is fine to coarse. Grav ogies. (sub-base).	vel is fine to			
			(0.95)						
			1.50 1.45 - 1.45 1.50 -	ASPHALT.			1.45 1.45	ES ES1	
			1.30 1.65 -	(MADE GROUND) Dark orangish brown gravelly fine to coarse SAN	ND.Gravel is subangula	r to	1.65	ES	
			(0.90)	subrounded fine to coarse brick. (MADE GROUND) Soft to firm dark grey gravelly CLAY. Gravel is a brick, concrete and flint. Abundant pockets of bl (MADE GROUND)	ngular to subrounded fi ack organic CLAY.	ine to coarse	1.65 1.70 1.70	ES2 B4 D3	
			0.40 2.55 -	Dark whitish grey becoming mottled light orangis Gravel is subangular to subrounded fine to coars (MADE GROUND)	sh brown sandy clayey se brick, chalk and cond	GRAVEL. crete.	2.55 2.55 2.56 2.56	ES ES7 B6 D5	
S			-0.05 3.00	Soft to firm dark grey with occasionally mottled b (ALLUVIUM)	plack CLAY		3.00 3.00	B9 D8	
			-0.25 3.20 -	Trial pit ends at 3.20m (1	Target depth)		Depth	Type & No	Results
ound	 dwate	r entrie	s:	Depth related remarks:			Depth General remar	Type & No	Results
epth:		se to:	Remarks:	From to: Remarks:			Weather: Stability: Remarks:	Bright, dry Good	
	abbreviat	tions see Key	of symbols and Sheet.	Project: Riverside EfW			Exploratory po	sition reference:	
GS g iss	All depth	s and reduced	levels are in metres. AFT	Project No: 3765				TP01	
ale:		1:2		Client: Hitachi Zosen Inova AG					Sheet 1

	aı	FI	Log				1611	aCUII	Suit
Persor	nnel:			Equipment & methods:	Dimensions:	Coordin	ates & level:	Dates:	
ogged	-		VSS	Method: Mechanically excavated	Width: 0.70	mE:	549501.85	Start:	26/04/2018
hecke	ed 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		
ickfill/ stal'n	Water- strike	Legend	Level & Depth (Thickness)	Stratum Descript	tion			ples & In Situ Te	esting
	> "		(11110111000)	Light orangish brown gravelly slightly clayey fine t	to coarse SAND. Gravel is	i	Depth	Type & No	Results
			- 1.81 0.15 -	subangular to subrounded fine to coarse flint, bris					
			-	and rootlets. (MADE GROUND)		/			
			(0.45)	Dark orangish brown gravelly fine to coarse SANI fine to coarse brick and concrete. Occasional pla					
			-	pipe and plastic strapping. One concrete angular		IIElai	0.50	PID	0.5 ppm\
			1.36 0.60 -	(MADE GROUND)			0.50	ES	0.5 ppin
			-	Dark grey gravelly ashy slightly silty fine to coarse subangular fine to coarse of flint, brick and concre			0.50	ES1	
			- -	of sandy CLAY. Rare terracoatta tile, glass and si	late.	5 p 5 6 16 16	0.80	ES	
			(0.60)	(MADE GROUND) 0.80 m: Re	are white and pinkish white sand siz	e crystals	0.80 0.90	ES2 PID	0.6 ppm
					th white coating that reacts on expos		0.90	ES	0.0 pp
			-		<u> </u>		0.90	ES3	
	¥		0.76 1.20 -	Soft to firm extremely closely fissured dark grey n	nottled black slightly sandy	CLAY.			
			-	Occasional fossil rootlets.	0 , ,		1.30 1.30	PID B6	0.5 ppm
			-	(ALLUVIUM)			1.30	D5	
			(0.60) –	-			1.30 1.30	ES ES4	
			- -						
W			0.16 1.80 -						
		<u> </u>	0.10 1.00	Very soft to soft dark grey mottled light orangish b (ALLUVIUM)	prown CLAY.				
		<u> </u>	_	(ALLOVIOM)					
		<u> </u>	-	- -					
		<u> </u>	-						
			_						
		F_=_	(1.20)						
		F_=_	_						
			-	-					
		<u> </u>	- -	2.70 - 3.00	m: Occasional pockets of peat/orga	nic matter			
	_	=	-						
			-1.04 3.00—	Trial nit and at 2 00m /Tr	avent double)		3.00	PID	0.2 ppm
			-	Trial pit ends at 3.00m (Ta	arget deptn)		3.00 3.00	B8 D7	
			- -						
			_						
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OLUB C	hwata	r entric	e.	Denth related remarks:			Depth General remark	Type & No	Results
ounce pth:		er entrie se to:	s: Remarks:	Depth related remarks: From to: Remarks:			General remark Weather:	s: Bright, dry	
20	1	1.20	- =:::=!				Stability:	Good	
00	2	2.90					Remarks:	J-0-0-0	
							-		
	No.	los e == 1	of our trans						
0.0	abbreviat	tions see Key	n of symbols and Sheet. I levels are in metres.	Project: Riverside EfW Project No: 3765			Exploratory pos		
g iss	ue:		AFT	Client: Hitachi Zosen Inova AG				TP02	
ale:		1:2	5						Sheet 1

ersonnel:		Vec	Equipment & methods:	Dimensions:		ates & level:	Dates:	20/04/2040
ogged by: hecked by		VSS DD	Method: Mechanically excavated Plant: JCB 3CX	Width: 0.70 Length: 2.10 Orientation:	mE: mN: mAOD:	549550.30 180668.77 1.71	Start: End: Logged:	26/04/2018 26/04/2018 26/04/2018
Τ.			Shoring: n/a	Bearing =	Grid:	OSGB	anlas 8 la Cita T	
Water- strike	Legend	Level & Depth (Thickness)	Stratum De:	scription		Depth	Type & No	Results
		(0.80)	Dark brown gravelly slightly clayey fine to co subrounded fine to coarse of flint, brick and o (MADE GROUND)	arse SAND. Gravel is subanç concrete. Rare plastic.	gular to	·		
		0.91 0.80 -	Black ashy gravelly fine to coarse SAND. Goorse flint. Rare gravel of slag and asphalt. Rotten egg odour.	ravel is subangular to subrour Rare cables and rubber duc	nded fine to	0.80 0.80 0.80	PID ES ES1	0.2 ppmv
_		0.61 1.10 -	(MADE ĞROUND) Soft dark grey mottled black CLAY. Occasiol (ALLUVIUM)	nal rootlets.				
▼		(0.50) -				1.50 1.50	PID B4	0.3 ppm\
		0.11 1.60 - - - - - - - -	Very soft to soft dark grey mottled orangish be pockets of peat. (ALLUVIUM)	rown CLAY. Occasional cobb	ole size	1.50 1.50 1.50	D3 ES ES2	
		(0.90) - - - - -						
		-0.79 2.50	Trial pit ends at 2.50	2.40 - 2.50 m: Occasional wo	ody material	2.50 2.50	B6 D5	
	ose to:	S: Remarks:	Depth related remarks: From to: Remarks:			Depth General remark Weather:		Results
05 50 Notes: 1	1.05 1.50	ı of symbols and	From to: Remarks: Project: Riverside EfW			Stability: Remarks:	Bright, dry Good sition reference:	
abbrevia	ations see Key hs and reduced	Sheet. Hevels are in metres.	Project No: 3765			Exploratory pos	TP04	
g issue. ale:	1:2		Client: Hitachi Zosen Inova AG				54	Sheet 1

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Person ogged Checke	l by:	:	VSS DD	Equipment & methods: Method: Mechanically excavated Plant: JCB 3CX	Dimensions: Width: 0.70 Length: 2.60 Orientation:	Coordin mE: mN: mAOD:	549453.45 180680.63 1.74	Dates: Start: End:	25/04/2018 25/04/2018 25/04/2018
				Shoring: n/a	Bearing =	Grid:	OSGB	Loggea.	20/04/2010
ackfill/	Water- strike	Legend	Level & Depth	Stratum Descrip	ition	'	San	nples & In Situ T	esting
nstal'n	st W	******	(Thickness)	Dark yellowish brown gravelly slightly clayey fine		-	Depth	Type & No	Results
			1.59 0.15 - (0.35) - 1.24 0.50 -	subangular to subrounded fine to coarse of flint, land rootlets. (MADE GROUND) Dark brown gravelly slightly clayey fine to coarse rounded of flint and brick. Occasional cobbles ar plastic. (MADE GROUND) Dark brown gravelly slightly clayey fine to coarse	SAND. Gravel is subanged boulders of concrete. Re	ant roots ular to are	0.60	PID	0.1 ppmv
		××× ××× ××× ××× ×××	1.04 0.70 - 0.84 0.90 -	subangular flint, brick and concrete. Rare gravel (MADE GROUND) Light greyish white clayey SILT. Occasional parti brown silt. (ALLUVIUM) Soft light brownish grey mottled black CLAY. Occ fissured. Occasional rootlets.	of asphalt, tile and slag.	angish	0.60 0.60	ES ES1	
			(0.70) - - - - - 0.14 1.60 -	(ALLUVIUM) Soft to firm light grey mottled light orangish browi	n CLAY.		1.30 1.30 1.30 1.30 1.30 1.60	PID B4 D3 ES ES2 B6	0.3 ppmv
	Y		(1.15)	(ALLUVIUM)	. 517 111		1.60	D5	
		alk alk k alk a alk alk k alk a	-1.01 2.75 - -1.26 3.00	Dark brown pseudofibrous PEAT. Occasional roo (ALLUVIUM) Trial pit ends at 3.00m (T			2.80 2.80	B8 D7	
							Depth	Type & No	Results
ound epth: 65 75	Ros 2	er entrie: se to: 50 65	s: Remarks:	Depth related remarks: From to: Remarks:			General remarl Weather: Stability: Remarks:	ks: Bright, dry Good	
	abbreviat All depths	ions see Key s and reduced	levels are in metres. AFT	Project: Riverside EfW Project No: 3765 Client: Hitachi Zosen Inova AG			Exploratory pos	TP05	Sheet 1

erson ogged hecke	by:		VSS DD	Equipment & methods: Method: Mechanically excavated Plant: JCB 3CX	Dimensions: Width: 0.70 Length: 2.50 Orientation:	mE: mN: mAOD:	549386.70 180615.57 1.50	Dates: Start: End: Logged:	25/04/2018 25/04/2018 25/04/2018
ackfill/	- e e		Level & Depth	Shoring: n/a	Bearing =	Grid:	OSGB Sam	nples & In Situ Te	esting
ackfill/ nstal'n	Water- strike	Legend	(Thickness)	Stratum Descrip	otion		Depth	Type & No	Results
			1.35 0.15	ASPHALT. (MADE GROUND) Dark orangish brown gravelly slightly clayey fine subangular to subrounded fine to coarse flint and angular to subangular brick and concrete. (MADE GROUND) Very soft to soft grey mottled black CLAY.	to coarse SAND. Gravel i d brick. Occasional cobble	s s of	0.30 0.30	ES ES1	
	-	 	- - - -	(ALLUVIUM)			0.70	ES	
	-	 	(1.20)				0.70 0.90 0.90	ES2 B4 D3	
	Y		0.00 1.50	Soft to firm grey mottled dark orangish brown CL (ALLUVIUM)	AY.				
	▼		(1.20)				1.90 1.90	B6 D5	
	Y		-1.20 2.70 -	Soft grey CLAY. Occasional cobble size pockets (ALLUVIUM)	of peat. Occasional plant	material.	2.90	B8	
			(1.15)				2.90	D7	
	-		-2.35 3.85 <u>-</u>	Trial pit ends at 3.85m (T	arget depth)				
			- - - - - - - - - - - - - - - - - - -						
-							Depth	Type & No	Results
rounds epth: 10 10 70	Ros 1. 2.	r entries se to: 10 10 60	s: Remarks:	Depth related remarks: From to: Remarks:			General remark Weather: Stability: Remarks:		Nesuits
a	bbreviati	nns see Key !	of symbols and Sheet. levels are in metres.	Project: Riverside EfW Project No: 3765				sition reference:	
g issu ale:	ıe:	DR. 1:2	AFT 5	Client: Hitachi Zosen Inova AG				TP06	Sheet 1

APPENDIX B Photographs

Core BH02A, BH05, BH10A

July 2018 Report No 3765R001-2



3765 BH02A core photo - box (1)



3765 BH02A core photo - box (2)



Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 1 of 13



3765 BH02A core photo - box (3)



3765 BH02A core photo - box (4)



Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 2 of 13



3765 BH02A core photo - box (5)



3765 BH02A core photo - box (6)



Project No: 3765

Client: Hitachi Zosen Inova AG

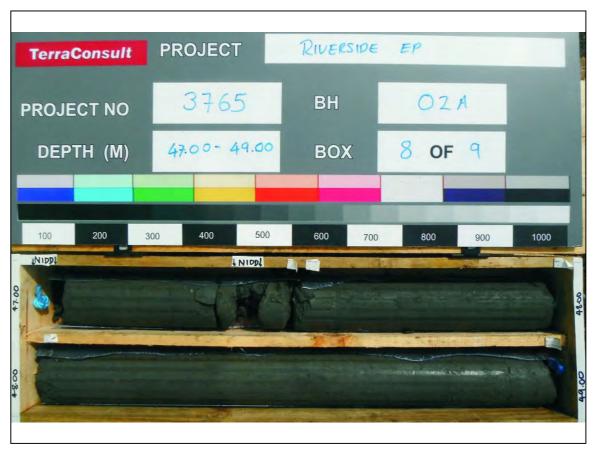
Reference:

Core Photographs

Sheet 3 of 13



3765 BH02A core photo - box (7)



3765 BH02A core photo - box (8)



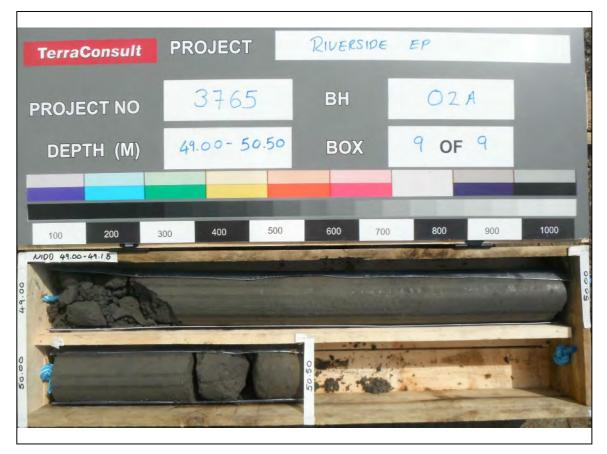
Project No: 3765

Client: Hitachi Zosen Inova AG

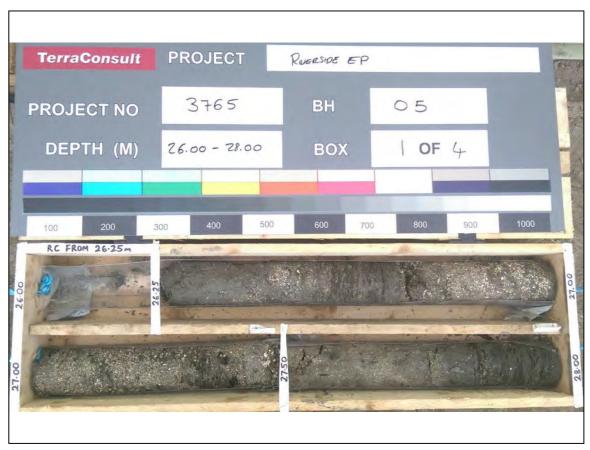
Reference:

Core Photographs

Sheet 4 of 13



3765 BH02A core photo - box (9)



3765 BH05 core photo - box (1)



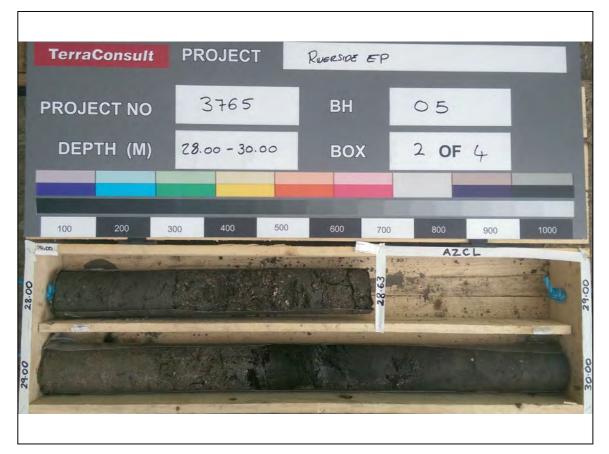
Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 5 of 13



3765 BH05 core photo - box (2)



3765 BH05 core photo - box (3)



Project No: 3765

Client: Hitachi Zosen Inova AG

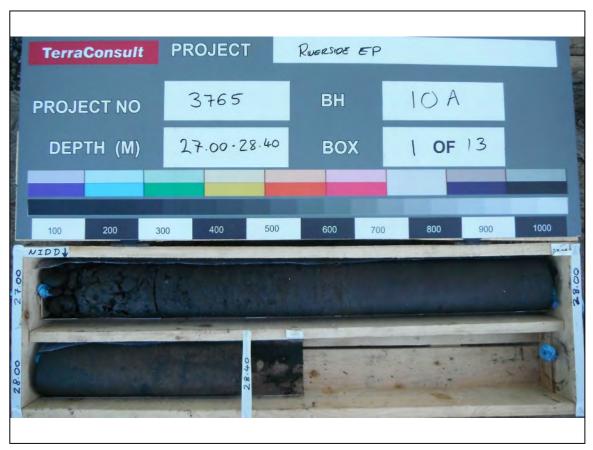
Reference:

Core Photographs

Sheet 6 of 13



3765 BH05 core photo - box (4)



3765 BH10A core photo - box (1)



Project No: 3765

Client: Hitachi Zosen Inova AG

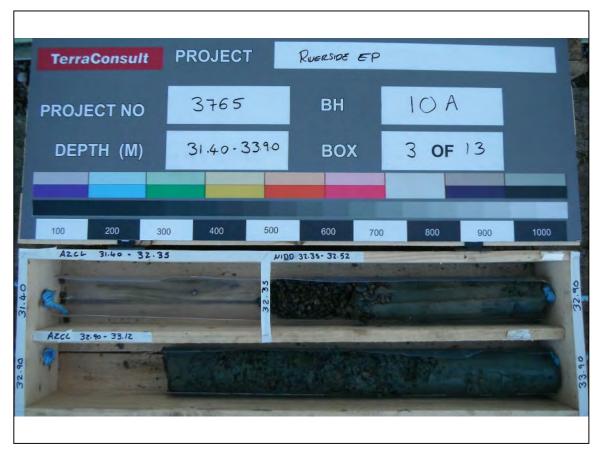
Reference:

Core Photographs

Sheet 7 of 13



3765 BH10A core photo - box (2)



3765 BH10A core photo - box (3)



Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 8 of 13



3765 BH10A core photo - box (4)



3765 BH10A core photo - box (5)



Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 9 of 13



3765 BH10A core photo - box (6)



3765 BH10A core photo - box (7)



Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 10 of 13



3765 BH10A core photo - box (8)



3765 BH10A core photo - box (9)



Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 11 of 13



3765 BH10A core photo - box (10)



3765 BH10A core photo - box (11)



Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 12 of 13



3765 BH10A core photo - box (12)



3765 BH10A core photo - box (13)



Project No: 3765

Client: Hitachi Zosen Inova AG

Reference:

Core Photographs

Sheet 13 of 13

APPENDIX C In Situ Testing Results

Variable head permeability test BH02, BH10

PID BH01 – BH06, BH08 – BH13, BH02A,

BH10A, TP01, TP02, TP04 - TP06

July 2018 Report No 3765R001-2

TerraConsult

Date:
Test no:
Carried out by:
Ground level:
(m OD)

04/04/2018
1
KG
32.70

Static water level (m)
Internal diameter (D) (m)
Length of standpipe below ground level (m)
Height of water above ground level (m)
Length of standpipe above ground level (m)
Water level at start of test (m)

ndpipe below ground level (m)	n/a
water above ground level (m)	n/a
ndpipe 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

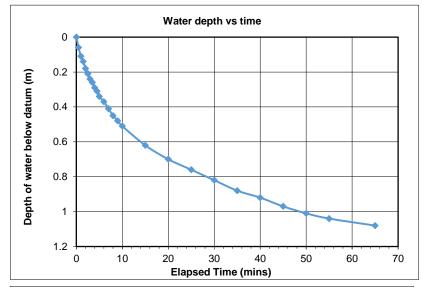
0.25

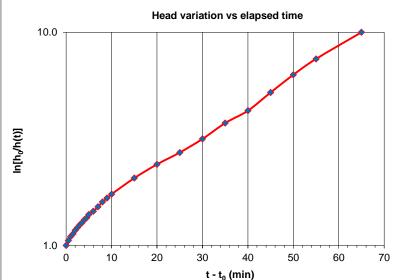
		_
Time (t ₀)	0	mins
Time (t)	60	mins
Head of water]
Initial head (h ₀) at (t ₀)	1.20	m
Final head (h(t)) at (t)	0.12	m
Length of response zone (L)	0.50	m
Cross sectional area (S)	0.05	m ²

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 <		147	
time (mins)	Elapsed	Water	Head of
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			
0.5 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	time (mins)		
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	0	0.00	1.20
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	0.5	0.06	1.14
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	0.11	1.09
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 <	1.5	0.14	1.06
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 <td< td=""><td>2</td><td>0.18</td><td>1.02</td></td<>	2	0.18	1.02
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 <td< td=""><td>2.5</td><td>0.21</td><td>0.99</td></td<>	2.5	0.21	0.99
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	3	0.24	0.96
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	3.5	0.26	0.94
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 0 0.00 1.2	4	0.29	0.91
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 0 0.00 1.20 0 0.00 1.2	4.5	0.31	0.89
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 0 0.00 1.20 0 0.00 1.20 0 0.00 1.2	5	0.34	0.86
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 0 0.00 1.20 0 0.00 1.20 0 0.00 1.20 0 0.00 1.2	6	0.37	0.83
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 0 0.00 1.20 0 0.00 1.20	7	0.41	0.79
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 0 0.00 1.20 0 0.00 1.20	8	0.45	0.75
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 0 0.00 1.20 0 0.00 1.20	9	0.48	0.72
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 0 0.00 1.20	10	0.51	0.69
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 0 0.00 1.20	15	0.62	0.58
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 0 0.00 1.20	20	0.70	0.50
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 0 0.00 1.20	25	0.76	0.44
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 0 0.00 1.20	30	0.82	0.38
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 0 0.00 1.20	35	0.88	0.32
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 0 0.00 1.20	40	0.92	0.28
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 0 0.00 1.20	45	0.97	0.23
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 0 0.00 1.20	50	1.01	0.19
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	55	1.04	0.16
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	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 0 0.00 1.20 0 0.00 1.20 0 0.00 1.20	0	0.00	1.20
0 0.00 0 0.00 1.20 0 0.00 1.20	0	0.00	
0 0.00 1.20 0 0.00 1.20	0	0.00	
0 0.00 1.20 0 0.00 1.20	0	0.00	1.20
	0	0.00	
0 0.00 1.20	0	0.00	1.20
	0	0.00	1.20





I /D =

Shape Factor (F) calculated according to ISO 22282-1:2012 Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2 \pi L}{ln \left\{ \left(\frac{L}{D} \right) + \sqrt{\left(\left(\frac{L}{D} \right)^2 + 1 \right)} \right\}}$$
3.14

= 2.27

$$k = \frac{S \ln \left(h_0/h(t)\right)}{F(t - t_0)}$$

k = 8.47E-04 m/s

Calculated by: DD
Checked by: JT
Issue: DRAFT

Project:

Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TerraConsult

Date: 04
Test no: Carried out by: Ground level: (m OD)

04/04/2018
2
KG
32.70

Static water level (m)
Internal diameter (D) (m)
Length of standpipe below ground level (m)
Height of water above ground level (m)
Length of standpipe above ground level (m)
Water level at start of test (m)

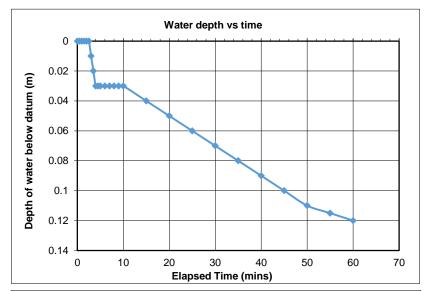
internal diameter (D) (III)	0.23
ndpipe below ground level (m)	n/a
f water above ground level (m)	n/a
ndpipe above ground level (m)	n/a
Water level at start of test (m)	0.00
Top of response zone (m)	2.00
Bottom of response zone (m)	2.50

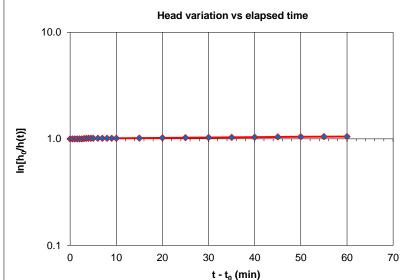
		_
Time (t ₀)	0	mins
Time (t)	60	mins
Head of water		Ĭ
Initial head (h ₀) at (t ₀)	2.50	m
Final head (h(t)) at (t)	2.38	m
Length of response zone (L)	0.50	m
Cross sectional area (S)	0.05	m ²

Strata description

Slightly gravely CLAY

description:	0 , 0 ,	
Elapsed	Water	Head of
time (mins)	below	water
tille (IIIIIs)	datum	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





/D =

0

0

Shape Factor (F) calculated according to ISO 22282-1:2012

2.50

2.50

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2 \pi L}{\ln \left\{ (L/D) + \sqrt{\left((L/D)^2 + 1 \right)} \right\}}$$

$$= \frac{3.14}{1.39}$$

2.27

0.00

0.00

$$k = \frac{S \ln \left(\frac{h_0}{h(t)} \right)}{F(t - t_0)}$$

k = 1.81E-05 m/s

Calculated by: DD
Checked by: JT
Issue: DRAFT

Project: Riverside EfW
Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TerraConsult

Date: Test no: Carried out by: Ground level: (m OD)

04/04/2018
3
KG
32.70

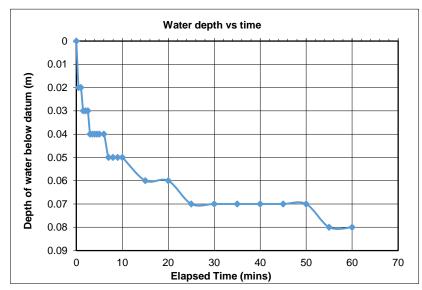
Static water level (m) Internal diameter (D) (m) Length of standpipe below ground level (r Height of water above ground level (r Length of standpipe above ground level (r Water level at start of test (r

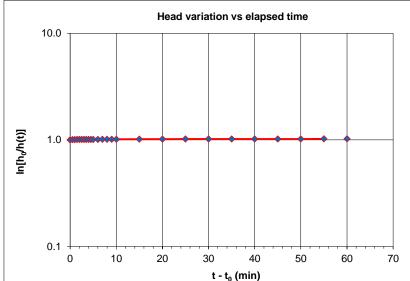
internal diameter (D) (iii)	0.23
ndpipe below ground level (m)	n/a
f water above ground level (m)	n/a
ndpipe above ground level (m)	n/a
Water level at start of test (m)	0.00
Top of response zone (m)	3.50
Bottom of response zone (m)	4.00

		_
Γime (t ₀)	0	mins
Γime (t)	60	mins
Head of water		Ī
nitial head (h ₀) at (t ₀)	4.00	m
inal head (h(t)) at (t)	3.92	m
ength of response zone (L)	0.50	m
Cross sectional area (S)	0.05	m ²

Slightly gravely CLAY

description:		
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





Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2 \pi L}{ln \left\{ \left(\frac{L}{D} \right) + \sqrt{\left(\left(\frac{L}{D} \right)^2 + 1 \right)} \right\}}$$
3.14

DRAFT

2.27

$$k = \frac{S \ln \left(h_0 / h(t) \right)}{F(t - t_0)}$$

k = 7.43E-06 m/s

DD Calculated by: JT Checked by:

Issue:

Project: Project No:

Riverside EfW

3765

Client: Hitachi Zosen Inova AG Exploratory position reference:

TerraConsult

Date: Test no: Carried out by: Ground level: (m OD)

04/04/2018
4
KG
32.70

Static water level (m) Internal diameter (D) (m) Length of standpipe below ground level (m) Height of water above ground level (m) Length of standpipe above ground level (m) Water level at start of test (m)

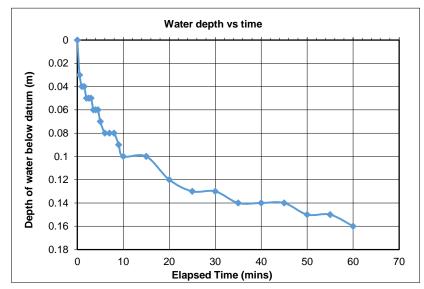
Top of response zone (m) Bottom of response zone (m)

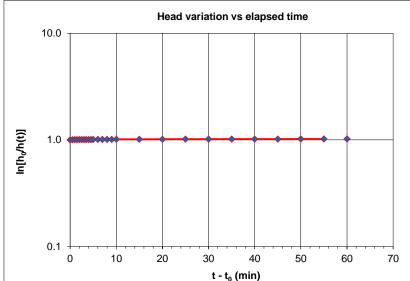
0.25
n/a
n/a
n/a
0.00
8.50
9.00

		_
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 CLAY

description:	OLAT	
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





Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2 \pi L}{\ln \left\{ \left(\frac{L}{D} \right) + \sqrt{\left(\left(\frac{L}{D} \right)^2 + 1 \right)} \right\}}$$
3.14

2.27

$$k = \frac{S \ln \left(\frac{h_0}{h(t)} \right)}{F(t - t_0)}$$

k = 6.60E-06 m/s

DD Calculated by: JT Checked by: DRAFT

Issue:

Project: Riverside EfW Project No: 3765

Client: Hitachi Zosen Inova AG Exploratory position reference:

TerraConsult

Date: Test no: Carried out by: Ground level: (m OD)

04/04/2018
5
KG
32.70

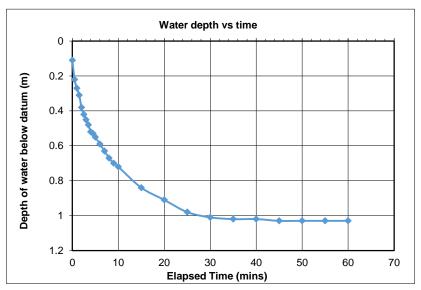
Static water level (m) Internal diameter (D) (m) Length of standpipe below ground lev Height of water above ground lev Length of standpipe above ground lev Water level at start of te

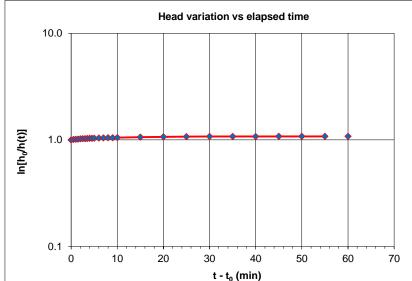
Internal diameter (D) (m)	0.20
ndpipe below ground level (m)	n/a
water above ground level (m)	n/a
ndpipe above ground level (m)	n/a
Water level at start of test (m)	0.11
Top of response zone (m)	12.50
Bottom of response zone (m)	13.00

		_
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	m²

Gravelly silty fine to coarse SAND.

description:	Gravelly Silty IIII	e to coarse san
Elapsed	Water below	Head of
time (mins)	datum	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





2.5

Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2 \pi L}{ln \left\{ \left(\frac{L}{D} \right) + \sqrt{\left(\left(\frac{L}{D} \right)^2 + 1 \right)} \right\}}$$

DRAFT

1.95

$$k = \frac{S \ln \left(h_0 / h(t) \right)}{F(t - t_0)}$$

k = 1.99E-05 m/s

DD Calculated by: JT Checked by:

Issue:

Project: Project No: Riverside EfW

3765

Client: Hitachi Zosen Inova AG Exploratory position reference:

TerraConsult

Date:
Test no:
Carried out by:
Ground level:
(m OD)

07/04/2018
1
MF
33.41

Static water level (m)
Internal diameter (D) (m)
Length of standpipe below ground level (m)
Height of water above ground level (m)
Length of standpipe above ground level (m)
Water level at start of test (m)

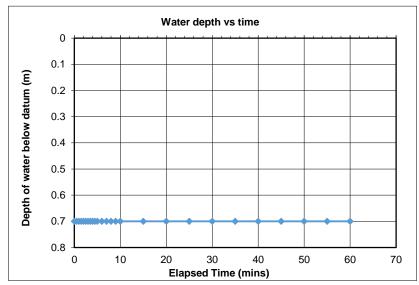
Top of response zone (m) Bottom of response zone (m)

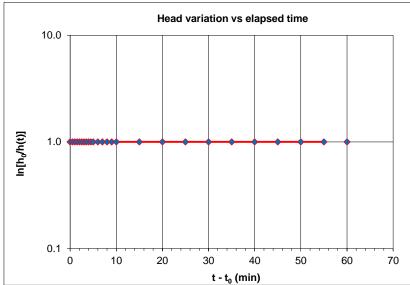
	-
0.25	
n/a	
n/a	
n/a	
0.70	
1.00	
1.20	

		_
Time (t ₀)	0	mins
Time (t)	60	mins
Head of water		I
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

description:	02/11	
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

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2\pi L}{\ln\left\{ (L/D) + \sqrt{((L/D)^2 + 1)} \right\}}$$

$$= \frac{1.26}{0.47}$$

$$= 2.67$$

$$k = \frac{S \ln \left(\frac{h_0}{h(t)} \right)}{F(t - t_0)}$$

k = N/A m/s

UNABLE TO CALCULATE

Calculated by: DD
Checked by: JT
Issue: DRAFT

Project: Project No: Riverside EfW 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TerraConsult

Date:
Test no:
Carried out by:
Ground level:
(m OD)

07/04/2018
2
MF
33.41

Static water level (m)
Internal diameter (D) (m)
Length of standpipe below ground level (m)
Height of water above ground level (m)
Length of standpipe above ground level (m)
Water level at start of test (m)

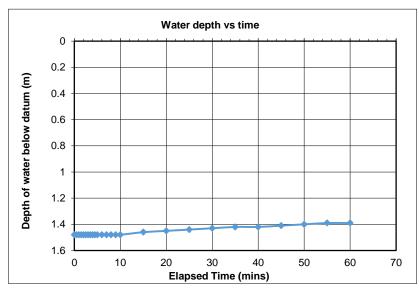
ndpipe below ground level (m)	n/a
water above ground level (m)	n/a
ndpipe above ground level (m)	n/a
Water level at start of test (m)	1.48
Top of response zone (m)	2.00
Bottom of response zone (m)	2.50

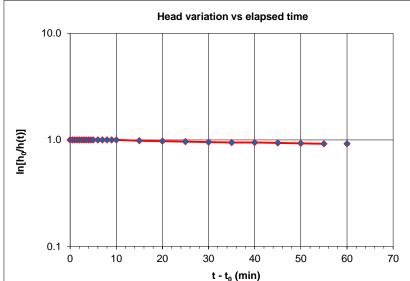
0.25

	-
0	mins
60	mins
	Ĭ
1.02	m
1.11	m
0.50	m
0.05	m²
	1.02 1.11 0.50

Strata
description:

description:	CLAT	
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
		I





I/D = 2

Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \frac{2 \pi L}{\ln \left\{ (L/D) + \sqrt{\left((L/D)^2 + 1 \right)} \right\}}$$

$$= \frac{3.14}{1.39}$$

2.27

$$k = \frac{S \ln \left(\frac{h_0}{h(t)} \right)}{F(t - t_0)}$$

k = N/A m/s

UNABLE TO CALCULATE

Calculated by: DD
Checked by: JT
Issue: DRAFT

Project: Riverside EfW Project No: 3765

Client: Hitachi Zosen Inova AG

Exploratory position reference:

TerraConsult

Date:
Test no:
Carried out by:
Ground level:
(m OD)

07/04/2018
3
MF
33.41

Static water level (m)
Internal diameter (D) (m)
Length of standpipe below ground level (m)
Height of water above ground level (m)
Length of standpipe above ground level (m)
Water level at start of test (m)

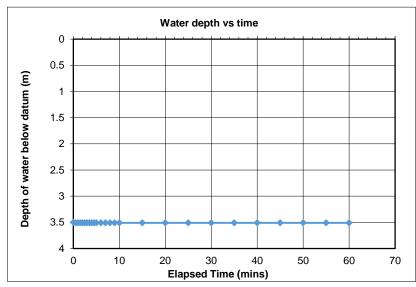
Top of response zone (m) Bottom of response zone (m)

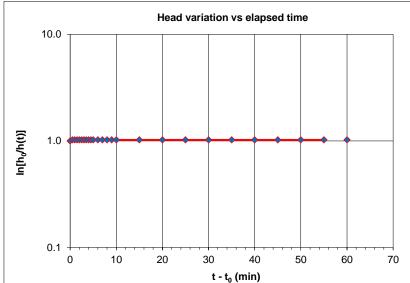
II/a	
0.25	
n/a	
n/a	
n/a	
3.50	
4.00	
4.00	

		_
Time (t ₀)	0	mins
Time (t)	60	mins
Head of water		I
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	m²

Strata
description:
CLAY

description:		
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





I /D = 0

Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

 $F = \pi D$

 $k = \frac{S \ln \left(h_0 / h(t) \right)}{F(t - t_0)}$

F = 0.79

k = N/A m/s

UNABLE TO CALCULATE

Calculated by: DD Project: Riverside EfW Exploratory position reference:

Checked by: JT Project No: 3765

Issue: DRAFT Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10

TerraConsult

Date: Test no: Carried out by: Ground level: (m OD)

07/04/2018
4
MF
33.41

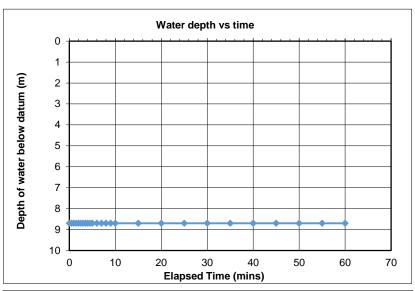
Static water level (m)
Internal diameter (D) (m)
Length of standpipe below ground level (m)
Height of water above ground level (m)
Length of standpipe above ground level (m)
Water level at start of test (m)

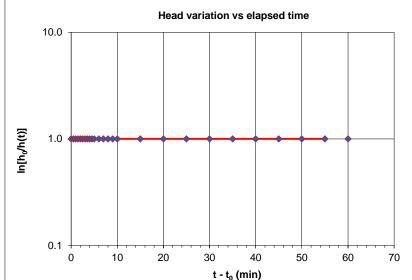
	į
ndpipe below ground level (m)	n/a
water above ground level (m)	n/a
ndpipe above ground level (m)	n/a
Water level at start of test (m)	8.70
Top of response zone (m)	9.00
Bottom of response zone (m)	9.00

		_
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

description:	OLAT	
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





I /D = 0

Shape Factor (F) calculated according to ISO 22282-1:2012

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

 $F = \pi D$

 $k = \frac{S \ln \left(h_0/h(t)\right)}{F(t - t_0)}$

F = 0.79

k = N/A m/s

UNABLE TO CALCULATE

Calculated by: DD Project: Riverside EfW Exploratory position reference:

Checked by: JT Project No: 3765

Issue: DRAFT Client: Hitachi Zosen Inova AG

Exploratory position reference:

BH10

Variable Head Permeability Test Results

TerraConsult

Date: Test no: Carried out by: Ground level: (m OD)

08/04/2018
5
MF
33.41

Static water level (m)
Internal diameter (D) (m)
Length of standpipe below ground level (m)
Height of water above ground level (m)
Length of standpipe above ground level (m)
Water level at start of test (m)

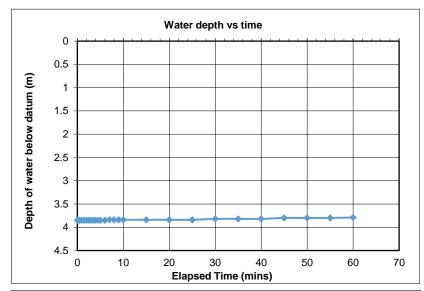
ndpipe below ground level (m)	n/a
water above ground level (m)	n/a
ndpipe above ground level (m)	n/a
Water level at start of test (m)	3.85
Top of response zone (m)	13.00
Bottom of response zone (m)	13.00

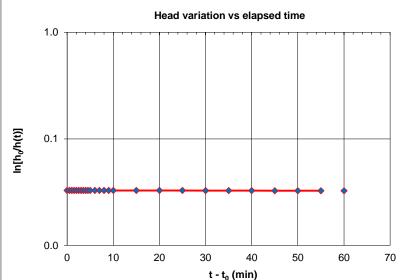
		_
Time (t ₀)	0	mins
Time (t)	60	mins
Head of water		
Initial head (h ₀) at (t ₀)	0.30	m
Final head (h(t)) at (t)	0.30	m
Length of response zone (L)	0.00	m
Cross sectional area (S)	0.03	m ²

Strata description

Sandy silty fine to coarse GRAVEL

description:	Sandy silty fine	to coarse GRAVI
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
		1





I/D = 0

Shape Factor (F) calculated according to ISO 22282-1:2012 Equation for bor

Equation for borehole permeability tests after BS EN ISO 22282-2:2012

$$F = \pi D$$

$$k = \frac{S \ln \left(h_0 / h(t) \right)}{F(t - t_0)}$$

F = 0.63

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	БПТО

PID Test Results Summary

Exploratory position:	Depth (m)	Test No:	Result (ppmv)
position.			(ppiliv)
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

Project: Riverside EfW
Project No: 3765

DRAFT

Issue:

Client: Hitachi Zosen Inova AG

Ref:

PID 01

APPENDIX D Instrumentation Sampling and Monitoring Records

Sample records

Installation development records

Groundwater and gas monitoring records

July 2018 Report No 3765R001-2

TerraConsult

Water Sample Summary

Exploratory	Sample	Sampling	Sample date
position:	type	round	
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

Project: Riverside EfW

Project No: 3765

DRAFT

Issue:

Client: Hitachi Zosen Inova AG

Water SampleSummary 01

Ref:

Project No 3765				
	RWERSIDE EP			
Client CORY EN	PERGY			
Borehole No 8402	Site Ruces of	E EP.		
Date 10/05/18				
10/03/10	Purging Data	·		
Initial Water Level, mBGL (a)		uideline Water Volumes		
TIME	14 44 Standpipe Diamet			
Base of Installation, m BGL (b)	19	0.3		
Saturated Depth, m (c) = (b-a)	25 50	0.5		
	100	8		
Diameter of Installation, mm (d)	150	18		
Base of Borehole, m (e)	200	31 71		
		s water within standpipe tubing (not borehole)		
Well Volume, litres (f) (πd ² c/4)x10 ⁻³	Readings taken durin			
Number of Well Volumes (g)	Water Level, mBGL	1.72 1.69 1.69 1.69 1.68 1.68 1.68		
Purging Device Low Flow	Pump Temperature, degC	15.9415.48 17.69 16.13 15.35 15.28 15.14		
Flow Rate, I/min (h) O.S. L in 1815es	0.1666 pH	6.626.69 6.4 6.68 6.69 6.69 6.69		
Time to purge, min (gf/h)	40 Dissolved O2, mg/l	4 54 4 54 4.27 4.28 4.04 4.04 4.01		
Volume Purged, litres	6.66 Conductivity, uS/m cm	1205 1194 1184 1188 1162 1163 116		
	Redox Potential, mV	67.4 66.1 62.9 65.9 63.2 62.5 62.5 603 594 594 594 581 582 579		
	Sampling Data			
Sample Collection Depth, mBGL	5.75 Oil	NONE		
Sample No	Appearance and Colour	Y.Ellowish		
Time Collected (hh:mm)	/5.30 Odour	NONE / SUGHT ORGANIC		
Time since purge (minutes)	40 Sediment	NONE		
Containers: Number [4 Type	2 x 250 ml ; 2 x 40 ml		
	Remarks			
Weather				
Weather	May.			
Notes and Comments - Screened - TUBING IN-	SECTION 3.0-85m. 174KE @ 5.75m ogl. @ 3.22pm(Erdt)			
Name	Signature			

Project No 3765]			
Project Zwersu	DE EP.			
	ENERGY			
Borehole No BH03] Si	te Quees	DE EP	
] .	Javelo	noe et	-
Date 11/05/18				
		Purging Data		
Initial Water Level, mBGL (a)	276 2745		ideline Water Volu	
TIME Base of Installation, m BGL (b)	8.03 8.17	Standpipe Diamet	er (mm)	Volume (litres/m) 0.3
base of installation, in bGL (b)		25		0.5
Saturated Depth, m (c) = (b-a)		50		2
		100		8
Diameter of Installation, mm (d)		150		18
Daniel of Daniel and (a)		200		31
Base of Borehole, m (e)		300 NB: well volume is defined as	water within standnine t	71
Well Volume, litres (f) (πd ² c/4)x10 ⁻³		Readings taken durin		
vveii voidille, illies (i) (kd G4)x10		TIME		8.50 9.00 9.05 9.15
Number of Well Volumes (g)		Water Level, mBGL	2.89 2.975 3.01	3.065 3.13 3.15 3.18
Purging Device Low Flou	omp .	Temperature, degC	14.73 14.19 13.91	14.09 14.01 14.05 14.30
Flow Rate, I/min (h) 0.50 m 10.5 mm	0.048	рН	6 54 6.54 6.54	6.55 6.55 6.55 6.55
Time to purge, min (gf/h)	45 -1	Dissolved O2, mg/l	1.48 1.47 1.44	1,34 1,43 1,43 1.42
Volume Purged, litres	2.16	Conductivity, uS/m C/	13190 13083 1797	12900 12890 12910 12900
	~ 1	Redox Potential, mV TOS (mg/L)	the same and the same and the same and	55.3 56.9 56.7 56.3
		Sampling Data	071 0 201 0707	043 0433 0437 0407
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 7	Гуре	2 × 250 ml	2×40nl.
		Remarks		
Weather SUMNY C	Ry,			
Notes and Comments - Statted - TUBING - Pump ADS FLOW RA	PORPE INTAKE G JUSTED TO I	3.5-8.5 bgl 2 6.00 bgl REDUCE WELL DRI	wood The De	PAWOOWN @ LOWEST
Name		Signature		

valla GG.					
roject No	3465.				
roject	RWERS108	· EP.			
lient	CARY EN	IERGI			
	Pilot] Si	te RWERSIOS	60	
Borehole No	BHOS]			
ate	11/05/18				
			Purging Data	W. W. Lunco	
nitial Water Level,	mBGL (a)	1.76 1.80	Gui Standpipe Diamete	ideline Water Volumes	es/m)
	TIME (b)	12.54 12.44	19	0.3	
Base of Installation	, m BGL (b)		25	0.5	
Saturated Depth, m	n (c) = (b-a)		50 100	8	
			150	18	
Diameter of Installa	ation, mm (d)		200	31	
Base of Borehole,	m (e)		300	water within standpipe tubing (not boreh	ole)
Well Volume, litres			Readings taken during	g purging pump on 12.4	14
Number of Well Vo			Water Level, mBGL Tidal Reduction	1.885 1.935 1.96 1.985 2.01	2-03
Purging Device	low Flor	w pump.	Temperature, degC	13.61 13.43 19 1 13.44	1 15.73
Flow Rate, I/min (h	n)	0.25	pH	713 7.39 (7.39)	7.15
Time to purge, min	n (gf/h)		Dissolved O2, mg/l	1.29 1.26 1.25 1.31 1.31	
Volume Purged, li	tres		Conductivity, uS/m Cm	19470 19470 19470 19470 1947	
			Redox Potential, mV	9737 9738 9732 9730 9736	9736
			Sampling Data		
Sample Collection	n Depth, mBGL	11.75	Oil	NONE	
Sample No			Appearance and Colour	OPAQUE YELLOWISH	BROWN
Time Collected (h	nh:mm)	13.25	Odour	SLIGHT OPCANIC	
Time since purge	(minutes)		Sediment	SUGHT; V. FINE	
Containers:	Number	4	Туре	2x2Soul: 2x4Out	
			Remarks		
Weather					
Notes and Comments	- SLOTTEN - TUBING - WL 10	DIPE (NTALE , min AZ	@ 10-13.5 m bg @ 11.75 m bgl: TER SAMPLE @	2.09 m How.	
Name			Signature		~

Project No 3 765]			
	DE Ep.			
Client CoRY				
	7		DE EP	
Borehole No BH08	~	nie nie nie nie nie nie nie nie nie nie	0 0	
Date 10/05/18				
		Purging Data		
Initial Water Level, mBGL (a)	1.15	Standpipe Diamet	uideline Wate	Volume (litres/m)
TIME Description management (b)	11 29	Standpipe Diamet	er (mm)	0.3
Base of Installation, m BGL (b)	13:0	25		0.5
Saturated Depth, m (c) = (b-a)		50		2
		100		8
Diameter of Installation, mm (d)		150		31
Base of Borehole, m (e)		300		71
base of Borellole, III (e)		NB: well volume is defined a	s water within star	ndpipe tubing (not borehole)
Well Volume, litres (f) (πd²c/4)x10 ⁻³		Readings taken durin	g purging	1140 11.45 1150 12.00 12.1
Number of Well Volumes (g)		Water Level, mBGL	1.15 1.17	1 19 1.195 1.21 1.24 1.2
Purging Device Law Flow	pump.	Temperature, degC	15 62 16.10	1628 16 22 15.57 16.26 16.3
Flow Rate, I/min (h)	0.25	pH	667 6.64	
Time to purge, min (gf/h)	50	Dissolved O2, mg/l	142 1.31	1.28 1.26 1.28 1.26 1.2
Volume Purged, litres	12.5	Conductivity, uS/mc/^	16720 16670	16620 16600 16630 16560 1654
		Redox Potential, mV	14.6 71.9 8353 834	69.7 69.7 68.3 69.2 74.5 8308 8306 8322 8278 829
SEE WELL DEVELOPM	ENT	Sampling Data	8353 834	0.208 0.208 0.200
RECORD 09/05/18		Odinpinig Duta		
Sample Collection Depth, mBGL	12.5	Oil	Λ	JoN€
Sample No		Appearance and Colour	VE	CLOWISH
Time Collected (hh:mm)	12.20	Odour	NON	E / SLIGHT ORGANIC
Time since purge (minutes)	50	Sediment	NO	NE
Containers: Number	4	Туре	2×250	oml; ex 4aml
		Remarks		
Weather Sunny	, DRY, 15°C			
Notes and Comments - Screene - Tuberg - WL 10	of 10-1: intale 6 mm after	5m 2 12-5m bgl a Simple & Stoppe	ing pump	- 1.345m
Name		Signature	1	

Project No 3765				
Project RIVERS	FLOE EP			
	ENERGY			
	_			
Borehole No BH12		Site RIVER	SIDE EP	
Date 10.05.18				
		Purging Data		
Initial Water Level, mBGL (a)	0.87 0.80	Gi	uideline Wate	r Volumes
	8:58 09:50	Standpipe Diamet	er (mm)	Volume (litres/m)
Base of Installation, m BGL (b)		19		0.3
Saturated Depth, m (c) = (b-a)		50		2
70		100		8
Diameter of Installation, mm (d)		150		18
Base of Borehole, m (e)		200 300		31 71
		NB: well volume is defined as		
Well Volume, litres (f) (πd ² c/4)x10 ⁻³		Readings taken durin	9 ha. 99	PUMP ON 09:50
Number of Well Volumes (g)		Water Level, mBGL		0.795 0.795 0.80 0.80 0.805 0.8
Purging Device Low FLOW	Pump	Temperature, degC	14.56 14.52	15:15 14.82 14.94 15:19 14.93 19
Flow Rate, I/min (h) 125 secs	0.25	рН	6.61 6.63	6.63 6.69 6.72 6.73 6.72 6
Time to purge, min (gf/h)	_	Dissolved O2, mg/l	1.32 1.30	1.28 1.30 1.29 1.28 1.28 1
Volume Purged, litres	13.75	Conductivity, uS/pt cm	14950 14770	14620 14620 14610 15810 16830 168
		Redox Potential, mV	79.0 77.0	75.6 784 80.0 80.4 81.0 81.
SEE WAL DEVELOPMENT		TOS (mg/L) 7490 7391 7335 7319 7313 8025 84 Sampling Data		7335 7319 7313 8025 8406 84
RECORD 09.05.18		Sampling Data		
Sample Collection Depth, mBGL	12.0	Oil	Non	V€
Sample No		Appearance and Colour	Yaro	IMI SM
Time Collected (hh:mm)	10:45	Odour	Nove	E SLIGHT ORGANIC
Time since purge (minutes)	55	Sediment	N	ONE
Containers: Number	4	Туре	2 x 250 m	nli2x4aml
				•
		Remarks		S. 1984
Weather SUNNY, 0	Ry, 17°C			
- TUBING INTI	AT ~10.00 A			
Name		Signature		

Project No 3765												
Project Rwers	IDE ED											
	CORY ENERGY											
Borehole No BH13	_	Site Pueps	at Ea									
	-	CWERS!	DE EP									
Date 10/05/18												
		Purging Data										
Initial Water Level, mBGL (a)	3.34 3.03		uideline Wate									
Base of Installation, m BGL (b)	16.25 16.44	Standpipe Diame	ter (mm)	Volume (litres/m) 0.3								
base of mistaliation, in BGE (b)		25		0.5								
Saturated Depth, m (c) = (b-a)		50	1	2								
		100		8								
Diameter of Installation, mm (d)		150		18								
Base of Borehole, m (e)		300		71								
		NB: well volume is defined a	s water within stan	dpipe tubing (not borehole)								
Well Volume, litres (f) (πd ² c/4)x10 ⁻³		Readings taken durin		Dump ON 16.44								
Number of Well Volumes (g)		Water Level, mBGL	3.01 3.00	1705 1710 1715 1725 1735 1745 3.00 2.99 2.985 2985 2.98 2.98								
Purging Device Low Flow	PUMP	Temperature, degC	16.45 16.19 15.62 15.28 15.25 15.45									
Flow Rate, I/min (h)	0.25	рН	6.58 6.68	6.71 6.72 6.72 6.73 6.72 6.73								
Time to purge, min (gf/h)	55	Dissolved O2, mg/l	1.70 145	1.45 1.42 1.46 1.48 1.44 1.39								
Volume Purged, litres	13.75.	Conductivity, uS/m Cm	15890 15900 15820 15720 15680 1584									
		Redox Potential, mV	64.2 66.2	68.4 73.5 75.3 76.1 76.7 76.7 7956 7956 7902 7842 7853 704								
		Sampling Data	7.171.1									
Sample Collection Depth, mBGL	5.00	Oil	NONE									
Sample No		Appearance and Colour	Tue810, 0	PAGUE, Yelloursh BROWN								
Time Collected (hh:mm)	17,45	Odour	love	/ SLIGHT ORGANIC								
Time since purge (minutes)		Sediment	V. FINE									
Containers: Number	4	Туре	2 x 250	ml: 7x word								
		Remarks										
Weather												
Weather Sunni	, DRY	7°C										
Notes and Comments - Slotted - TUBING	PYE Z. NTAKE @	on - 8.0 m 5.0 m bgl.										
Name		Signature										

Project No 3765							
Project No Ruecou	de Ep						
Client CORY.				We part of the second			
Borehole No BHOZ		Site Rwers	nich Go.				
Date 07/06/18	?						
		Purging Data					
initial Water Level, m.bgl (a)	1.34 1.36	Guideline Water Volumes					
		Standpipe Diame	eter (mm)	Volume (litres/m) 0.3			
Time	11.40 11.43	19		0.5			
Base of Installation, m.bgl (b)	8.43.	50		2			
2000 01 1110101111111111111111111111111	<u> </u>	100		8			
Sturated Depth, m (c) = (b-a)		150		18 31			
Diameter of installation, mm (d)		200 300		71			
Diameter of installation, mm (d)		NB: well volume is defined as	s water within stand	pipe tubing (not borehole)			
Base of Borehole, m (e)		Readings Taken Durin	3	Dump ON 11.45			
		Time Taken	11.50 12.55	12.00 12.05 17.10			
Well volume, litres (f) (pd ² c/4)x10 ⁻³		Water Level, m.bgl	1.46 1.47	1.48 1.49 1.5			
Number of well volumes (g)		Temperature, degC		18.7 18.2 18.3			
Purging Device	bow Flow.	рН	7.24 7.22	7.19 7.19 7.18			
Flow Rate, I/min (h)	0.25.	Dissolved O2, mg/l	1.12 0.88 0.87 0.62 0.53				
Time to Purge, min (gf/h)		Conductivity, uS/m	1700 1197 1151 1114 1117				
Volume Purged, litres		Redox Potential, mV	80.6-50.0-41.9 23.8 -22.1				
		Sampling Data					
Sample Collection Depth, m.bgl	5.75.	Oil	NONE				
Sample No		Appearance and colour	r dear				
Time Collected (hh:mm)	12.10	Odour	NENE				
Time Since Purge (minutes)		Sediment	NONE.				
Containers: Number	4	Туре	2 + 25	onl 2×60ml			
-		Remarks					
Weather							
		- American					
Notes and							
Comments							
Name		Signature					
Itallic		Olgridadie					

Project No 3765							
Project No Rw Et	espe Ep						
Client CoRY							
LCORT							
Borehole No BHO3		Site Ruck	SDE EP				
Date 07/06/1	8.						
		Purging Data					
initial Water Level, m.bgl (a)	2.54		Guideline Water	Volumes			
Time	13.76	Standpipe Diam	neter (mm)	Volume (litres/m) 0.3			
Base of Installation, m.bgl (b)		25		0.5			
	8.91	50 100		2 8			
Sturated Depth, m (c) = (b-a)		150 200		18			
Diameter of installation, mm (d)		300		31 71			
Base of Borehole, m (e)		NB: well volume is defined a Readings Taken Duri	ng Purging Qu	e tubing (not borehole)			
Well volume, litres (f) (pd ² c/4)x10 ⁻³		Time Taken Water Level, m.bgl	13.40 13.45 1	3.5013.55			
Number of well volumes (g)		Temperature, degC	2.71 2.79 2				
Purging Device	Low Flow	pH	22.0 22.0 2				
Flow Rate, I/min (h)	1 1 1		6.69 6.71 6				
		Dissolved O2, mg/l	0.330.080.070.05				
Time to Purge, min (gf/h)		Conductivity, uS/m	11317 11255 11145 11116				
Volume Purged, litres		Redox Potential, mV	-116.3 -121.1 -118.5 -111.d				
		Sampling Data					
Sample Collection Depth, m.bgl	6.0	Oil	Newe				
Sample No		Appearance and colour	Slightly opp	gue vellouish Gran			
Time Collected (hh:mm)	13.55	Odour	Shall	ora i d lk c ld			
Time Since Purge (minutes)		Sediment	Jugary	orgenie, sugate sugare			
Containers: Number			S	highthe Sith			
- Turnor	4	Туре	2 × 250	nl 2760ml.			
		Remarks					
Weather							
Notes and Comments							
Name		[C:					
		Signature					

Project No 8765							
Project-	SIDE EP						
Client CoRy							
	_						
Borehole No BHOS		Site Rwe	RSIDE E	P.			
Date 07/06/18	2.						
		Purging Data					
initial Water Level, m.bgl (a)	2.82		Guideline Wate	er Volumes			
Time	14.10	Standpipe Diam	neter (mm)	Volume (litres/m) 0.3			
Base of Installation, m.bgl (b)	13.51	25		0.5			
	13-31	50 100		2 8			
Sturated Depth, m (c) = (b-a)		150 200		18			
Diameter of installation, mm (d)		300		31 71			
Base of Borehole, m (e)		NB: well volume is defined a Readings Taken Duri	ns water within stand	pipe tubing (not borehole) Pump on 14.15			
Well volume, litres (f) (pd ² c/4)x10 ⁻³		Time Taken Water Level, m.bgl	14.20 14.25	16.30 16.35 14.40 2.80 2.80 2.80			
Number of well volumes (g)		Temperature, degC	16.7 16.6 16.7 16.8 16.6				
Purging Device	Low Flow	рН	6.99 6.99	7.00 7.00 7.01			
Flow Rate, I/min (h)	0.25.	Dissolved O2, mg/l	0.14 0.13	0.12 0.10 0.11			
Time to Purge, min (gf/h)		Conductivity, uS/m IS398 IS480 IS518 IS561 15670					
Volume Purged, litres		Redox Potential, mV	-154.4 -154.6 -155.0 -155.1 -154.5				
		Sampling Data					
Sample Collection Depth, m.bgl	11.75.	Oil	NONE				
Sample No		Appearance and colour	Shightly	opaque yellowinh			
Time Collected (hh:mm)	14.40	Odour	Shophth a	and delland			
Time Since Purge (minutes)		Sediment	Shoffly	Silty			
Containers: Number	4	Туре	24 78	0 ml 24 Gant.			
		Remarks					
Weather							
Notes and Comments Tide res	pire						
Name		Signature					

Project No 3765		
Project K Rwersix	DE . EP .	
Client CoRy		
Borehole No BHOS	Site Rue	exside of.
Date 07/06/18	language de la constante de la	
Date 07 (06/18	Duraina Data	
	Purging Data	
initial Water Level, m.bgl (a)	1.10 115	Guideline Water Volumes
	Standpipe Dia	
Time	9.19 9.34 19	
Base of Installation, m.bgl (b)	14.88 50	
base of installation, m.bgi (b)	100	
Sturated Depth, m (c) = (b-a)	150	
	200	0 31
Diameter of installation, mm (d)	300	
	NB: well volume is define	d as water within standpipe tubing (not borehole)
Base of Borehole, m (e)	reddings raken be	arma ranging
	Time Taken	9.44 9.50 9.55 10.00 10.05 10.10
Well volume, litres (f) (pd ² c/4)x10 ⁻³	Water Level, m.bgl	1.175 181.20 1.215 1.23 1.25 1.265
Number of well volumes (g)	Temperature, degC	17.1 15.8 15.6 15.6 15.7 15.8
Purging Device	Low Flow pH	6.82 6.79 6.80 6.80 6.80 6.80
Flow Rate, I/min (h)	O.25 Dissolved O2, mg/l	0390.9 0.18 0.17 0.15
Time to Purge, min (gf/h)	Conductivity, uS/# C/*	13676 13608 13721 13781 13823 13887
Volume Purged, litres	Redox Potential, mV	-97.6 -100.9 -105.6-107.7 -109.4 -110.4
	Sampling Data	
Sample Collection Depth, m.bgl [17.5 ×0il	NONE
Sample No [&Appearance and col	our clear, Shouth yellowish
Time Collected (hh:mm)	10.10. × Odour	Shefith, Oceganic
Time Since Purge (minutes)	⊁ Sediment	Dene
Containers: Number [<i>∠</i> ≻Type	2 x 250ml, 2 x 60ml.
	Remarks	
	o tribut	
Weather		
Mater and		
Notes and Comments Tridally in	Phenced. It mins often pu	up off 1.29 m dip.
Name	Signature	

Project No 3765							
Project No Ewelside Ef							
Client							
Borehole No BH12	Site RWERSIDE EP						
Date 07/06/18							
	Purging Data						
	ruiging bata						
initial Water Level, m.bgl (a)		Buideline Water					
	Standpipe Diame	eter (mm)	Volume (litres/m)				
Time 10.40	19		0.3				
29.70.	50		2				
Base of Installation, m.bgl (b)	100		8				
Sturated Depth, m (c) = (b-a)	150		18				
otaliated populi, iii (v) = (v-a)	200		31				
Diameter of installation, mm (d)	300		71				
	NB: well volume is defined as		pipe tubing (not borehole) Temp eN 10.46				
Base of Borehole, m (e)	Readings Taken Durin	0 0					
2 3	Time Taken		11.00 11.05 11.10 11.15				
Well volume, litres (f) (pd ² c/4)x10 ⁻³	Water Level, m.bgl	1.165 1.17					
Number of well volumes (g)	Temperature, degC	16.9 16.8					
Purging Device Low Flow	рН	6.81 6.81	6.80 6.81 6.806.80				
Flow Rate, I/min (h)	Dissolved O2, mg/l	0.50 0.43	0.31 0.18 0.15 0.14				
Time to Purge, min (gf/h)	Conductivity, uS/m 11450 11332 11224 11183 11096 11038						
Volume Purged, litres	Redox Potential, mV -88-1 -65-3 -29-7 -12-2 -12-2 -7-4						
	Sampling Data						
Sample Collection Depth, m.bgl	Oil	NENE.					
Sample No	Appearance and colou	clear,	Slightly yellowish				
Time Collected (hh:mm)	Odour	Slightly	orgenic				
Time Since Purge (minutes)	Sediment	NON	€.				
Containers: Number	Туре	2× 250	onl ex bonl				
	Remarks						
Weather							
Weather							
Notes and Comments Pip 5 mins often	e purp off.	dep 1.2	6m.				
Name	Signature						

Project No 3765											
Project No Rwel	SOE EP.										
Client CoR	1										
Borehole No 3413		Site RWERSIDE									
Date 07/06/	18.										
		Purging Data									
initial Water Level, m.bgl (a)	1.60 1.36	Guideline Water Volumes									
Time	12.33 12.40	Standpipe Diame	eter (mm)	Volume (litres/m) 0.3							
		25		0.5							
Base of Installation, m.bgl (b)	7.98	50		2							
		100		8							
Sturated Depth, m (c) = (b-a)		150		18							
B		200		31							
Diameter of installation, mm (d)		NB: well volume is defined as	water within stand								
Base of Borehole, m (e)		Readings Taken Durin		pump or 12.40							
2400 0. 201011010, 111 (0)		Time Taken	processing the same of the sam	12-35 13.0013.05							
Well volume, litres (f) (pd ² c/4)x10 ⁻³		Water Level, m.bgl	1.42 i-40	j.46 1.52 i.54							
Number of well volumes (g)		Temperature, degC	18.9 22.5	21.5 22.2 21.9							
Purging Device	Low Flow	pH	6.61 6.64	6.65 6.65 6.65							
Flow Rate, I/min (h)	0.25	Dissolved O2, mg/l	0.380.15 0.15 0.17 0.16								
Time to Purge, min (gf/h)		Conductivity, uS/m 11875 13852 12999 13288 13329									
Volume Purged, litres		Redox Potential, mV	-21.8 -52.0	-54.9 -62.9 -64.9							
		Sampling Data									
Sample Collection Depth, m.bg	1 5.0	Oil	NONE								
Sample No		Appearance and colour		sellough beaugn							
Time Collected (hh:mm)	13.05	Odour	Horse								
Time Since Purge (minutes)	17.03	Sediment	Clinth	Slighty Ocquerie							
Containers: Number		Туре	Sugara	316							
- Number	4		Z × 250	nt 2×6ant.							
		Remarks		and the second s							
Weather											
Notes and Comments											
Name		Signature									

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J a5	K	GIOU	IIIU	walt	IAIO		ng n	COI	u					U	6111	accinsuit
Project No:		3765	Project:	Riverside E	fW											
Date:		30/05/2018	1					State of Groun	nd:	Dry						
Operator:		DG						Wind:						4-9mph	l	
								Wind direction	n:					ENE		
Equipment							Cloud cover: Partly sunny									
used (include		Dipmeter						Precipitation:						None		
s/n):								Pressure trend	d:					Steady		
								etection limits:		1	1		<u> </u>	1	T	
	O	Barometric	Air temp	Depth of	Time of	Depth to			CH4	CH4 (%	O2	CO2	СО	H2S	Nitrogen	
Borehole ID	Inst ID	Pressure (mbars)	(oC)	Installation (m BGL)	Reading hh:mm	Groundwater (m BGL)	Pressure (Pa)	FlowRate (I/hr)	(% vol)	LEL)	(% vol)	(% vol)	(ppm)	(ppm)	(%vol)	Remarks
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 3765 Project: Riverside EfW Project No: 11/06/2018 Dry Date: State of Ground: DG Wind: 8 mph Operator: ENE Wind direction: None Cloud cover: Equipment used (include Dipmeter Precipitation: None s/n): Pressure trend: **Detection limits:** Time of Barometric Depth of Depth to ₽ Differential CH4 CH4 (% 02 CO2 CO H2S Air temp Nitrogen Reading FlowRate (I/hr) Borehole ID nstallation (m Inst Pressure Groundwater (m Remarks Pressure (Pa) (% vol) LEL) (% vol) (% vol) (%vol) (oC) (ppm) (ppm) (mbars) BGL) hh:mm BGL) BH02 1 1014 8.9 10:34 1.37 -11.00 -3.0 0 20.4 0.3 0 0 <<<.< **BH03** 2.59 2.39 1 1014 11:24 0.00 0.0 0.3 9.0 16.8 3.7 0 0 **BH05** 1.90 1014 13.51 11:12 0.00 0.0 0 20.3 0.2 0 0 <<<.< BH08 -22.90 -29.2 0 20.3 0.6 0 1 1016 14.88 09:48 1.67 <<<.< 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 29.7 0 1014 10:14 1.21 -35.00 -6.4 20.3 0.6 0 0 <<<.< 22.3 BH13 1 0.79 194.00 2.5 0 1015 7.95 10:57 58.8 17.8 3.6 0 BH01 5.95 10:40 3.18 BH04 2.59 11:18 1.61 BH09 2.04 10:24 0.92

TerraConsult

Project No:	3765 Project: Riverside EfW		
Date:	28/06/2018	State of Ground:	Dry
Operator:	DG	Wind :	8 mph
		Wind direction:	NE
Equipment		Cloud cover:	Low Clouds becoming sunny
used (include	Dipmeter	Precipitation:	None
s/n):		Pressure trend:	Steady
l			

							D	etection limits:								
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 (I/hr)	CH4 (% vol)	CH4 (% LEL)	O2 (% vol)	CO2 (% vol)	CO (ppm)	H2S (ppm)	Nitrogen (%vol)	Remarks
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 op	en well c	over												
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										

Exploratory	Date:	Time:	Installed	Checke	Reading	Comments:
position:			depth	d depth	(m)	
			(m):	(m):	(/	
DI IO4	10/04/40	40.00	0.00	5.05	0.00	
	12/04/18 13/04/18	16.00	6.00 6.00	5.95	2.66 2.68	
	16/04/18	13.20 16.30	6.00	5.95 5.95	2.80	
	17/04/18	14.45	6.00	5.95	3.17	
	18/04/18	15.10	6.00	5.95	2.98	
	19/04/18	14.57	6.00	5.95	3.27	
	20/04/18	12.15	6.00	5.95	3.41	
	24/04/18	16.27	6.00	5.95	3.30	
	25/04/18	11.59	6.00	5.95	2.74	
	26/04/18	16.03	6.00	5.95	2.95	
	27/04/18	12.18	6.00	5.95	2.87	
	02/05/18	8.33	6.00	5.95	2.99	
	02/05/18	16.47	6.00	5.95	2.92	
	03/05/18	10.07	6.00	5.94	3.06	
BH01 0	04/05/18	8.51	6.00	5.94	3.06	
BH01 0	08/05/18	16.55	6.00	5.94	3.14	
	J					

Project: Riverside EfW

Project No: 3765

DRAFT

Client: Hitachi Zosen Inova AG

Ref:

Exploratory	Date:	Time:	Installed	Checke	Reading	Comments:
position:	Date.		depth	d depth	(m)	Sommonio.
1			(m):	(m):	()	
DUIDO	40/04/40	45.50	0.50	0.50	4.00	
BH02 BH02	12/04/18 13/04/18	15.50 13.10	8.50 8.50	8.52 8.52	1.33 1.08	
BH02	16/04/18	16.20	8.50	8.50	1.08	
BH02	17/04/18	14.39	8.50	8.50	1.17	
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	
		_				

Project: Riverside EfW

Project No: 3765

DRAFT

Client: Hitachi Zosen Inova AG

Ref:

Exploratory position:	Date:	Time:	Installed depth	d depth	Reading (m)	Comments:
			(m):	(m):		
Dillo	40/04/40	45.00	0.50	0.00	0.44	
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 BH03	25/04/18 26/04/18	15.28 11.50	8.50 8.50	8.88 8.90	2.41 2.40	
ВН03	27/04/18	12.44	8.50	8.90	2.40	
BH03	02/05/18	8.50	8.50	8.89	2.38	
BH03	02/05/18	10.56	8.50	8.90	2.38	
BH03	03/05/18	10.33	8.50	8.90	2.39	
BH03	08/05/18	16.15	8.50	8.90	2.40	
Bi 103	00/03/10	10.10	0.00	0.50	2.40	
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Project: Riverside EfW

Project No: 3765

DRAFT

Client: Hitachi Zosen Inova AG

Ref:

Exploratory position:	Date:	Time:	Installed depth (m):	Checke d 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	1.32	
BH04	24/04/18	17.00	2.00	2.02	1.18	
BH04	25/04/18	15.25	2.00	2.02	1.18	
ВН04	26/04/18		2.00		1.17	
BH04	27/04/18	11.54 12.50		2.02	1.17	
BH04	02/05/18	8.55	2.00	2.02	1.15	
BH04	03/05/18	11.00	2.00		1.13	
				2.02	1.13	
BH04 BH04	04/05/18	10.36	2.00	2.03	1.12	
БП04	08/05/18	16.20	2.00	2.03	1.15	
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Project: Riverside EfW

Project No: 3765

DRAFT

Client: Hitachi Zosen Inova AG

Ref:

Exploratory position:	Date:	Time:	Installed depth (m):	Checke d depth (m):	Reading (m)	Comments:
			(1117.	(1117.		
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	
200	00/00/10					

Project: Riverside EfW

Project No: 3765

DRAFT

Client: Hitachi Zosen Inova AG

Ref:

Exploratory	Date:	Time:	Installed		Reading	Comments:
position:			depth	d depth	(m)	
			(m):	(m):		
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	

Project: Riverside EfW

Project No: 3765

DRAFT Client: Hitachi Zosen Inova AG

Ref:

Exploratory position:	Date:	Time:	Installed depth	Checke d depth	Reading (m)	Comments:
position.			(m):	(m):	(111)	
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 0.84	
BH09 BH09	04/05/18 08/05/18	8.40 16.45	2.00	2.03 2.03	0.85	
БПОЭ	06/03/16	10.43	2.00	2.03	0.00	
			•			

Project: Riverside EfW

Project No: 3765

DRAFT

Client: Hitachi Zosen Inova AG

Ref:

Exploratory	Date:	Time:	Installed	Checke	Reading	Comments:
position:			depth	d depth	(m)	
'			(m):	(m):	()	
BH11	06/04/19	1117	0.00	0.02	0.64	
BH11	06/04/18 07/04/18	14.17 15.05	9.00 9.00	9.03 9.04	0.64 0.65	
BH11	10/04/18	10.15	9.00	9.04	0.63	
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	

Project: Riverside EfW

Project No: 3765

DRAFT

Client: Hitachi Zosen Inova AG

Ref:

Exploratory position:	Date:	Time:	Installed depth (m):	Checke d depth (m):	Reading (m)	Comments:
			(1117.	(111).		
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	
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Project: Riverside EfW

Project No: 3765

DRAFT

Client: Hitachi Zosen Inova AG

Ref:

Exploratory	Date:	Time:	Installed	Checke	Reading	Comments:
position:			depth	d depth	(m)	
,			(m):	(m):	()	
DUMO	40/04/40	45.40	0.00	7.00	0.75	
BH13 BH13	12/04/18	15.12 12.40	8.00	7.99	0.75	
BH13	13/04/18 16/04/18	15.54	8.00	8.00	0.63	
BH13	17/04/18	14.17	8.00 8.00	7.98 7.98	0.61 0.61	
BH13	18/04/18	14.17	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	
	2 2. 2 27 . 2	-	3.50			

Project: Riverside EfW

Project No: 3765

DRAFT Client: Hitachi Zosen Inova AG

Ref:

APPENDIX E Geotechnical Laboratory Test Results

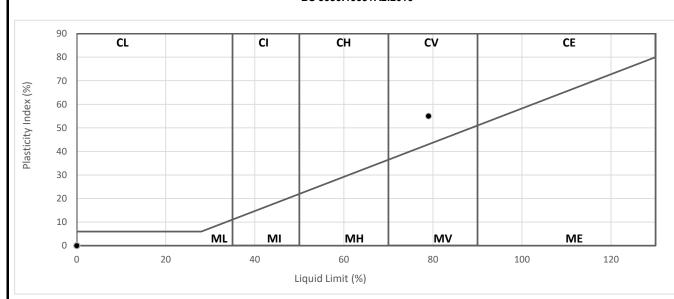
Classification tests
Chemical and electro-chemical tests
Compaction related tests
Compressibility tests
Consolidation tests
Shear strength tests (total stress)
Shear strength tests (effective stress)

July 2018 Report No 3765R001-2

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	D	epth (r	m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
BH01		D	2.50	-		41					
BH01		D	4.45	-		137					
BH01		В	8.50	-		35					
BH01		D	16.00	-		31					
BH01		D	19.00	-		28					
BH01		D	28.70	-		19					
BH01		D	29.95	-		19					
BH02		В	2.00	-		30					
BH02		D	7.30	-		87					
BH02		В	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



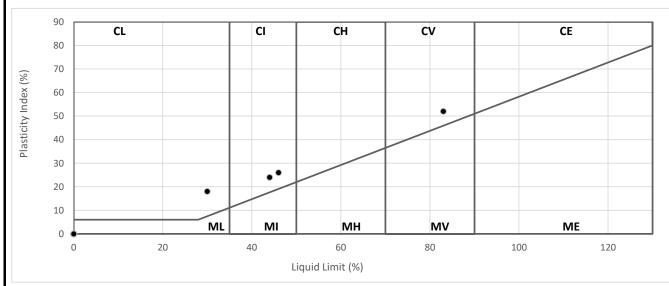
Operators	Checked	08-07-18	Emma Sharp	
DB	Approved	09-07-18	Paul Evans	



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	D	epth (ı	m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing .425mm %	Remarks
BH04		В	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



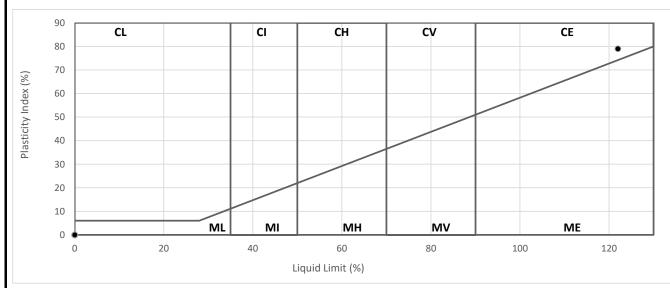
Operators	Checked	08-07-18	Emma Sharp	
DB	Approved	09-07-18	Paul Evans	



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	D	epth (r	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



Operators	Checked	27-06-18	Emma Sharp	
DB	Approved	28-06-18	Paul Evans	

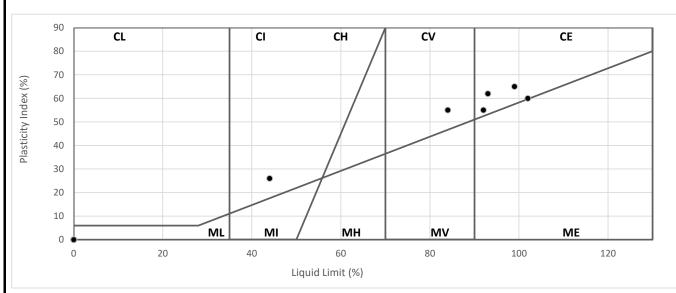


GSTL	LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)	
Contract Number	39466	
Site Name	Riverside	

Hole Reference	Sample Number	Sample Type	D	epth (r	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		В	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		В	3.00	-		48	84	29	55	100	CV Very High Plasticity
TP04		В	2.50	-		78	92	37	55	100	CE Extremely High Plasticity
TP05		В	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

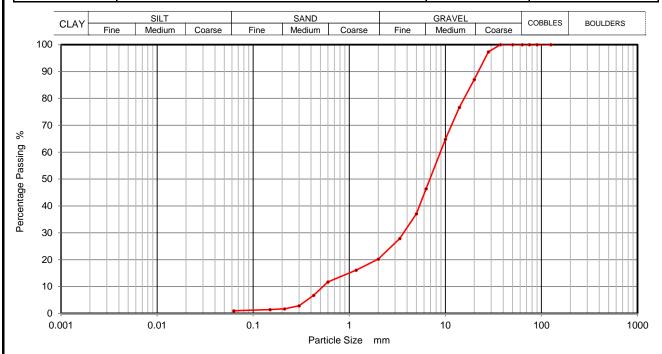
#: Liquid Limit and Plastic Limit Wet Sieved



Operators	Checked	08-07-18	Emma Sharp	
DB	Approved	09-07-18	Paul Evans	



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Blown sitty line to coarse sarity line to coarse GNAVEL.	Depth Base	
		Sample Type	В



Sie	ving	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.0200		
90	100	0.0060		
75	100	0.0019		
63	100	0.0010		
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	

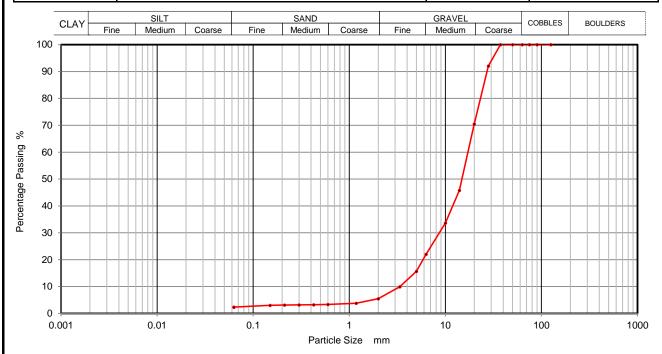
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	01-07-18	Emma Sharp
RO/MH	Approved	02-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION		39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine slightly sandy fine to coarse GRAVEL.	Depth Top	26.50
	BIOWIT SIRV THE SIRVING SAILUY THE TO COAISE GRAVEL.	Depth Base	
		Sample Type	В



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	

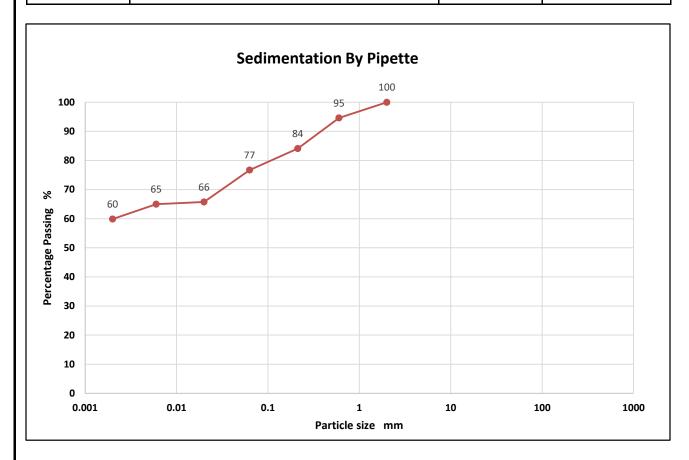
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	01-07-18	Emma Sharp
RO/MH	Approved	02-07-18	Paul Evans



CCTI	Sedimentation By Pipette Analyisis	Contract Number	39466
GSIL	BS 1377 Part 2:1990 Clause 9.4	Borehole/Pit No.	BH2
Site Name	Riverside	Sample No.	
Soil Description	Crow silty condy CLAV	Depth Top	9.50
	Grey silty sandy CLAY.	Depth Base	
		Sample Type	В



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	95
0.212	84
0.063	77

Sedimentation Analysis

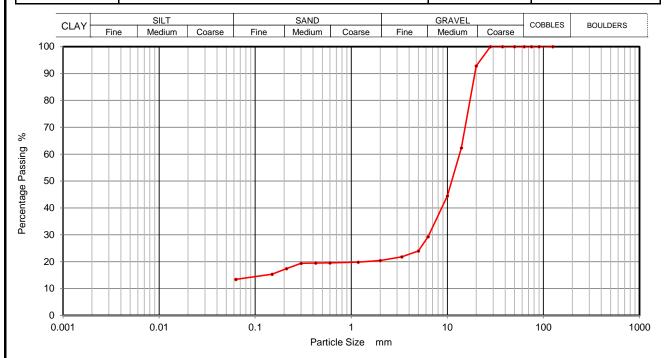
Particle Diameter	Percentage Passing
0.02	66
0.006	65
0.002	60

Soil Fraction	Total Percentage
Gravel	0
Sand	23
Silt	17
Clay	60

Operators	Checked	08-07-18	Emma Sharp
RO	Approved	09-07-18	Ben Sharp



CCTI	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2		39466
GOIL			BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown fine sandy silty clayey fine to coarse GRAVEL.	Depth Top	21.00
	Brown line sandy silty dayey line to coarse GRAVEL.	Depth Base	
		Sample Type	В



Sieving		Sedime	entation
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		<u> </u>
0.212	17		
0.15	15		
0.063	13		

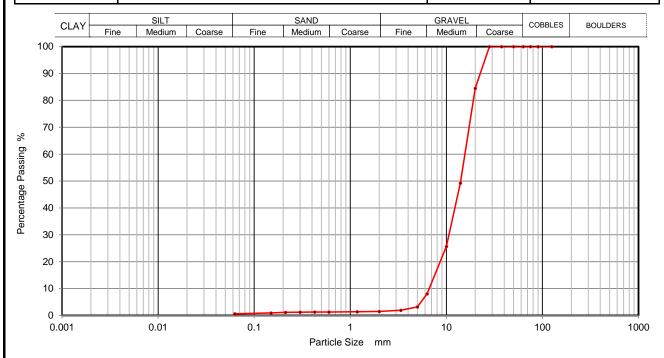
Sample Proportions	% dry mass
Cobbles	0
Gravel	80
Sand	7
Silt and Clay	13

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	01-07-18	Emma Sharp
RO/MH	Approved	02-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2		39466
GOIL			BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse GRAVEL.	Depth Top	27.00
	BIOWIT SIILY IIIIE LO COAISE GRAVEL.	Depth Base	
		Sample Type	В



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		

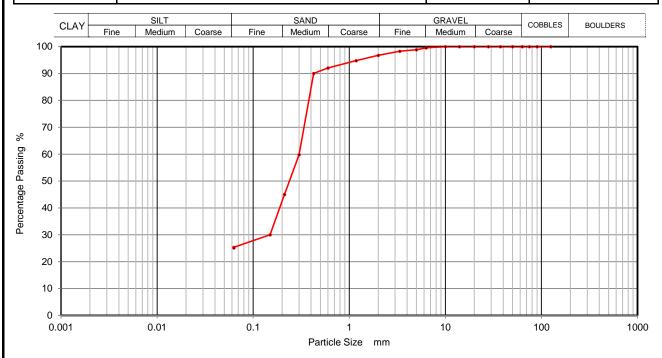
Sample Proportions	% dry mass
Cobbles	0
Gravel	99
Sand	0
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	01-07-18	Emma Sharp
RO/MH	Approved	02-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	blown line slightly gravelly slity dayey line to coarse SAND.	Depth Base	
		Sample Type	D



Sie	ving	Sedime	entation
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		

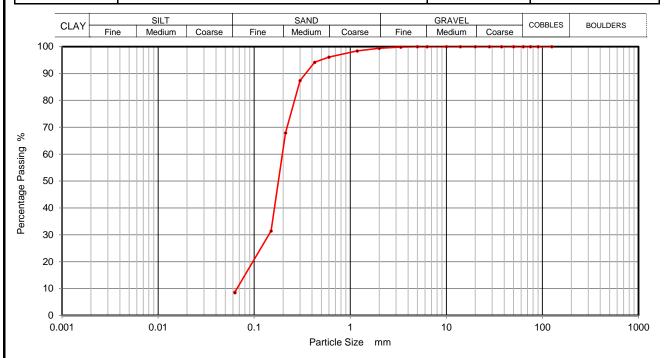
Sample Proportions	% dry mass
Cobbles	0
Gravel	3
Sand	72
Silt and Clay	25

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	02-07-18	Emma Sharp
RO/MH	Approved	03-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH02A
Site Name	Riverside	Sample No.	
Soil Description	Brown fine slightly gravelly silty fine to coarse SAND.	Depth Top	45.50
	Blown line slightly gravelly slity line to coarse SAND.	Depth Base	
		Sample Type	D



Sie	ving	Sedime	entation
Particle Size	% Passing	Particle Size	% Passing
mm	76 F assiriy	mm	70 F assiriy
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		

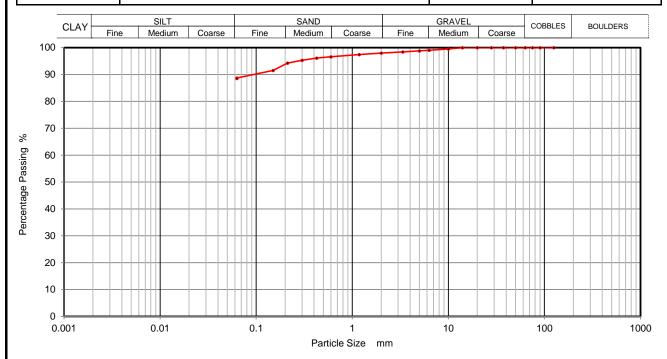
Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	90
Silt and Clay	9

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	02-07-18	Emma Sharp
RO/MH	Approved	03-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	ВН03
Site Name	e Riverside		
Soil Description		Depth Top	11.50
	Brown fine slightly gravelly fine to coarse slightly sandy silty CLAY.	Depth Base	
		Sample Type	D



Sie	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				

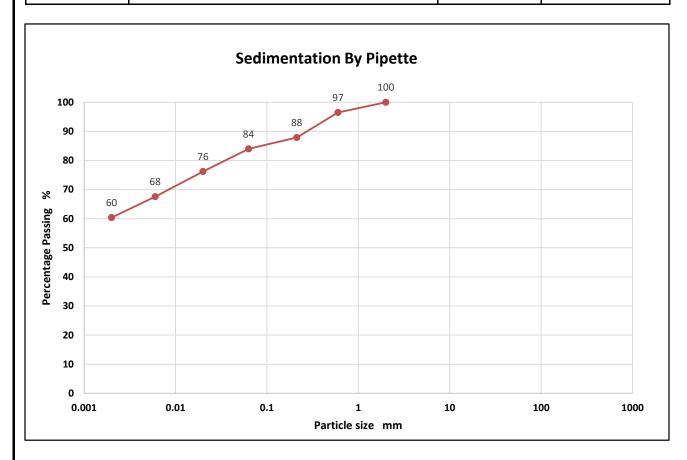
Sample Proportions	% dry mass	
Cobbles	0	
Gravel	2	
Sand	9	
Silt and Clay	89	

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	02-07-18	Emma Sharp
RO/MH	Approved	03-07-18	Paul Evans



CCTI	Sedimentation By Pipette Analyisis	Contract Number	39466
GSIL	BS 1377 Part 2:1990 Clause 9.4	Borehole/Pit No.	ВН3
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top	13.50
	Grey Saridy Silly CLAT.	Depth Base	
		Sample Type	В



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	97
0.212	88
0.063	84

Sedimentation Analysis

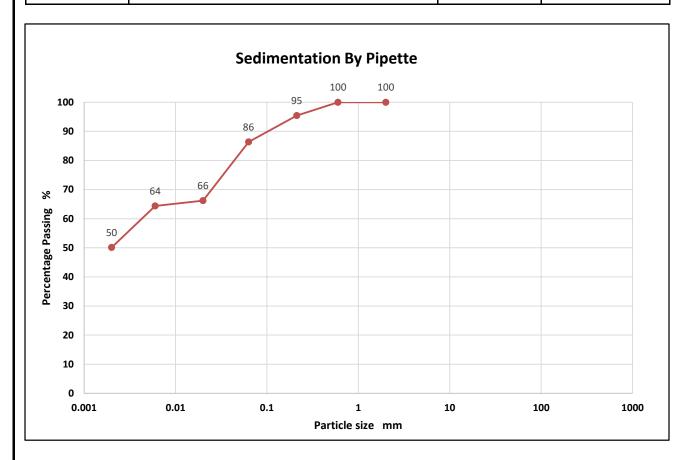
Particle Diameter	Percentage Passing
0.02	76
0.006	68
0.002	60

Soil Fraction	Total Percentage
Gravel	0
Sand	16
Silt	24
Clay	60

Operators	Checked	08-07-18	Emma Sharp	
RO	Approved	09-07-18	Ben Sharp	



CCTI	Sedimentation By Pipette Analyisis	Contract Number	39466
GSIL	BS 1377 Part 2:1990 Clause 9.4	Borehole/Pit No.	ВН3
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top	29.50
	Grey Saridy Silly CLAT.	Depth Base	
		Sample Type	В



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	95
0.063	86

Sedimentation Analysis

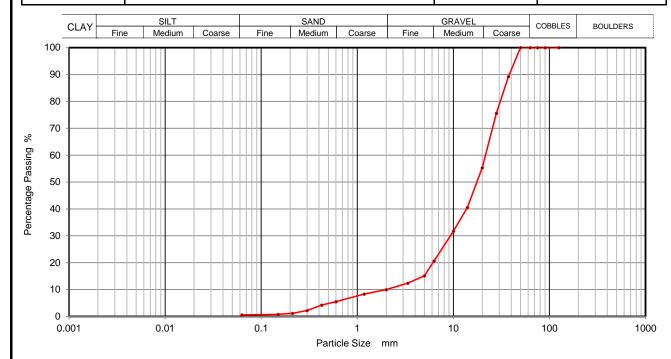
Particle Diameter	Percentage Passing
0.02	66
0.006	64
0.002	50

Soil Fraction	Total Percentage
Gravel	0
Sand	14
Silt	36
Clay	50

Operators	Checked	08-07-18	Emma Sharp
RO	Approved	09-07-18	Ben Sharp



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	ВН04
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine slightly sandy fine to coarse GRAVEL.	Depth Top	10.50
	brown slity line slightly sandy line to coarse GRAVEL.	Depth Base	
		Sample Type	D



Sie	ving	Sedime	entation
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		

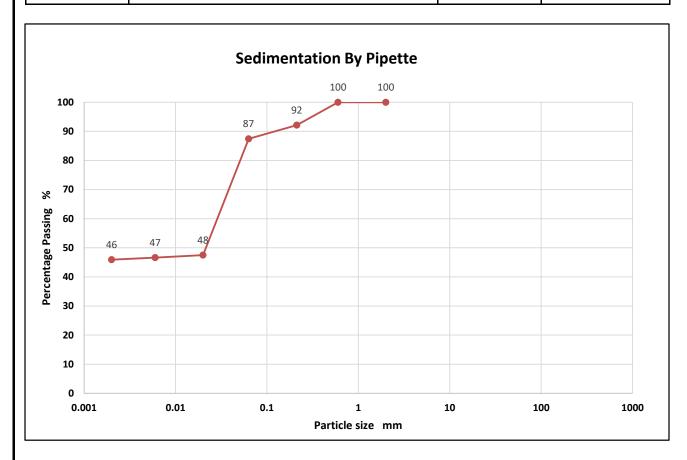
Sample Proportions	% dry mass
Cobbles	0
Gravel	90
Sand	9
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	02-07-18	Emma Sharp
RO/MH	Approved	03-07-18	Paul Evans



CCTI	Sedimentation By Pipette Analyisis	Contract Number	39466
GSIL	BS 1377 Part 2:1990 Clause 9.4	Borehole/Pit No.	BH4
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top	18.00
	Gley Salldy Silly CLAT.	Depth Base	
		Sample Type	В



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	100
0.212	92
0.063	87

Sedimentation Analysis

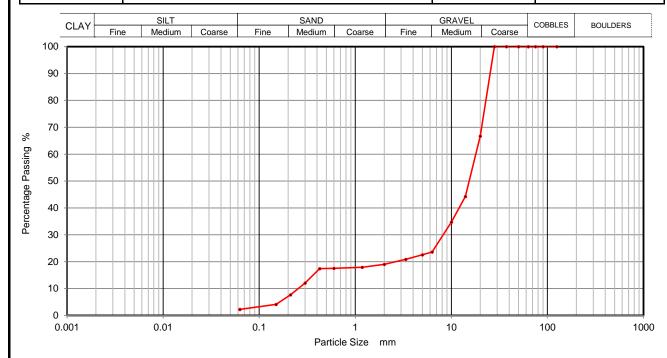
Particle Diameter	Percentage Passing
0.02	48
0.006	47
0.002	46

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



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	ВН04
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	21.00
	BIOWIT SIRLY THE TO COAISE SAITLY THE TO COAISE GRAVEL.	Depth Base	
		Sample Type	D



Sieving		Sedimentation	
Particle Size	% Passing	Particle Size	% Passing
mm	70 : acomig	mm	70 : acomig
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		

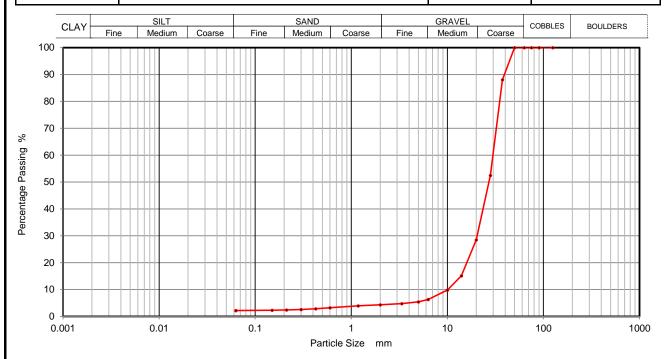
Sample Proportions	% dry mass
Cobbles	0
Gravel	81
Sand	17
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	02-07-18	Emma Sharp
RO/MH	Approved	03-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION		39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	David State Control of the Control o	Depth Top	10.50
	Brown silty fine to coarse slightly sandy fine to coarse GRAVEL.	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		

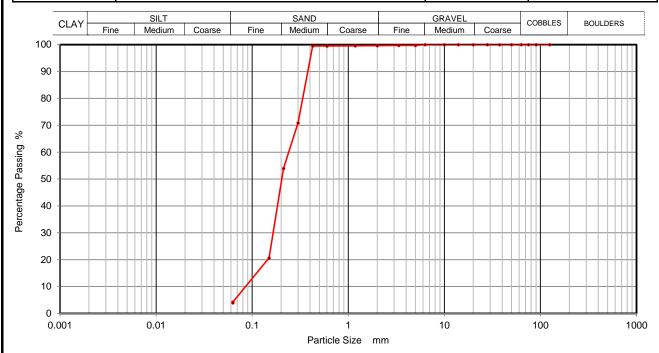
Sample Proportions	% dry mass
Cobbles	0
Gravel	96
Sand	2
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	ВН05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty fine to medium SAND.	Depth Top	22.50
	BIOWIT SIRLY TITLE TO THE GIGHT SAND.	Depth Base	
		Sample Type	D



Sieving		Sedime	entation
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		

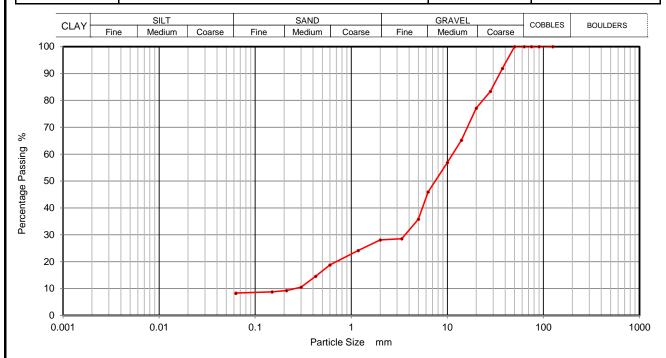
Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	96
Silt and Clay	4

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp	
RO/MH	Approved	05-07-18	Paul Evans	



CCTI	PARTICLE SIZE DISTRIBUTION		39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	blown sitty line to coarse sarrdy line to coarse GRAVEL.	Depth Base	
		Sample Type	В



Sieving		Sedime	entation
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		

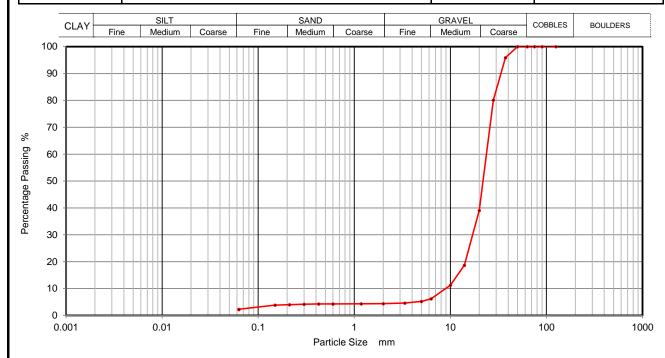
Sample Proportions	% dry mass
Cobbles	0
Gravel	72
Sand	20
Silt and Clay	8

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp	
RO/MH	Approved	05-07-18	Paul Evans	



CCTI	PARTICLE SIZE DISTRIBUTION		39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Blown silty line to coarse slightly sairty line to coarse GRAVEL.	Depth Base	
		Sample Type	В



Sieving		Sedime	entation
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		

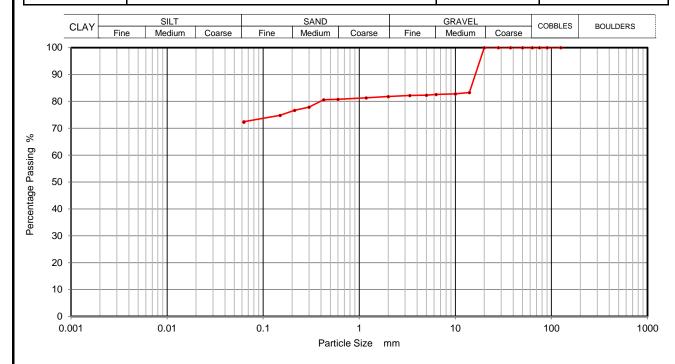
Sample Proportions	% dry mass	
Cobbles	0	
Gravel	96	
Sand	2	
Silt and Clay	2	

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp	
RO/MH	Approved	05-07-18	Paul Evans	



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	ВН09
Site Name	Riverside	Sample No.	
Soil Description	Crowline to engree conduiting to engree growelly gitty CLAV	Depth Top	21.50
	Grey fine to coarse sandy fine to coarse gravelly silty CLAY.	Depth Base	
		Sample Type	D



Sie	ving	Sedime	entation
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	

Operators	Checked	04-07-18	Emma Sharp	
RO/MH	Approved	05-07-18	Paul Evans	



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	blown sitty line to coarse sarrdy line to coarse GRAVEL.	Depth Base	
		Sample Type	В



Sie	ving	Sedime	entation
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		

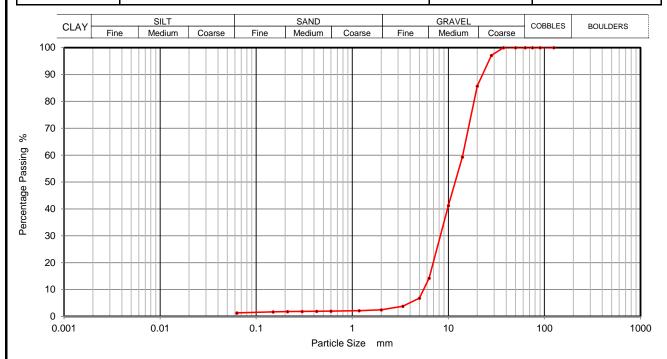
Sample Proportions % dry mass	
Cobbles	0
Gravel	80
Sand	18
Silt and Clay	2

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Brown silly line to medium silgnity sandy line to coarse GRAVEL.	Depth Base	
		Sample Type	В



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		

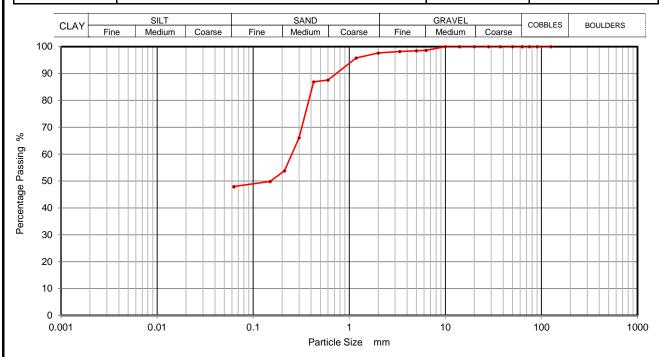
Sample Proportions	% dry mass
Cobbles	0
Gravel	98
Sand	1
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Grey line slightly gravery slity clayey line to coarse SAND.	Depth Base	
		Sample Type	D



Sie	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			

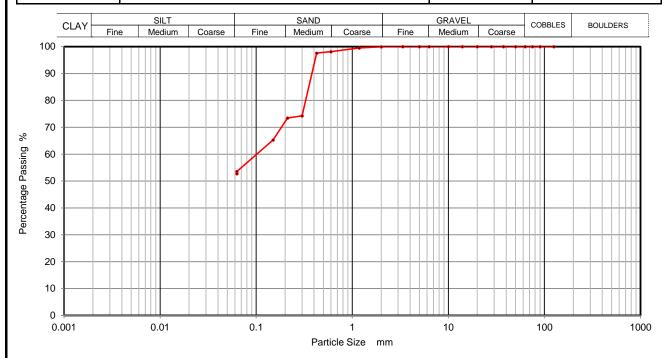
Sample Proportions	% dry mass	
Cobbles	0	
Gravel	2	
Sand	50	
Silt and Clay	48	

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH10A
Site Name	Riverside	Sample No.	
Soil Description	Grey fine to coarse sandy silty CLAY.	Depth Top	46.40
	Grey line to coarse sarity stilly CLAT.	Depth Base	
		Sample Type	D



Sie	ving	Sedime	entation
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	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2		BH10A
Site Name	Riverside	Sample No.	
Soil Description	Brown silty clayey fine to coarse SAND.	Depth Top	49.40
	Brown silty clayey lifte to coarse SAND.	Depth Base	
		Sample Type	D



Sie	ving	Sedime	entation
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		

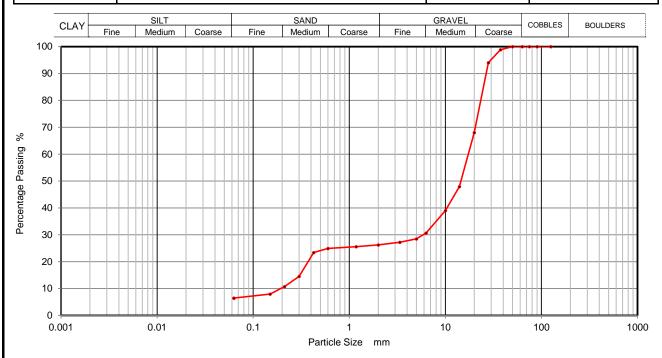
Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	84
Silt and Clay	16

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2		39466
GOIL			BH11
Site Name	Riverside	Sample No.	
Soil Description	Grey silty fine to coarse sandy fine to coarse GRAVEL	Depth Top	31.50
	Grey stily line to coarse sarray line to coarse GNAVEL	Depth Base	
		Sample Type	В



Sie	ving	Sedime	entation
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		<u> </u>
0.212	11		
0.15	8		
0.063	6		

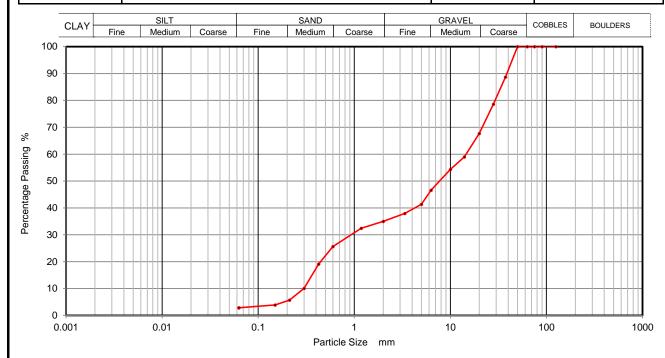
Sample Proportions	% dry mass	
Cobbles	0	
Gravel	74	
Sand	20	
Silt and Clay	6	

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Grey Sitty time to coarse Sandy line to coarse GRAVEL	Depth Base	
		Sample Type	В



Sie	ving	Sedime	entation
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		

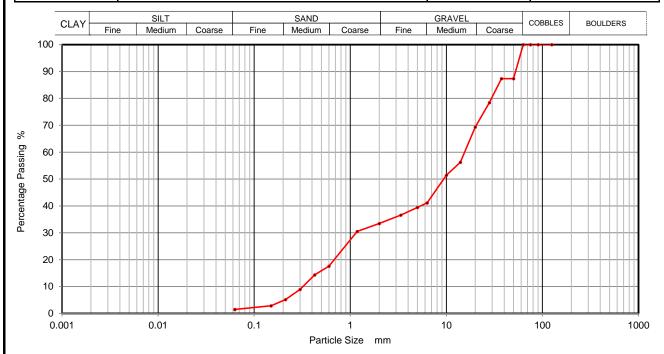
Sample Proportions	% dry mass
Cobbles	0
Gravel	65
Sand	32
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Gley Silly line to coarse sailty line to coarse GNAVEL.	Depth Base	
		Sample Type	В



Sie	ving	Sedime	entation
Particle Size	% Passing	Particle Size	% Passing
mm	70 1 d33ing	mm	70 T d33H1g
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		

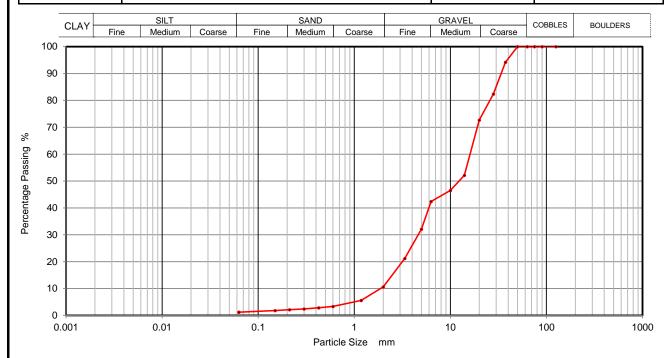
Sample Proportions	% dry mass
Cobbles	0
Gravel	67
Sand	32
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Grey Silly line to coarse sarity line to coarse GRAVEL.	Depth Base	
		Sample Type	В



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		

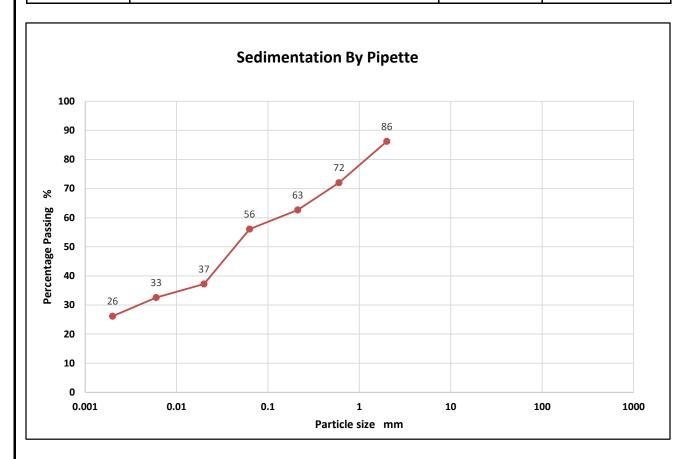
Sample Proportions	% dry mass
Cobbles	0
Gravel	89
Sand	10
Silt and Clay	1

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	Sedimentation By Pipette Analyisis BS 1377 Part 2:1990 Clause 9.4		39466
GSIL			BH12
Site Name	Riverside	Sample No.	
Soil Description	Grey gravelly clayey silty SAND.	Depth Top	26.00
	Grey gravelly dayey silly SAND.	Depth Base	
		Sample Type	В



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	86
0.60	72
0.212	63
0.063	56

Sedimentation Analysis

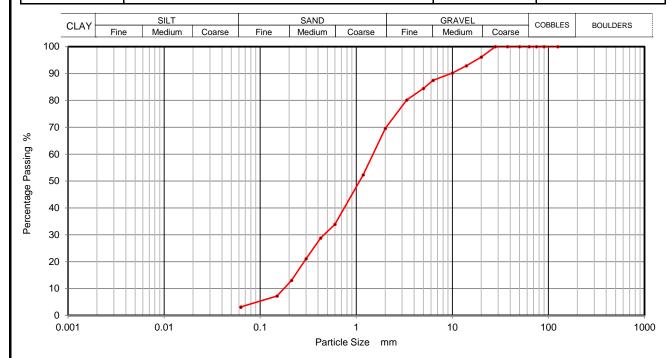
Particle Diameter	Percentage Passing
0.02	37
0.006	33
0.002	26

Soil Fraction	Total Percentage
Gravel	14
Sand	30
Silt	30
Clay	26

Operators	Checked	08-07-18	Emma Sharp
RO	Approved	09-07-18	Ben Sharp



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Brown sitty line to coarse gravery line to coarse SAND.	Depth Base	
		Sample Type	В



Sieving		Sedime	entation
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		

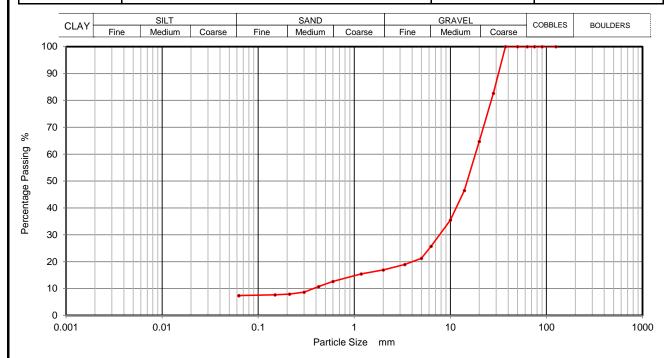
Sample Proportions	% dry mass
Cobbles	0
Gravel	30
Sand	67
Silt and Clay	3

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	PARTICLE SIZE DISTRIBUTION		39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	blown sitty line to coarse sarrdy line to coarse GRAVEL.	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		

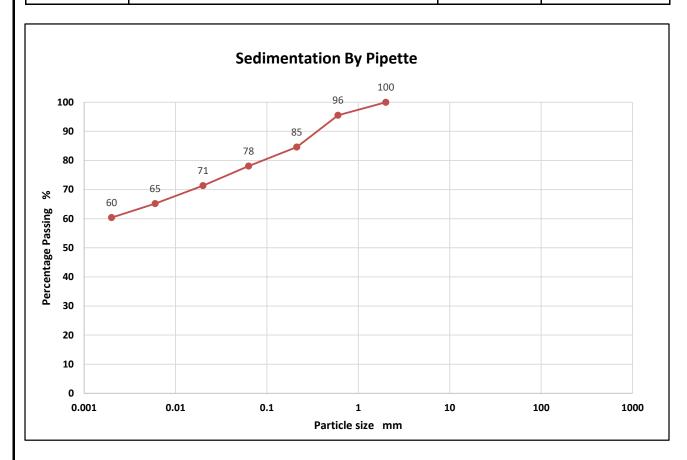
Sample Proportions	% dry mass
Cobbles	0
Gravel	83
Sand	10
Silt and Clay	7

Grading Analysis	
Uniformity Coefficient	

Operators	Checked	04-07-18	Emma Sharp
RO/MH	Approved	05-07-18	Paul Evans



CCTI	Sedimentation By Pipette Analyisis	Contract Number	39466
GSIL	BS 1377 Part 2:1990 Clause 9.4	Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Provincilly candy CLAV	Depth Top	16.00
	Brown silty sandy CLAY.	Depth Base	
		Sample Type	В



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	100
0.60	96
0.212	85
0.063	78

Sedimentation Analysis

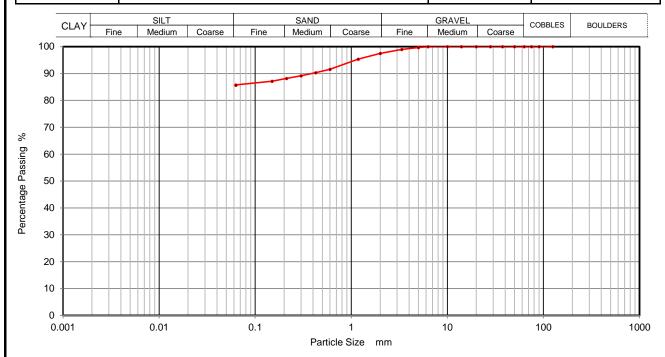
Particle Diameter	Percentage Passing
0.02	71
0.006	65
0.002	60

Soil Fraction	Total Percentage
Gravel	0
Sand	22
Silt	18
Clay	60

Operators	Checked	08-07-18	Emma Sharp
RO	Approved	09-07-18	Ben Sharp



CCTI	PARTICLE SIZE DISTRIBUTION	Contract Number	39466
GOIL	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	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
	Brown line slightly gravelly line to coarse sandy slity CLAT.	Depth Base	
		Sample Type	D



Sie	Sieving Sedimentation		entation
Particle Size	% Passing	Particle Size	% Passing
mm	76 F assiriy	mm	70 F assiriy
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	

Operators	Checked	01-07-18	Emma Sharp
RO/MH	Approved	02-07-18	Paul Evans



CCTI	Certificate of Chemical Analysis	Contract Number	39466
GSIL	(BRE BR 279)	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	D	epth (m)	Acid Soluble Sulphate	Aqueous Extract Sulphate	Chloride Content	Ph Value	Total Sulphur	Magnesium	Nitrate
BH02		В	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		В	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		В	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
 % SO₄

 Aqueous Extract Sulphate
 g/l SO₄

 Chloride Content (Semi)
 mg Cl/l

 PH Value
 @ 25°

 Total Sulphur
 % S

 Magnesium
 g/l SO₄

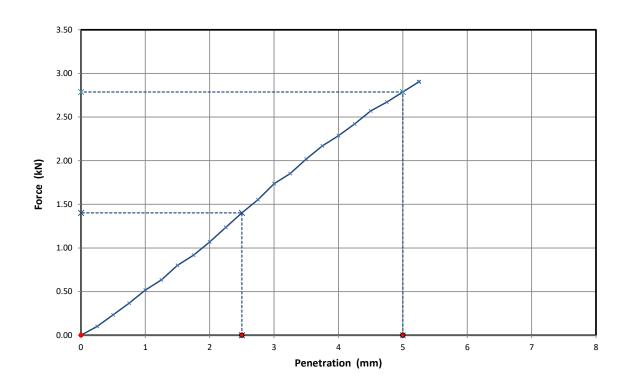
 Nitrate
 NO₃ mg/l

Remarks

NCP = No Chloride Present

Test Operator	Checked and	Authorised by	Ben Sharp	
Darren Bourne	Date	27-06-18	Den Sharp	

CCTI	California Bearing Ratio	Contract Number	39466
GSIL	BS 1377: Part 4: 1990 Clause 7	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	В



Initial Sample C	onditions
Moisture Content (%)	3.6
Moisture Top (%)	
Moisture Bottom (%)	
5 !! 5 . i: (14 / 5)	
Bulk Density (Mg/m3)	2.12
5 5 % (14 / 5)	
Dry Density (Mg/m3)	2.05

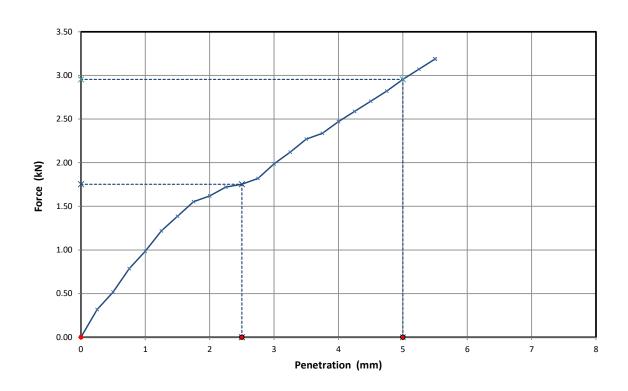
Specified Tes	Specified Testing Parameters						
Surcharge (Kg)	2						
Soaking Time (hours)	N/A						
Swelling (mm)	N/A						
Remarks							

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



CCTI	California Bearing Ratio	Contract Number	39466
GSIL	BS 1377: Part 4: 1990 Clause 7	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	В



14
14
2.08
1.83

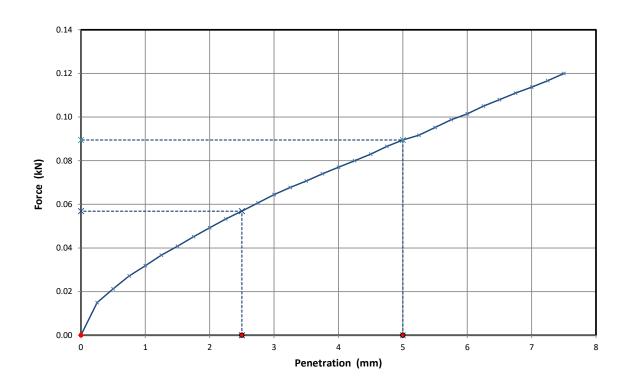
Specified Testing Parameters		
Surcharge (Kg)	2	
Soaking Time (hours)	N/A	
Swelling (mm)	N/A	
Remarks		

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



CCTI	California Bearing Ratio	Contract Number	39466
GSIL	BS 1377: Part 4: 1990 Clause 7	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	В



64
1.66
1.01

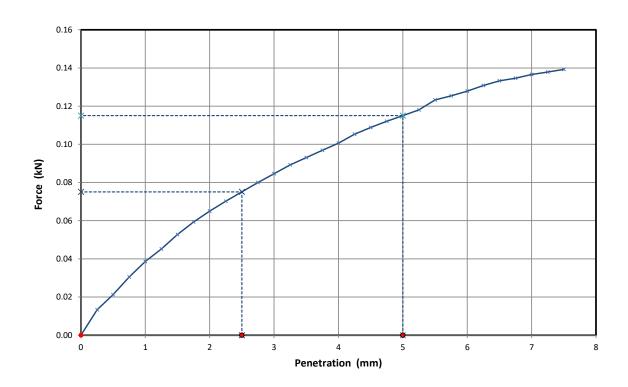
Specified Testing Parameters			
Surcharge (Kg)	2		
Soaking Time (hours)	N/A		
Swelling (mm)	N/A		
Remarks			

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



CCTI	California Bearing Ratio	Contract Number	39466
GSIL	BS 1377: Part 4: 1990 Clause 7	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	В



Initial Sample Conditions			
Moisture Content (%)	43		
Moisture Top (%)			
Moisture Bottom (%)			
Bulk Density (Mg/m3)	1.26		
Dry Density (Mg/m3)	0.88		
-			

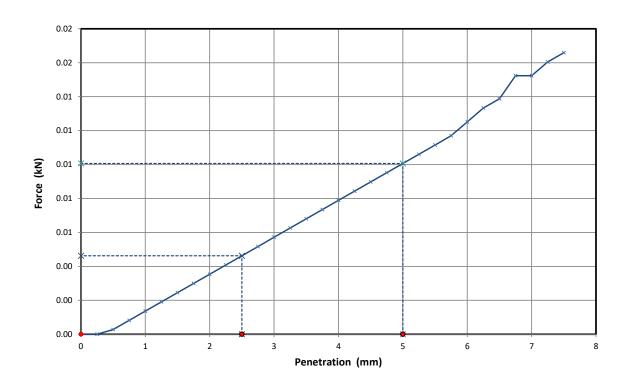
Specified Testing Parameters		
Surcharge (Kg)	2	
Soaking Time (hours)	N/A	
Swelling (mm)	N/A	
Remarks		
	1	

CBR Test Values				
2.5mm Top	0.6		2.5mm Bottom	
5mm Top 0.6 5mm E		5mm Bottom		
CBR Value %	0.6		CBR Value %	

Operators	Checked	05-07-18	Sean Penn
RO/MH	Approved	06-07-18	Ben Sharp



CCTI	California Bearing Ratio	Contract Number	39466
GSIL	BS 1377: Part 4: 1990 Clause 7	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	В



Initial Sample Conditions		
Moisture Content (%)	8.0	
Moisture Top (%)		
Moisture Bottom (%)		
Bulk Density (Mg/m3)	1.97	
Dry Density (Mg/m3)	1.83	

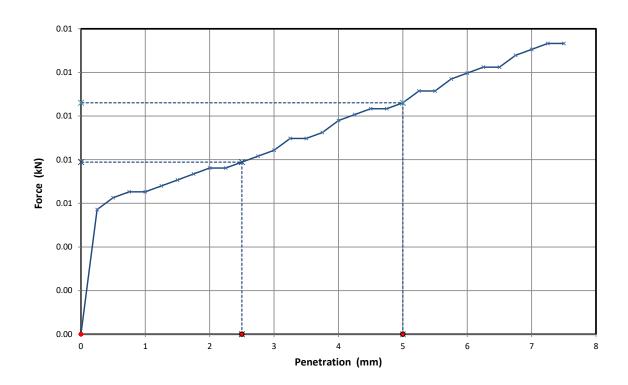
Specified Testing Parameters		
Surcharge (Kg)	2	
Soaking Time (hours)	N/A	
Swelling (mm)	N/A	
Remarks		
]	

CBR Test Values				
2.5mm Top	0.0	2.5mm Bottom		
5mm Top 0.1 5mm Bott		5mm Bottom		
CBR Value %	0.1	CBR Value %		

Operators	Checked	05-07-18	Sean Penn
RO/MH	Approved	06-07-18	Ben Sharp



CCTI	California Bearing Ratio	Contract Number	39466
GSIL	BS 1377: Part 4: 1990 Clause 7	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	В



onditions
20
1.97
1.64

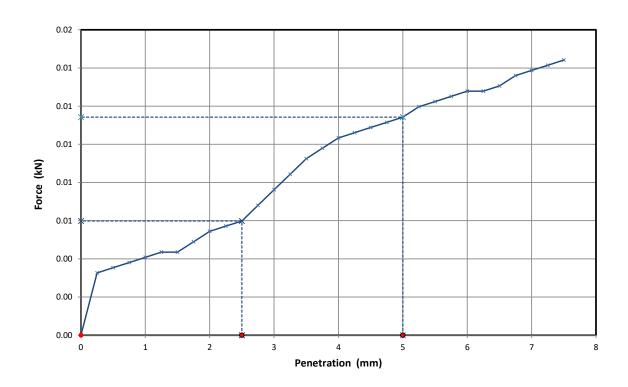
Specified Tes	sting Parameters
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

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	
RO/MH	Approved	06-07-18	Ben Sharp	



CCTI	California Bearing Ratio	Contract Number	39466
GSIL	BS 1377: Part 4: 1990 Clause 7	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	В



Initial Sample C	onditions
Moisture Content (%)	21
Moisture Top (%)	
Moisture Bottom (%)	
Bulk Density (Mg/m3)	2.10
Dry Density (Mg/m3)	1.73
<u> </u>	

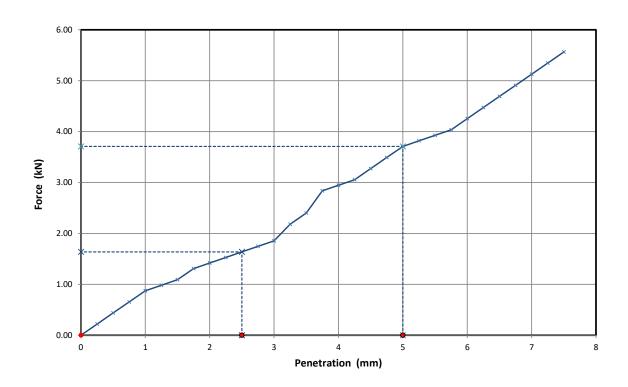
Specified Tes	ting Parameters
Surcharge (Kg)	2
Soaking Time (hours)	N/A
Swelling (mm)	N/A
Remarks	

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	
RO/MH	Approved	06-07-18	Ben Sharp	



CCTI	California Bearing Ratio	Contract Number	39466
GSIL	BS 1377: Part 4: 1990 Clause 7	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	В



1.4
1.88
1.86

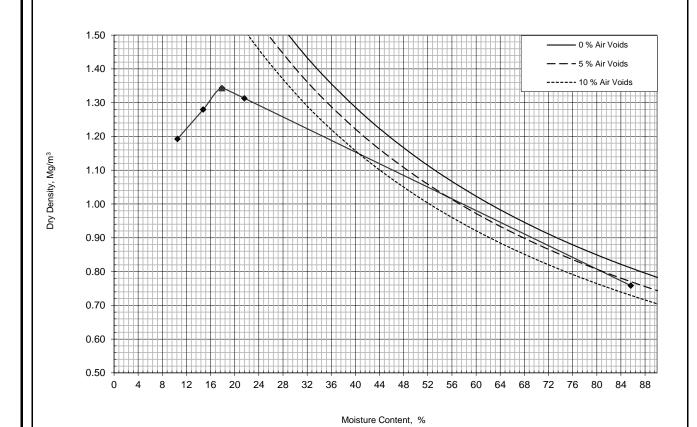
Specified Testing Parameters				
Surcharge (Kg)	2			
Soaking Time (hours)	N/A			
Swelling (mm)	N/A			
Remarks				

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	
RO/MH	Approved	06-07-18	Ben Sharp	



CCTI	Dry Density / Moisture Content Relationship	Contract Number	39466
GSIL	BS 1377:Part 4:1990	Borehole / Pit No	ВН03
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	В



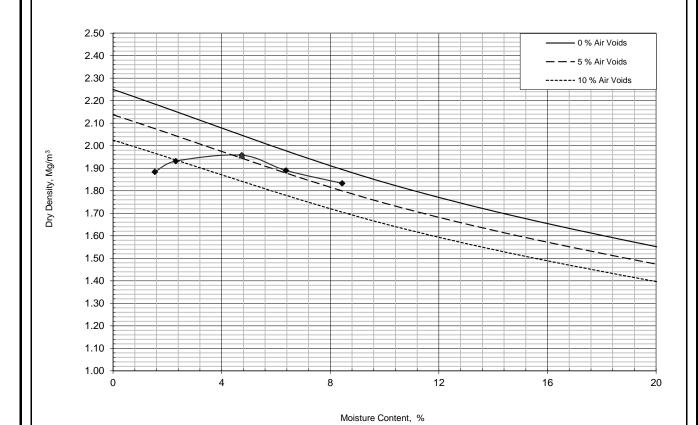
Compaction Point	1	2	3	4	5				
Moisture Content	11	15	18	22	86				
Bulk Density	1.32	1.47	1.58	1.60	1.41				
Dry Density	1.19	1.28	1.34	1.31	0.76				

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	
CA	Approved	09-07-18	Paul Evans	



CCTI	Dry Density / Moisture Content Relationship	Contract Number	39466
GSIL	BS 1377:Part 4:1990	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	В



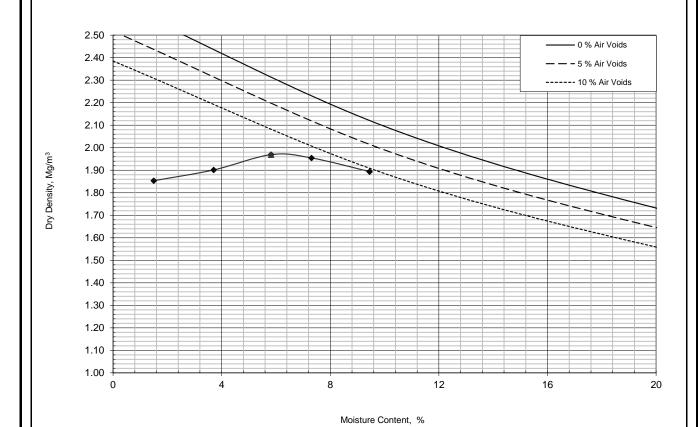
Compaction Point	1	2	3	4	5				
Moisture Content	1.5	2.3	4.7	6.4	8.4				
Bulk Density	1.91	1.98	2.05	2.01	1.99				
Dry Density	1.88	1.93	1.96	1.89	1.83				

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		
CA	Approved	09-07-18	Paul Evans		



CCTI	Dry Density / Moisture Content Relationship		39466
GSIL	BS 1377:Part 4:1990	Borehole / Pit No	BH12
Site Name	Littlefield	Sample No	
Soil Description	Light brown filne 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	В



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				

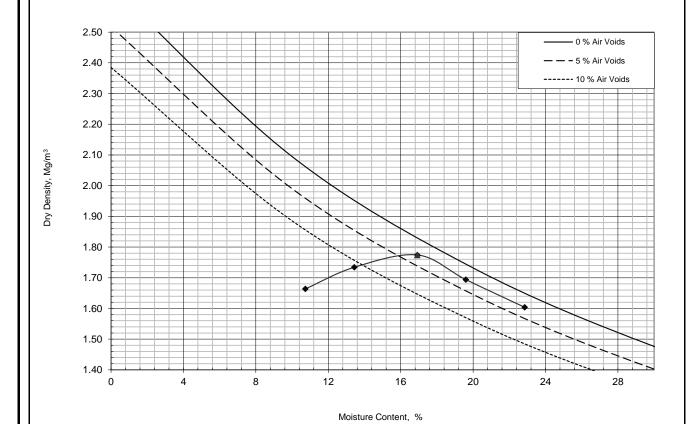
Initial Moisture Content	5.8	%
Maximum Dry Density	1.97	Mg/m3
Optimum Moisture Content	6	%
Paricle Density	2.65 Assumed	Mg/m3
Material Retianed 37.5mm	0	%
Material Retianed 20mm	17.2	%

Operators	Checked	08-07-18	Emma Sharp
CA	Approved	09-07-18	Paul Evans





CCTI	Dry Density / Moisture Content Relationship	Contract Number	39466
GOIL	BS 1377:Part 4:1990	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	В



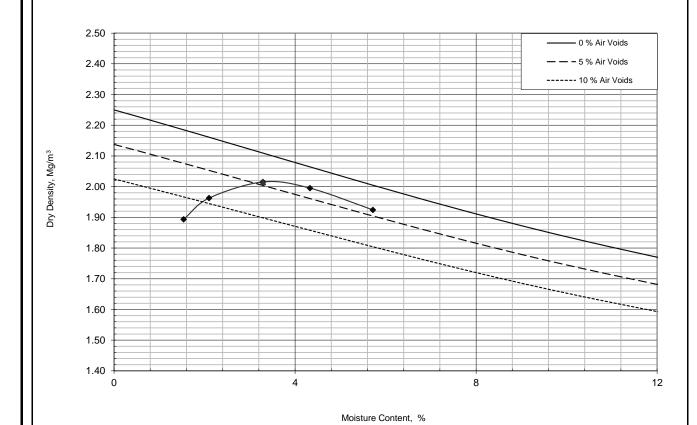
Compaction Point	1	2	3	4	5				
Moisture Content	11	13	17	20	23				
Bulk Density	1.84	1.97	2.07	2.03	1.97				
Dry Density	1.66	1.73	1.77	1.69	1.60				

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
CA	Approved	09-07-18	Paul Evans



CCTI	Dry Density / Moisture Content Relationship	Contract Number	39466
GSIL	BS 1377:Part 4:1990	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	В



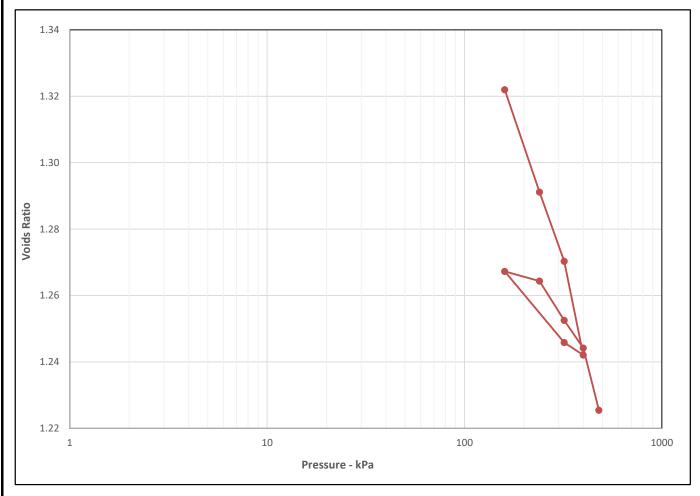
Compaction Point	1	2	3	4	5				
Moisture Content	1.5	2.1	3.3	4.3	5.7				
Bulk Density	1.92	2.00	2.08	2.08	2.03				
Dry Density	1.89	1.96	2.02	2.00	1.92				

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
CA	Approved	09-07-18	Paul Evans



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	17.50
	GIEY SIILY CLAY.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



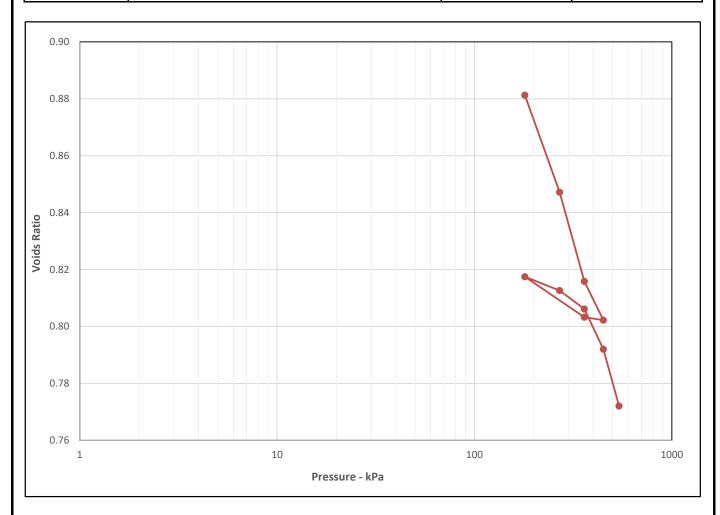
Swelling Stage Reached At 160kPA

Initial Sample Conditi	ons	Pres	sure R	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	
LG	Approved	09-07-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GJIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	13.50
	Grey Silty CLAT.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U



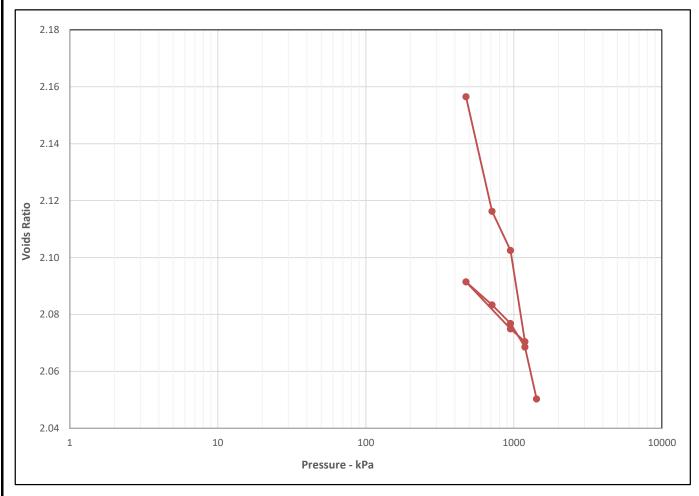
Initial Sample Condition	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	34	0	-	180	0.14	12	360	-	450	0.04	0.17
Bulk Density (Mg/m3)	1.83	180	-	270	0.2	9.1	450	-	540	0.087	0.039
Dry Density (Mg/m3)	1.37	270	-	360	0.19	7.2		-			
Voids Ratio	0.9315	360	-	450	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





CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY with organic material.	Depth Top (m)	28.50
	Grey Silty GLAT with organic material.	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

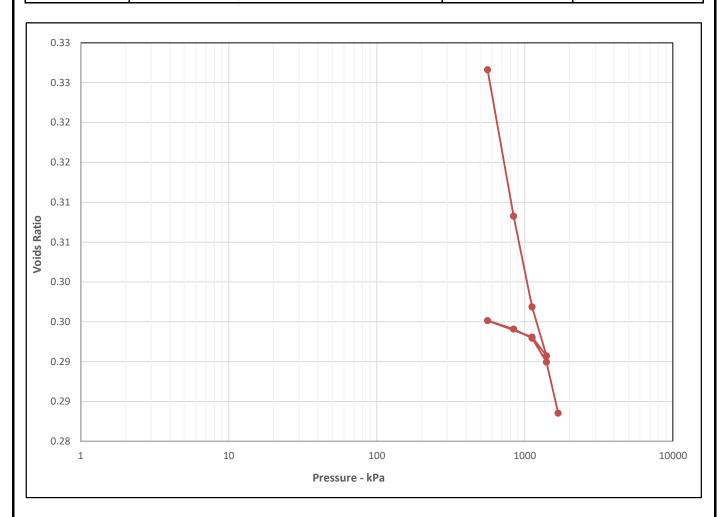
Initial Sample Condition	ons	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	43	0	-	475	0.14	17	950	-	1187.5	0.0089	13
Bulk Density (Mg/m3)	1.12	475	-	712.5	0.054	12	1187.5	-	1425	0.011	8.8
Dry Density (Mg/m3)	0.78	712.5	-	950	0.019	9.1		-			
Voids Ratio	2.3822	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





CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH02A
Site Name	Riverside	Sample No.	
Soil Description	Croveille CLAV	Depth Top (m)	32.85
	Grey silty CLAY.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

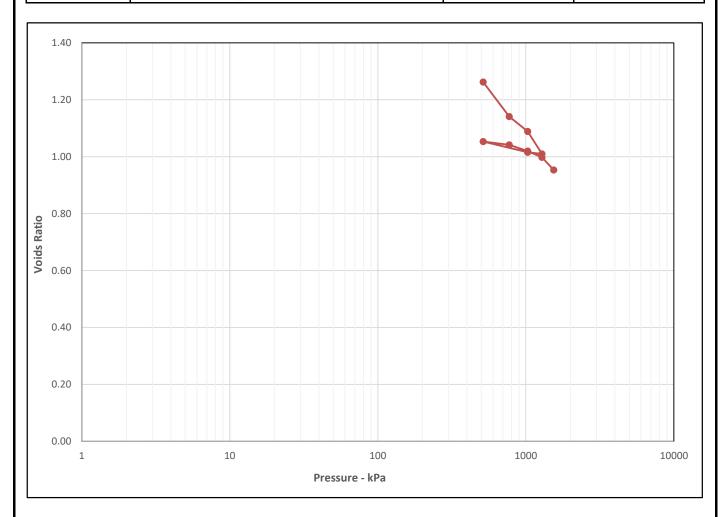


Initial Sample Condition	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	8.6	0	-	560	0.12	7.2	1120	-	1400	0.0031	7.6
Bulk Density (Mg/m3)	2.02	560	-	840	0.049	12	1400	-	1680	0.0083	2.8
Dry Density (Mg/m3)	1.86	840	-	1120	0.031	5		-			
Voids Ratio	0.4225	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	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH03
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY with organic material.	Depth Top (m)	29.50
	Grey Sitty CLAT with organic material.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

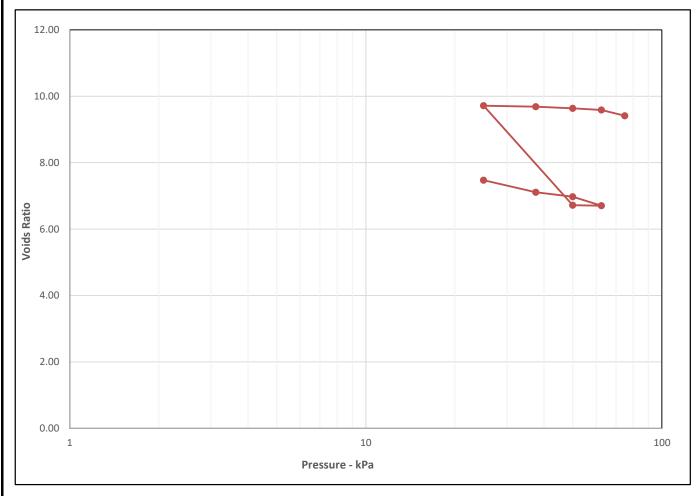


Initial Sample Condition	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	84	0	-	515	0.41	3.4	1030	-	1287.5	0.042	0.44
Bulk Density (Mg/m3)	1.70	515	-	772.5	0.21	6	1287.5		1545	0.042	0.066
Dry Density (Mg/m3)	0.92	772.5	-	1030	0.095	0.11		-			
Voids Ratio	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	
LG	Approved	27-06-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
UJIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Black silty CLAY with organic material.	Depth Top (m)	9.00
	Black Silly CLAT with organic material.	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



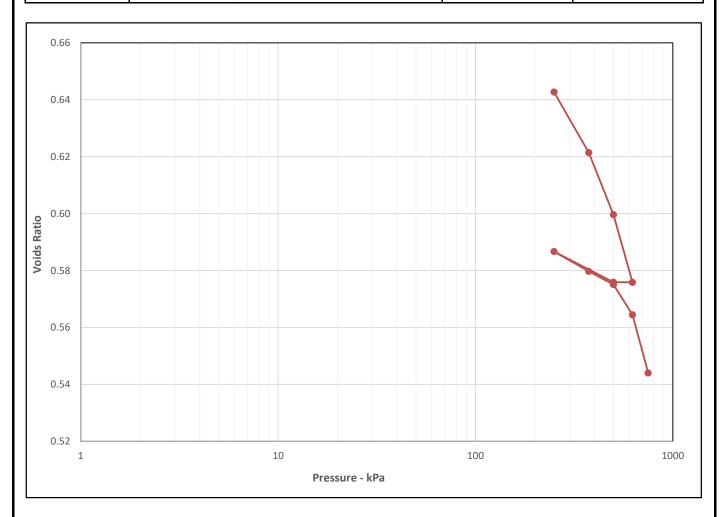
No Swell Recorded

Initial Sample Condition	ons	Pres	sure R	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	
LG	Approved	09-07-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Croueillay CLAV	Depth Top (m)	16.50
	Grey silty CLAY.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

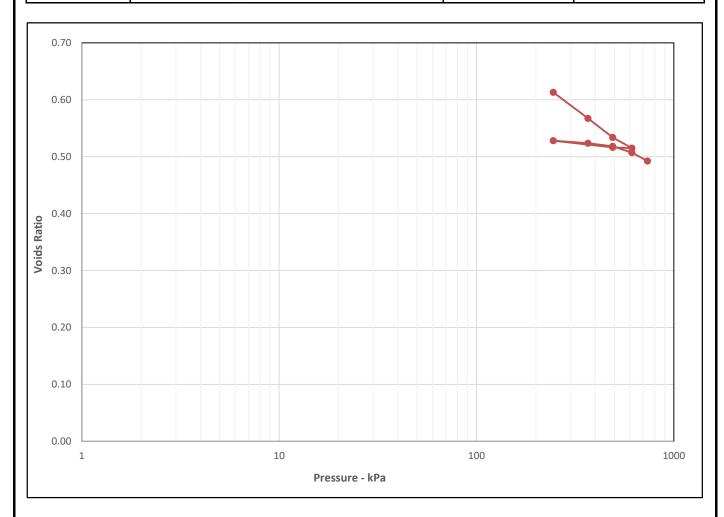


Initial Sample Conditio	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	23	0	-	250	0.17	14	500	-	625	0.024	12
Bulk Density (Mg/m3)	1.90	250	-	375	0.1	15	625	-	750	0.054	8.9
Dry Density (Mg/m3)	1.54	375	-	500	0.11	8		-			
Voids Ratio	0.7156	500	-	625	0.1	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	
LG	Approved	27-06-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	16.50
	GIEY SIILY CLAY.	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

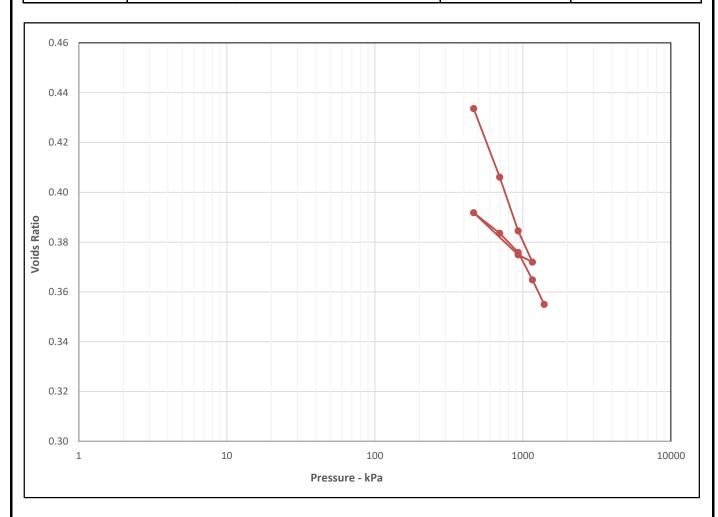


Initial Sample Conditio	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	21	0	-	245	0.21	16	490	-	612.5	0.029	7.2
Bulk Density (Mg/m3)	1.88	245	-	367.5	0.23	9.7	612.5		735	0.059	0.7
Dry Density (Mg/m3)	1.56	367.5	-	490	0.17	6.4		-			
Voids Ratio	0.7004	490	-	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	
LG	Approved	27-06-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	28.00
	GIEY SILY CLAY.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

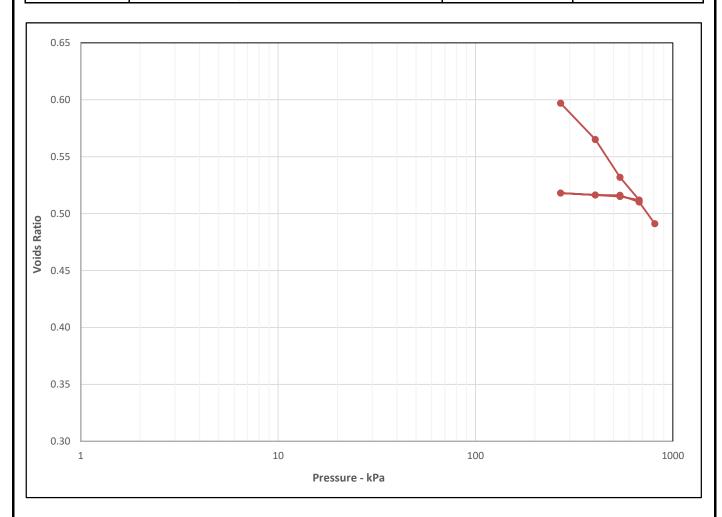


Initial Sample Conditio	ns	Pres	sure R	ange	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	17	0	-	465	0.15	11	930	-	1162.5	0.024	1.2
Bulk Density (Mg/m3)	2.01	465	-	697.5	0.083	8.3	1162.5		1395	0.034	1.5
Dry Density (Mg/m3)	1.72	697.5	-	930	0.066	2.5		-			
Voids Ratio	0.5394	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	
LG	Approved	27-06-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
UJIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	18.00
	Grey Sariuy Silty GLAT.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

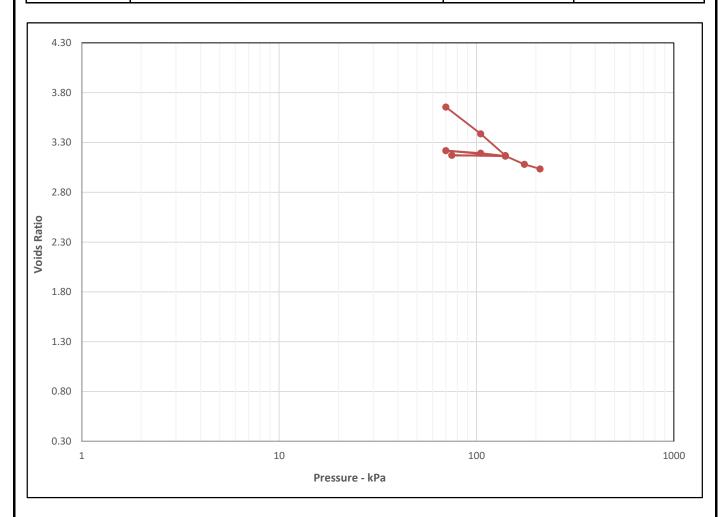


Initial Sample Conditio	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	21	0	-	270	0.22	14	540	-	675	0.0017	3.9
Bulk Density (Mg/m3)	1.89	270	-	405	0.15	10	675	-	810	0.028	4
Dry Density (Mg/m3)	1.56	405	-	540	0.16	8		-			
Voids Ratio	0.6975	540	-	675	0.1	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	
LG	Approved	27-06-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Black organic silty CLAY.	Depth Top (m)	5.50
	Black organic siny CLAT.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

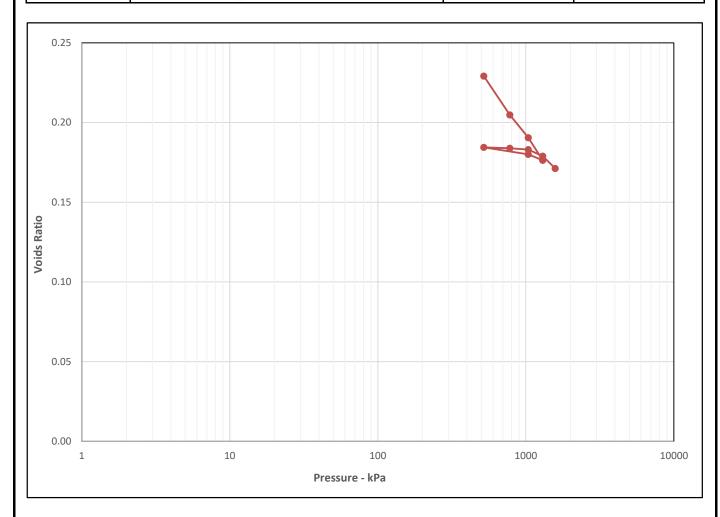


Initial Sample Conditio	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	150	0	-	70	2.3	6.8	140	-	175	0.2	2.5
Bulk Density (Mg/m3)	1.20	70	-	105	1.6	3	175		210	0.58	1.9
Dry Density (Mg/m3)	0.48	105	-	140	1.4	3.1		-			
Voids Ratio	4.5342	140	-	75	0.0	2.8		-			
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	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	30.50
	Grey Sarray Silty CLAT.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

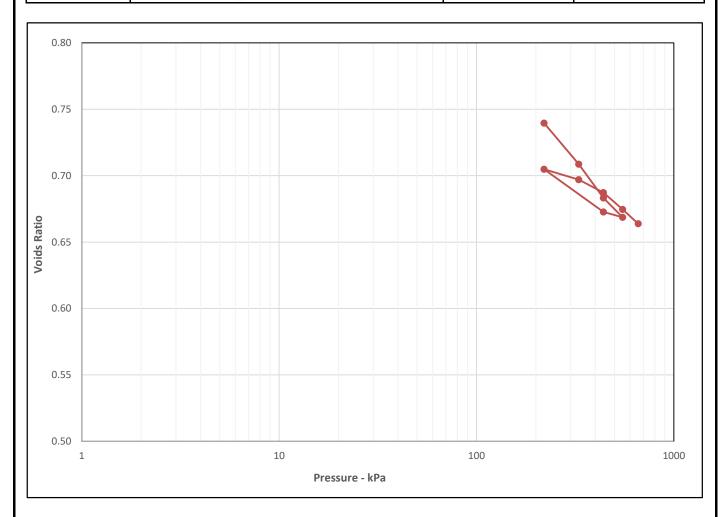


Initial Sample Conditio	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	5.4	0	-	520	0.12	11	1040	-	1300	0.0028	12
Bulk Density (Mg/m3)	2.14	520	-	780	0.076	8.3	1300		1580	0.013	0.92
Dry Density (Mg/m3)	2.03	780	-	1040	0.046	8		-			
Voids Ratio	0.3075	1040	-	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	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	15.00
	Grey Saridy Silty CLAT.	Depth Base (m)	
Lab Temperature	20°c	Sample Location	Middle
Remarks	Cv Calculated Using T90 Particle Density Assumed Unless Stated Otherwise	Sample Type	U

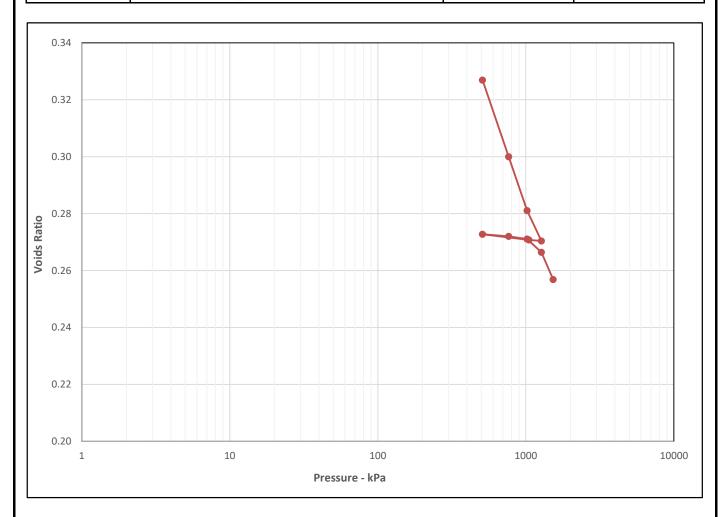


Initial Sample Conditio	ns	Pres	sure R	ange	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	24	0	-	220	0.21	9.1	440	-	550	0.052	4.4
Bulk Density (Mg/m3)	1.81	220	-	330	0.16	5.2	550		660	0.068	9.2
Dry Density (Mg/m3)	1.45	330	-	440	0.14	5.9		-			
Voids Ratio	0.8253	440	-	550	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	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH10A
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	29.50
	Grey Saridy Silty CLAT.	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

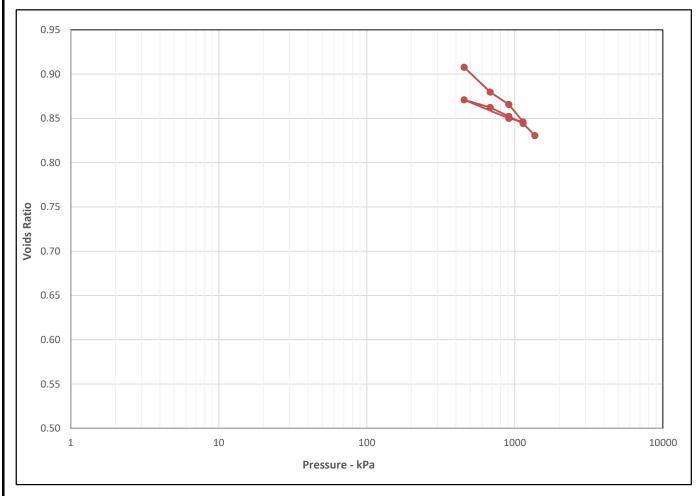


Initial Sample Conditio	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	8.3	0	-	510	0.18	13	1020	-	1275	0.0029	9.3
Bulk Density (Mg/m3)	1.96	510	-	765	0.08	8.9	1275	-	1530	0.014	3.8
Dry Density (Mg/m3)	1.81	765	-	1020	0.057	7.2		-			
Voids Ratio	0.4616	1020	-	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	
LG	Approved	27-06-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Grey sandy silty CLAY.	Depth Top (m)	27.00
	Grey Sarruy Sirry GLAT.	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



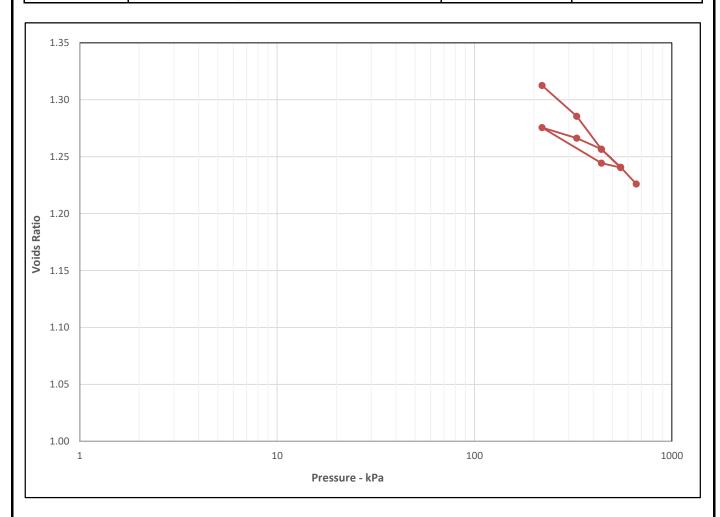
Swelling Stage Reached At 34kPA

Initial Sample Conditio	ns	Pres	sure R	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	
LG	Approved	09-07-18	Paul Evans	



CCTI	ONE DIMENSIONAL CONSOLIDATION TEST	Contract Number	39466
GOIL	BS1377:Part 5:1990, clause 3	Borehole/Trialpit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	15.00
	GIEY SIRY CLAT.	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

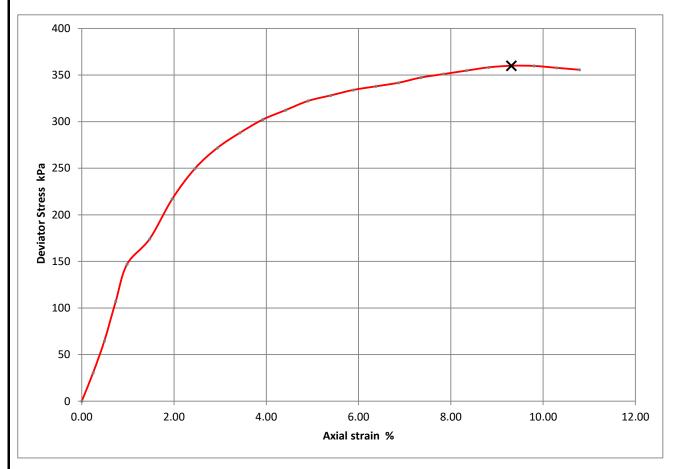


Initial Sample Conditio	ns	Pres	sure R	Range	Mv m2/MN	Cv m2/yr	Pressure Range		Mv m2/MN	Cv m2/yr	
Moisture Content (%)	27	0	-	220	0.11	18	440	-	550	0.038	3.2
Bulk Density (Mg/m3)	1.42	220	-	330	0.11	4.8	550	-	660	0.064	4.3
Dry Density (Mg/m3)	1.12	330	-	440	0.12	3.3		-			
Voids Ratio	1.3708	440	-	550	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		-			

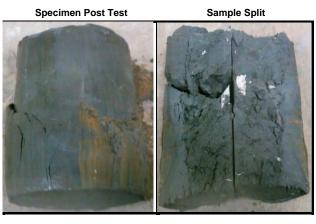
Operators	Checked	26-06-18	Ben Sharp	
LG	Approved	27-06-18	Paul Evans	

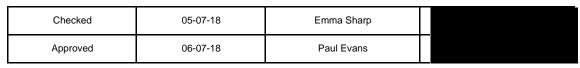


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Grevish brown sandy silty CLAY	Depth Top (m)	20.50
	Greyish blown sailty sitty CLAT	Depth Base (m)	20.95
		Sample Type	U



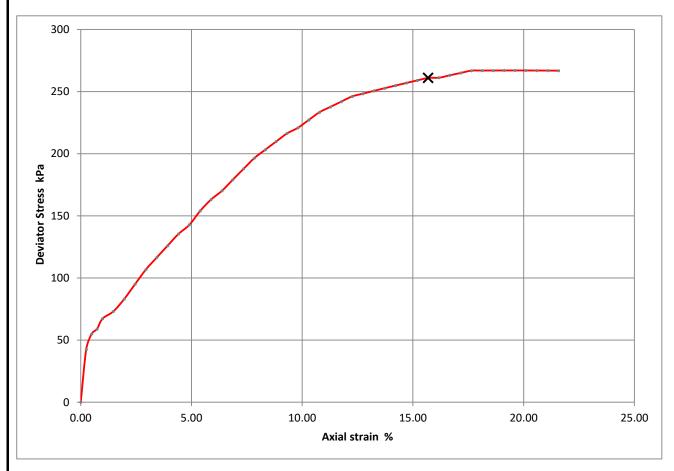
Moisture Content (%)	28
Bulk Density (Mg/m³)	1.99
Dry Density (Mg/m ³)	1.55
Specimen Length (mm)	204
Specimen Diameter (mm)	102
Cell Pressure (kPa)	350
Deviator Stress (kPa)	360
Undrained Shear Strength (kPa)	180
Failure Strain (%)	9.31
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



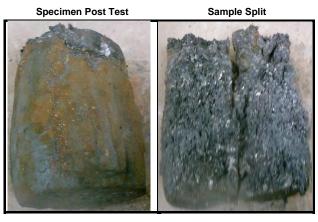




CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH01
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with shell fragments.	Depth Top (m)	29.50
	Blown sity CEAT with shell hagments.	Depth Base (m)	29.95
		Sample Type	U



Moisture Content (%)	19
Bulk Density (Mg/m³)	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

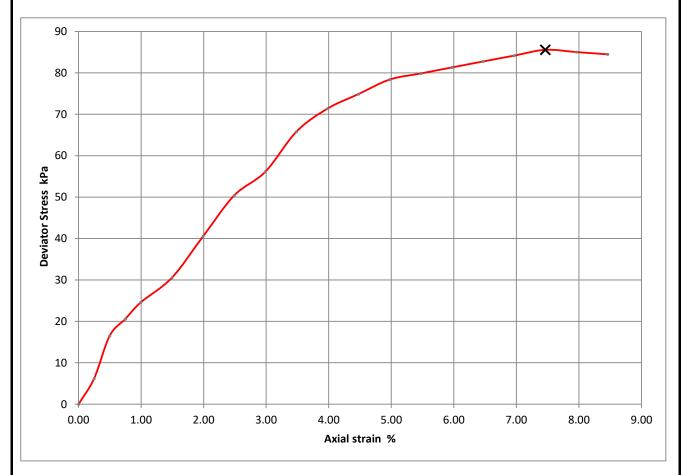




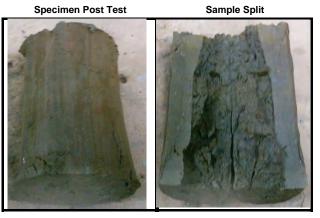


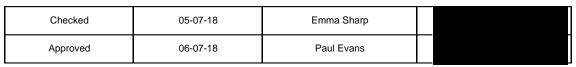


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Grevish brown silty CLAY	Depth Top (m)	2.50
	Gleyish blown sity CLAT	Depth Base (m)	2.95
		Sample Type	U



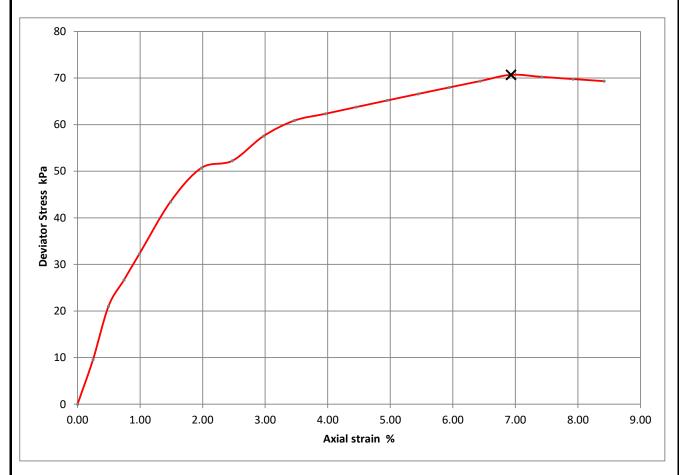
Moisture Content (%)	62
Bulk Density (Mg/m³)	1.79
Dry Density (Mg/m ³)	1.10
Specimen Length (mm)	201
Specimen Diameter (mm)	101
Cell Pressure (kPa)	30
Deviator Stress (kPa)	86
Undrained Shear Strength (kPa)	43
Failure Strain (%)	7.46
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



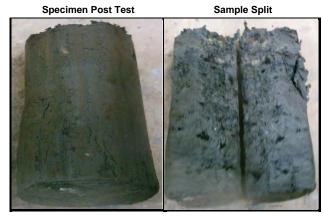


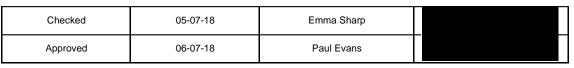


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY	Depth Top (m)	7.50
	Blown silly CEAT	Depth Base (m)	7.95
		Sample Type	U



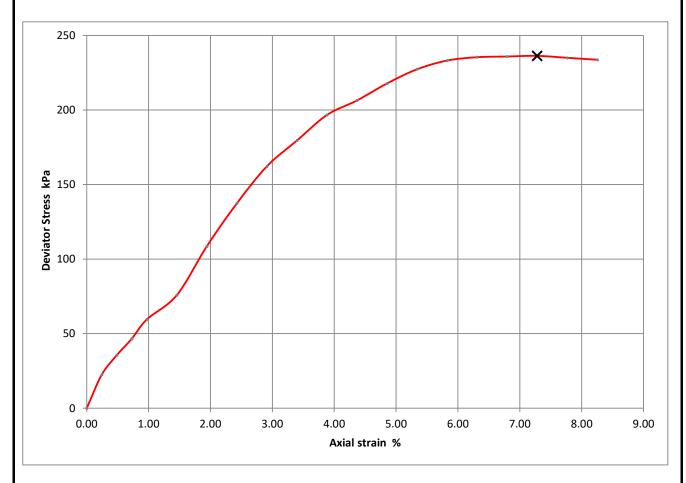
Moisture Content (%)	71
Bulk Density (Mg/m³)	1.45
Dry Density (Mg/m ³)	0.85
Specimen Length (mm)	202
Specimen Diameter (mm)	105
Cell Pressure (kPa)	90
Deviator Stress (kPa)	71
Undrained Shear Strength (kPa)	35
Failure Strain (%)	6.93
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00







CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY	Depth Top (m)	16.50
	Blown silly CEAT	Depth Base (m)	16.95
		Sample Type	U



Moisture Content (%)	22
Bulk Density (Mg/m³)	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

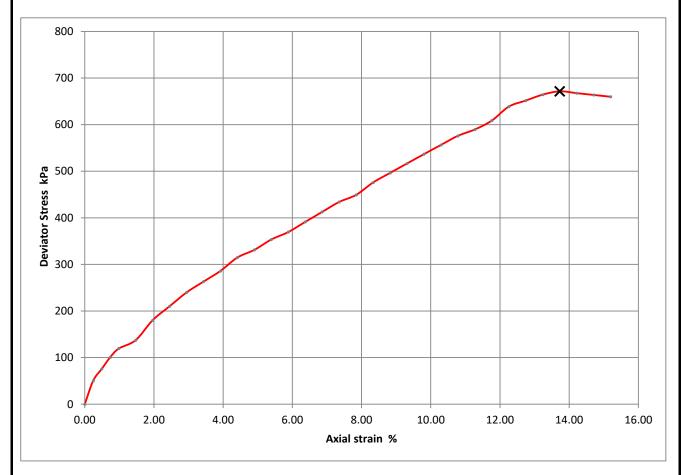




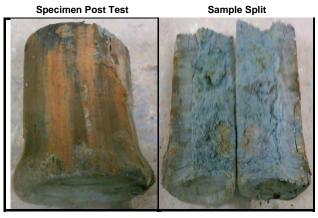
Checked	05-07-18	Emma Sharp	
Approved	06-07-18	Paul Evans	_



CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH02
Site Name	Riverside	Sample No.	
Soil Description	Grevish brown sandy silty CLAY.	Depth Top (m)	31.50
	Greyish brown samuy sing CEAT.	Depth Base (m)	31.95
		Sample Type	U



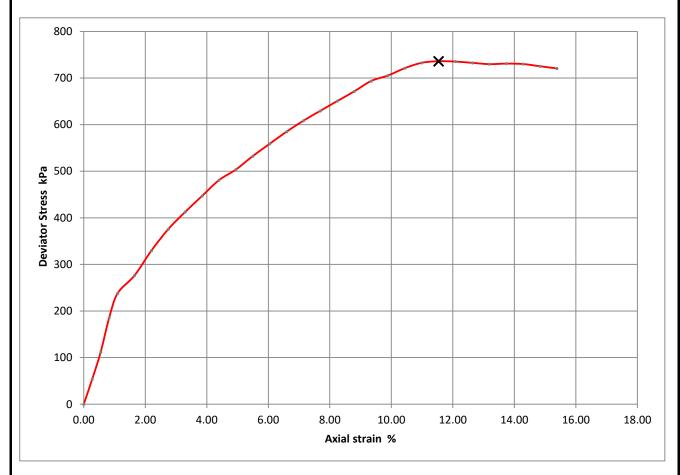
Moisture Content (%)	13
Bulk Density (Mg/m ³)	2.20
Dry Density (Mg/m ³)	1.94
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	475
Deviator Stress (kPa)	671
Undrained Shear Strength (kPa)	336
Failure Strain (%)	13.73
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



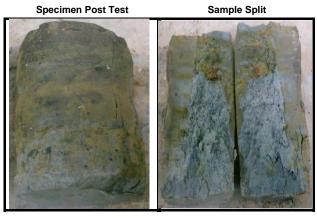


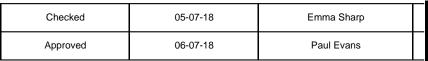


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH02A
Site Name	Riverside	Sample No.	
Soil Description	Grevish brown sandy silty CLAY	Depth Top (m)	32.85
	Greyish brown sandy slity CLAY	Depth Base (m)	
		Sample Type	U



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

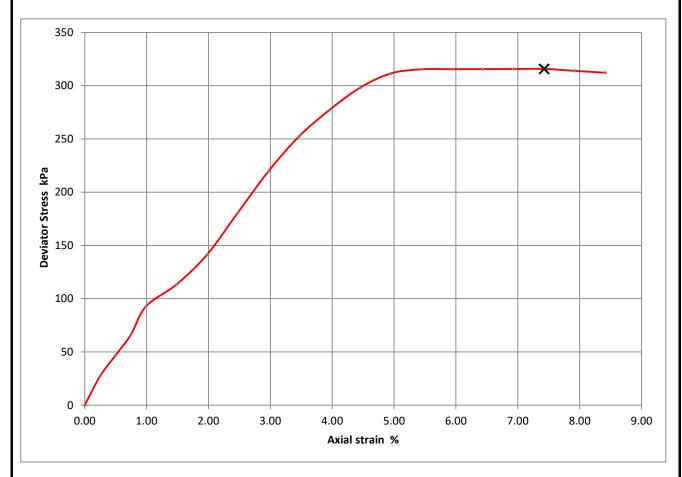




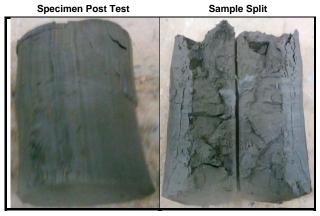


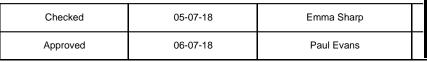


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH03
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY	Depth Top (m)	17.50
		Depth Base (m)	
		Sample Type	U



Moisture Content (%)	28
Bulk Density (Mg/m³)	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

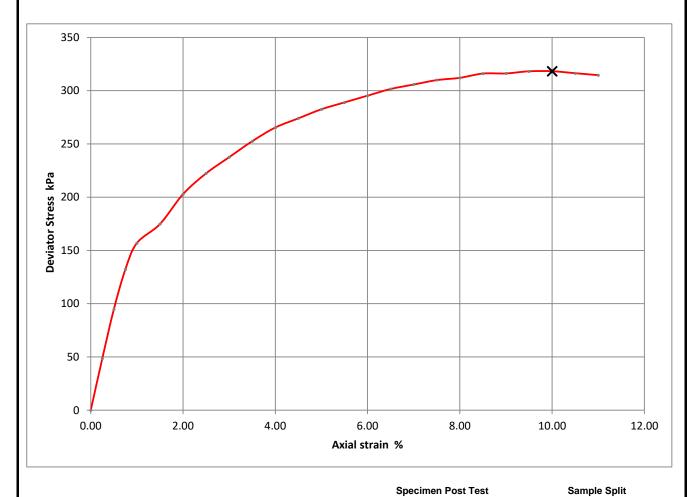








CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH03
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY with shell fragments	Depth Top (m)	26.50
	Grey Silly CLAT with Shell Hagments	Depth Base (m)	26.95
		Sample Type	U



Emma Sharp

Paul Evans

Moisture Content (%)	30
Bulk Density (Mg/m³)	2.16
Dry Density (Mg/m³)	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

Checked

Approved

05-07-18

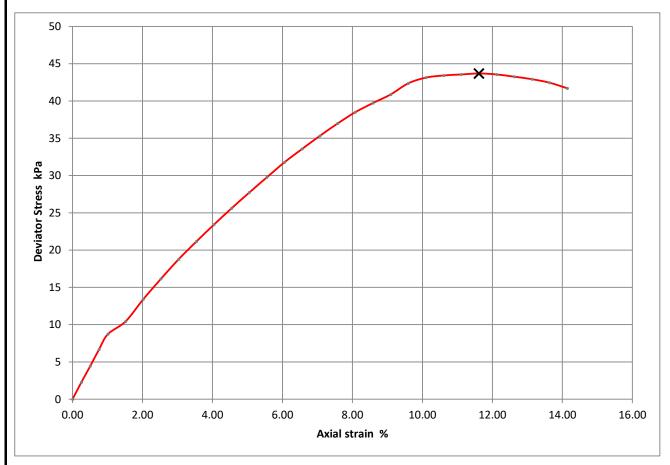
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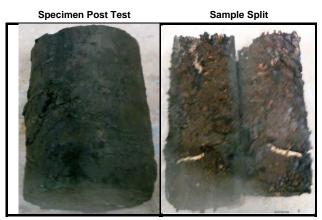


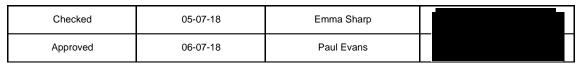


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Black PEAT	Depth Top (m)	3.50
	DIAUK PEAT	Depth Base (m)	3.95
		Sample Type	U



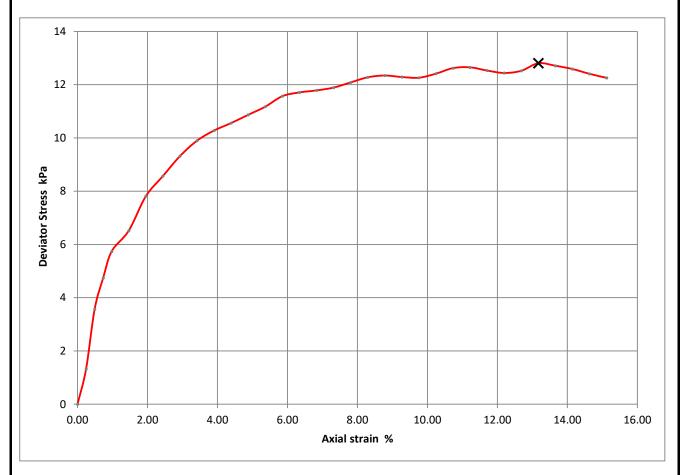
Moisture Content (%)	504
, ,	
Bulk Density (Mg/m³)	1.04
Dry Density (Mg/m ³)	0.17
Specimen Length (mm)	198
Specimen Diameter (mm)	103
Cell Pressure (kPa)	50
Deviator Stress (kPa)	44
Undrained Shear Strength (kPa)	22
Failure Strain (%)	11.62
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



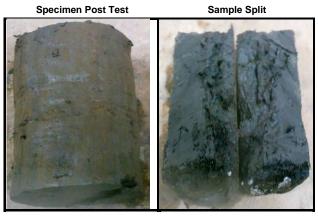


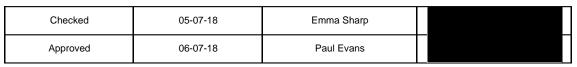


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with wood fragments.	Depth Top (m)	9.00
	BIOWITSHIY CLAT WITH WOOD Hagments.	Depth Base (m)	9.45
		Sample Type	U



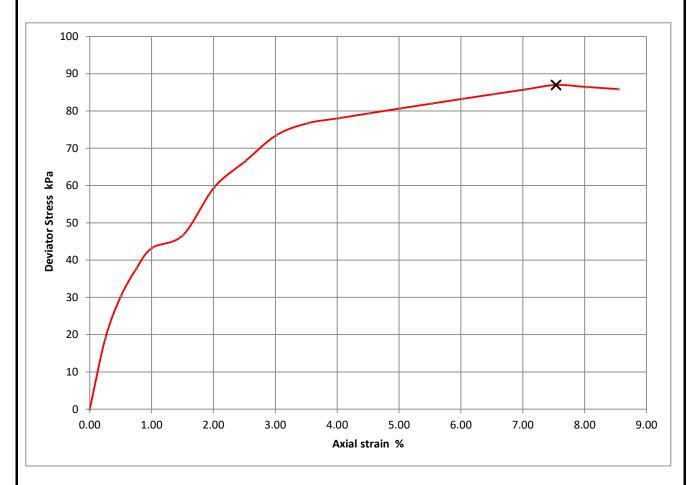
Moisture Content (%)	219
Bulk Density (Mg/m³)	1.49
Dry Density (Mg/m ³)	0.47
Specimen Length (mm)	205
Specimen Diameter (mm)	102
Cell Pressure (kPa)	80
Deviator Stress (kPa)	13
Undrained Shear Strength (kPa)	6
Failure Strain (%)	13.17
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00







GSTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH04
Site Name	Riverside	Sample No.	
Soil Description	Proup silty CLAV with wood fragments	Depth Top (m)	13.50
	Brown silty CLAY with wood fragments.	Depth Base (m)	
		Sample Type	U



Moisture Content (%)	34
Bulk Density (Mg/m³)	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

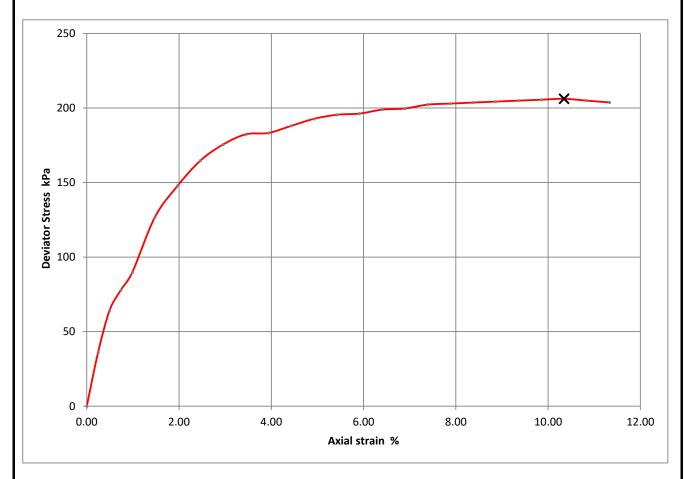




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Approved	06-07-18	Paul Evans	



CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	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

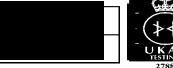


Moisture Content (%)	35
Bulk Density (Mg/m³)	1.77
Dry Density (Mg/m ³)	1.31
Specimen Length (mm)	203
Specimen Diameter (mm)	101
Cell Pressure (kPa)	465
Deviator Stress (kPa)	206
Undrained Shear Strength (kPa)	103
Failure Strain (%)	10.34
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



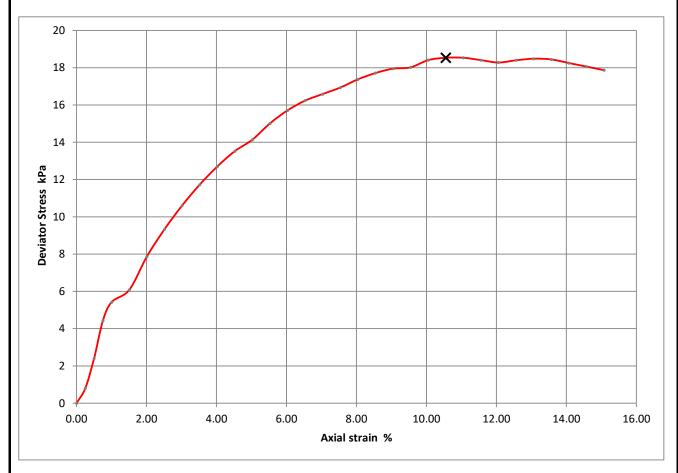


Checked	05-07-18	Emma Sharp
Approved	06-07-18	Paul Evans

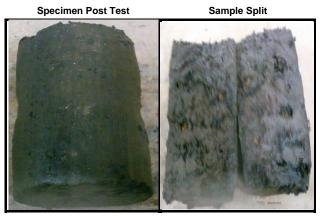


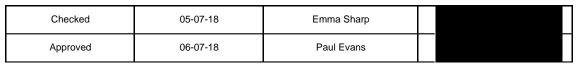


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing PEAT.	Depth Top (m)	3.00
		Depth Base (m)	
		Sample Type	U



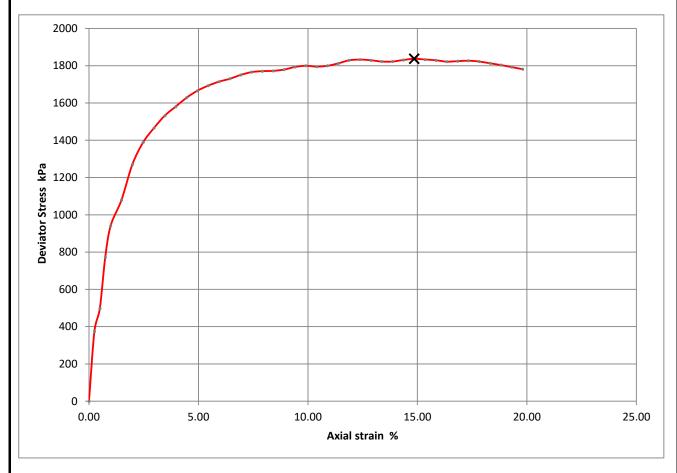
Moisture Content (%)	72
Bulk Density (Mg/m³)	1.37
Dry Density (Mg/m ³)	0.80
Specimen Length (mm)	199
Specimen Diameter (mm)	99
Cell Pressure (kPa)	40
Deviator Stress (kPa)	19
Undrained Shear Strength (kPa)	9
Failure Strain (%)	10.55
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



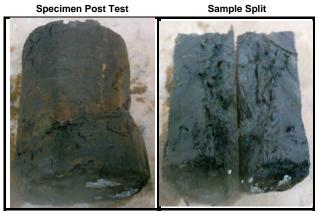


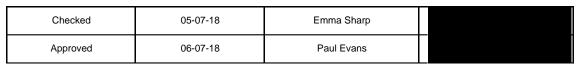


GSTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing PEAT.	Depth Top (m)	9.00
	Brown siny SEAT Somaning (EAT).	Depth Base (m)	9.45
		Sample Type	U



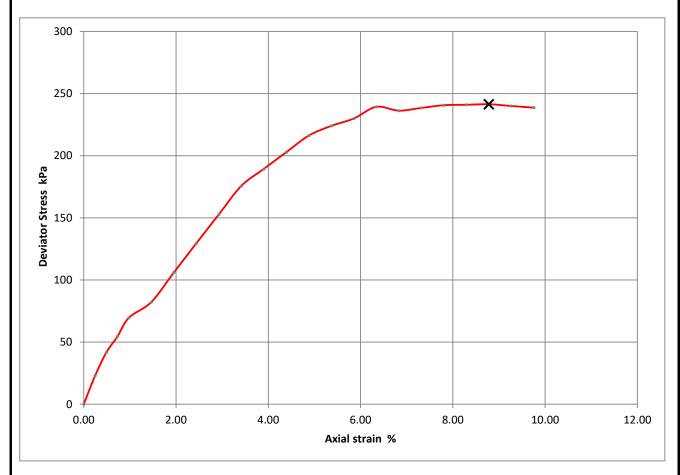
Moisture Content (%)	72
Bulk Density (Mg/m³)	1.26
Dry Density (Mg/m ³)	0.73
Specimen Length (mm)	202
Specimen Diameter (mm)	101
Cell Pressure (kPa)	115
Deviator Stress (kPa)	1837
Undrained Shear Strength (kPa)	919
Failure Strain (%)	14.85
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



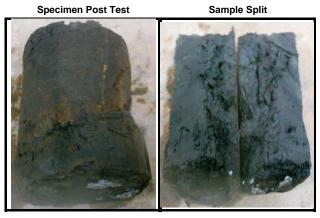


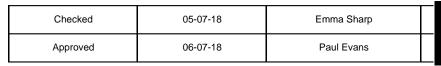


GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number Borehole/Pit No.	39466 BH05
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing PEAT.	Depth Top (m)	15.00
		Depth Base (m)	15.45
		Sample Type	U



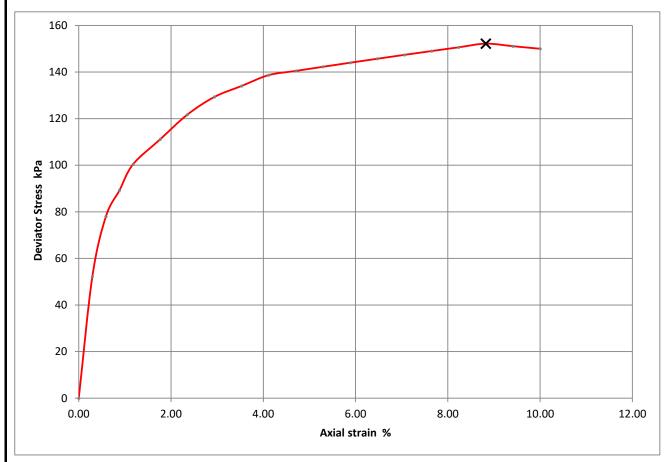
Moisture Content (%)	1018
Bulk Density (Mg/m³)	1.92
Dry Density (Mg/m ³)	0.17
Specimen Length (mm)	205
Specimen Diameter (mm)	104
Cell Pressure (kPa)	220
Deviator Stress (kPa)	241
Undrained Shear Strength (kPa)	121
Failure Strain (%)	8.78
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00







GSTL	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Grevish brown silty CLAY with shell fragments.	Depth Top (m)	27.84
	Greyish blown sity CLAT with shell hagments.	Depth Base (m)	28.00
		Sample Type	U



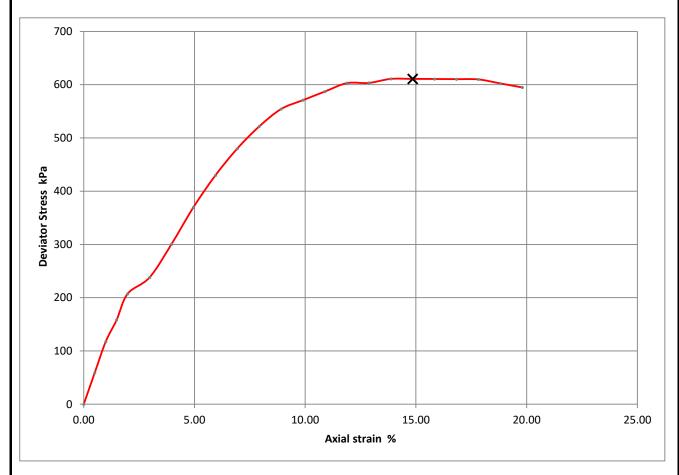
Moisture Content (%)	27
Bulk Density (Mg/m ³)	2.16
Dry Density (Mg/m ³)	1.70
Specimen Length (mm)	170
Specimen Diameter (mm)	85
Cell Pressure (kPa)	465
Deviator Stress (kPa)	152
Undrained Shear Strength (kPa)	76
Failure Strain (%)	8.82
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00

Specimen Post Test	Sample Split
Image Missing	Image Missing

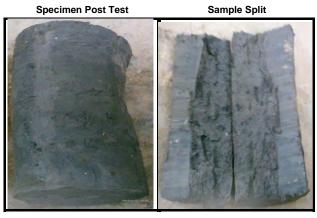
Checked	05-07-18	Emma Sharp	
Approved	06-07-18	Paul Evans	

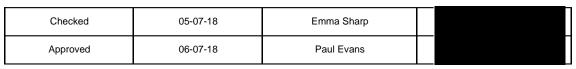


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
GOIL		Borehole/Pit No.	BH05
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown sandy silty CLAY	Depth Top (m)	30.00
		Depth Base (m)	30.30
		Sample Type	U



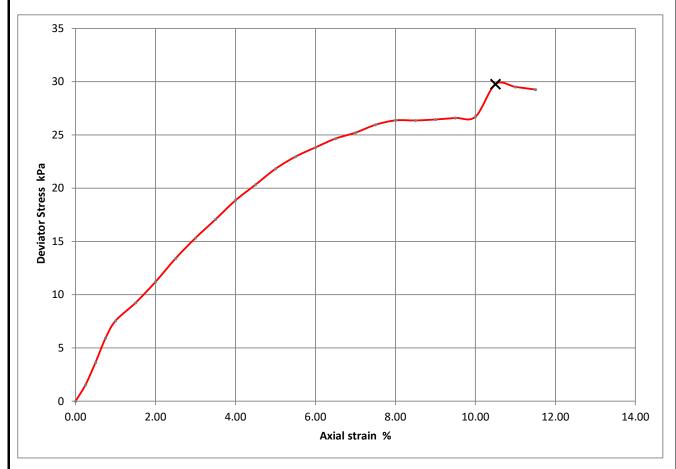
Moisture Content (%)	15
Bulk Density (Mg/m³)	4.39
Dry Density (Mg/m ³)	3.83
Specimen Length (mm)	101
Specimen Diameter (mm)	90
Cell Pressure (kPa)	505
Deviator Stress (kPa)	611
Undrained Shear Strength (kPa)	305
Failure Strain (%)	14.85
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



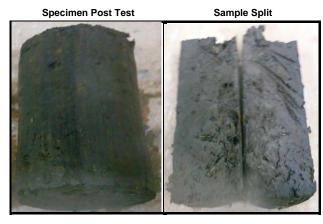


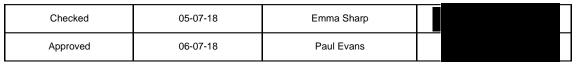


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with peat material.	Depth Top (m)	3.00
		Depth Base (m)	3.45
		Sample Type	U



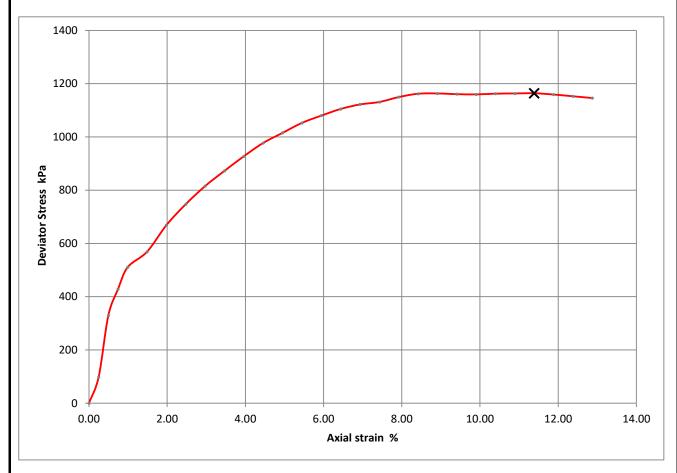
Moisture Content (%)	164
Bulk Density (Mg/m³)	1.32
Dry Density (Mg/m ³)	0.50
Specimen Length (mm)	200
Specimen Diameter (mm)	100
Cell Pressure (kPa)	40
Deviator Stress (kPa)	30
Undrained Shear Strength (kPa)	15
Failure Strain (%)	10.50
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



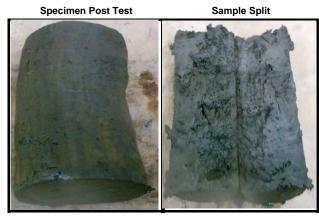


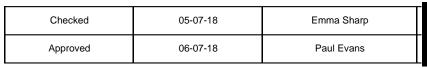


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
GOIL		Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY contaning peat material.	Depth Top (m)	6.00
		Depth Base (m)	6.45
		Sample Type	U



Moisture Content (%)	162
Bulk Density (Mg/m³)	1.31
Dry Density (Mg/m³)	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

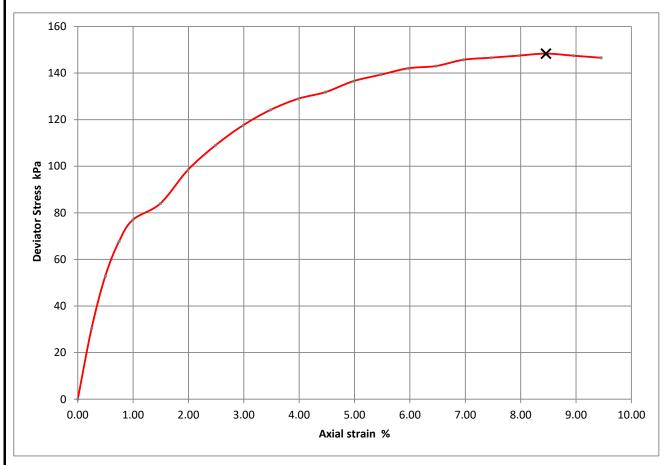




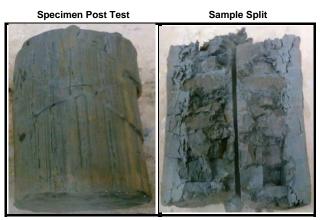




CCTI	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number	39466
GOIL		Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Greyish brown silty CLAY	Depth Top (m)	16.50
		Depth Base (m)	16.95
		Sample Type	U



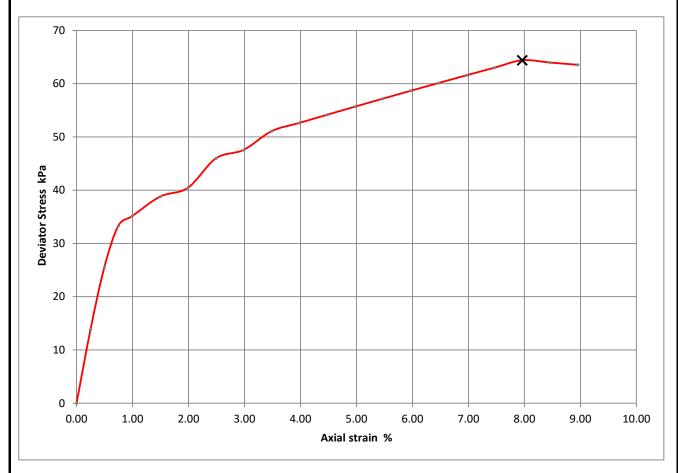
Moisture Content (%)	35
Bulk Density (Mg/m³)	1.85
Dry Density (Mg/m ³)	1.37
Specimen Length (mm)	201
Specimen Diameter (mm)	104
Cell Pressure (kPa)	240
Deviator Stress (kPa)	148
Undrained Shear Strength (kPa)	74
Failure Strain (%)	8.46
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



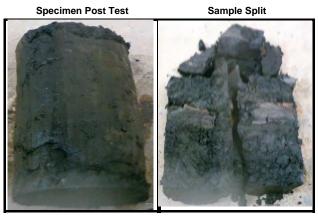




GSTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH08
Site Name	Riverside	Sample No.	
Soil Description	Brown sandy silty CLAY containing peat material.	Depth Top (m)	19.50
		Depth Base (m)	19.95
		Sample Type	U



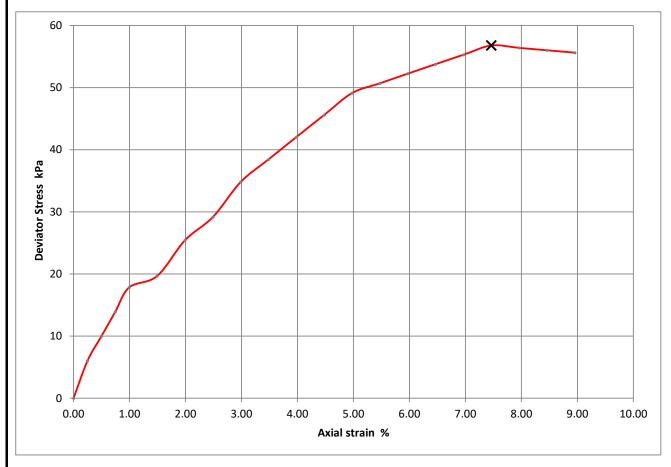
Moisture Content (%)	173
Bulk Density (Mg/m ³)	1.17
Dry Density (Mg/m ³)	0.43
Specimen Length (mm)	201
Specimen Diameter (mm)	103
Cell Pressure (kPa)	300
Deviator Stress (kPa)	64
Undrained Shear Strength (kPa)	32
Failure Strain (%)	7.96
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



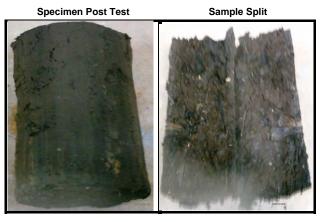




	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Black PEAT	Depth Top (m)	3.50
		Depth Base (m)	3.95
		Sample Type	U



Moisture Content (%)	260
Bulk Density (Mg/m³)	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

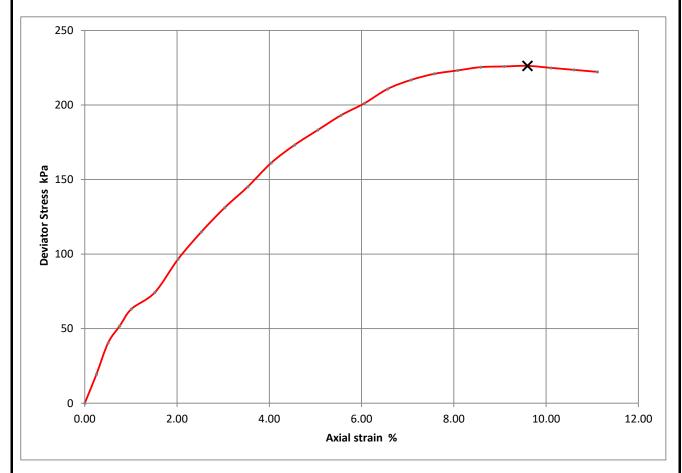




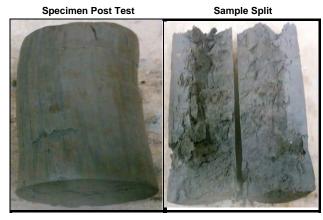




CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH09
Site Name	Riverside	Sample No.	
Soil Description	Brown sandy silty CLAY	Depth Top (m)	14.00
	Blown Sandy Sitty CLAT	Depth Base (m)	
		Sample Type	U



Moisture Content (%)	25
, ,	
Bulk Density (Mg/m³)	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

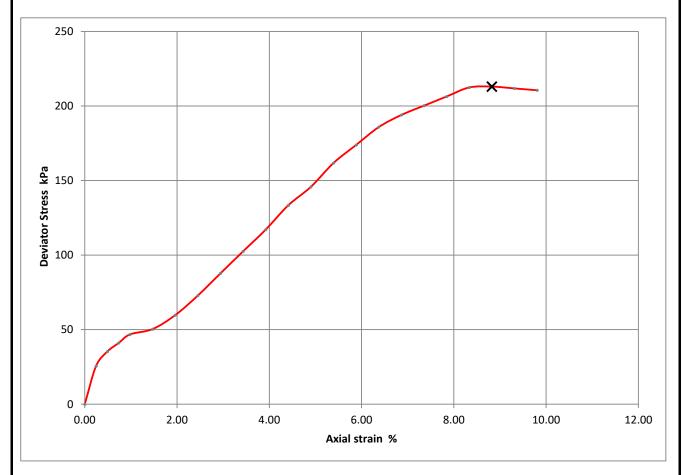




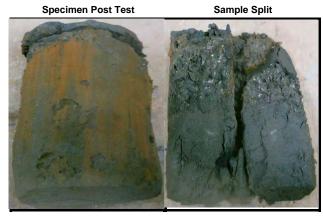




GSTL	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
Site Name	BS 1377 : 1990 Part 7 : 8 Riverside	Borehole/Pit No. Sample No.	BH09
Soil Description		Depth Top (m)	17.00
	Greyish brown fine to coarse gravelly sandy silty CLAY.	Depth Base (m)	17.45
		Sample Type	U



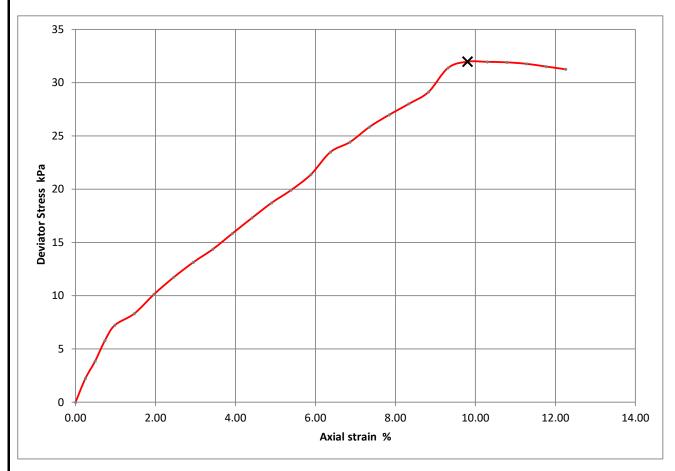
Moisture Content (%)	25
Bulk Density (Mg/m³)	1.99
,,,,,,	
Dry Density (Mg/m³)	1.59
Specimen Length (mm)	204
Specimen Diameter (mm)	102
Cell Pressure (kPa)	45
Deviator Stress (kPa)	213
Undrained Shear Strength (kPa)	107
Failure Strain (%)	8.82
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



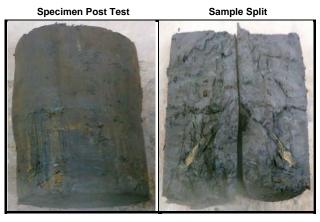
Checked	05-07-18	Emma Sharp	-
Approved	06-07-18	Paul Evans	

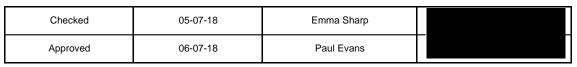


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with peat material.	Depth Top (m)	3.00
	Brown sitty CEAT with peat material.	Depth Base (m)	3.45
		Sample Type	U



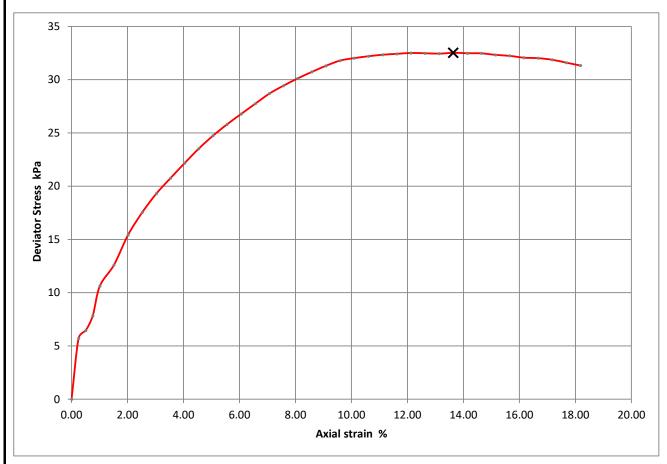
Moisture Content (%)	111
Bulk Density (Mg/m ³)	1.35
Dry Density (Mg/m ³)	0.64
Specimen Length (mm)	204
Specimen Diameter (mm)	102
Cell Pressure (kPa)	40
Deviator Stress (kPa)	32
Undrained Shear Strength (kPa)	16
Failure Strain (%)	9.80
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



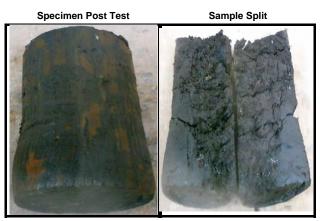


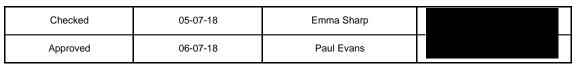


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH10
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with peat material.	Depth Top (m)	9.00
	Brown sitty CEAT with peat material.	Depth Base (m)	9.45
		Sample Type	U



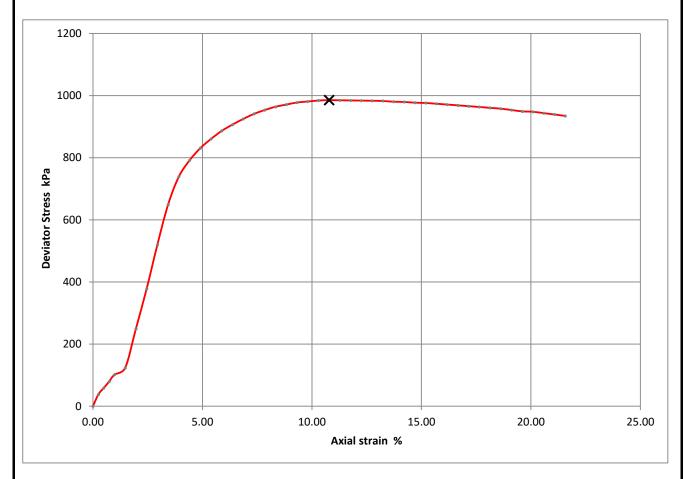
Moisture Content (%)	260
Bulk Density (Mg/m ³)	1.11
Dry Density (Mg/m ³)	0.31
Specimen Length (mm)	198
Specimen Diameter (mm)	107
Cell Pressure (kPa)	110
Deviator Stress (kPa)	33
Undrained Shear Strength (kPa)	16
Failure Strain (%)	13.64
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



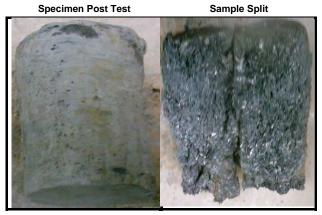


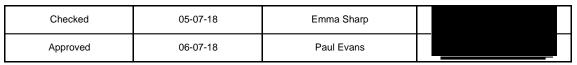


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH10A
Site Name	Riverside	Sample No.	
Soil Description	Grevish brown sandy silty CLAY.	Depth Top (m)	29.50
	Greyish brown samuy sinty CLAT.	Depth Base (m)	
		Sample Type	U



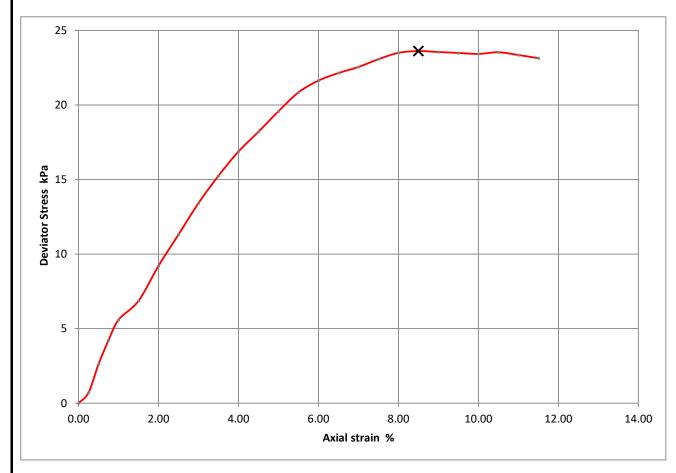
Moisture Content (%)	9.3
Bulk Density (Mg/m ³)	2.16
Dry Density (Mg/m³)	1.98
, , , , , ,	
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	510
Deviator Stress (kPa)	985
Undrained Shear Strength (kPa)	493
Failure Strain (%)	10.78
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



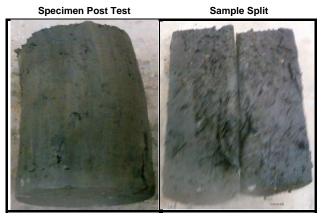


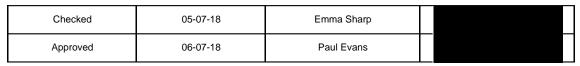


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with peat material.	Depth Top (m)	2.50
	Blown Silly CLAT with peat material.	Depth Base (m)	2.95
		Sample Type	U



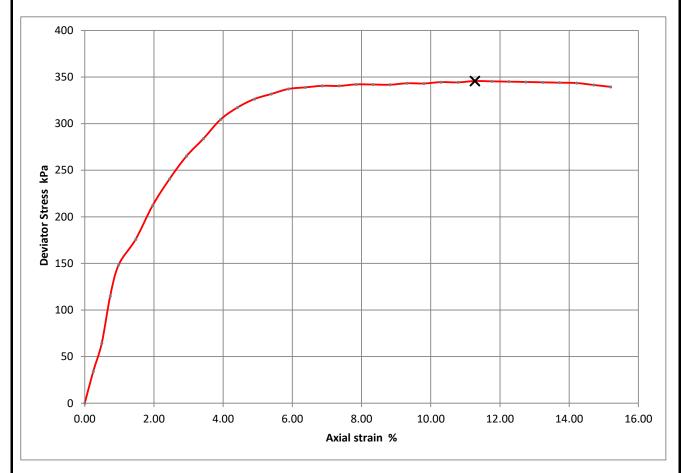
Moisture Content (%)	26
Bulk Density (Mg/m ³)	1.21
Dry Density (Mg/m ³)	0.96
Specimen Length (mm)	200
Specimen Diameter (mm)	103
Cell Pressure (kPa)	35
Deviator Stress (kPa)	24
Undrained Shear Strength (kPa)	12
Failure Strain (%)	8.50
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



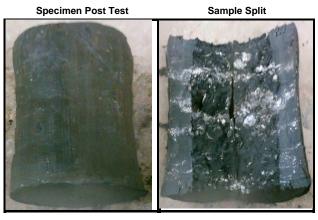


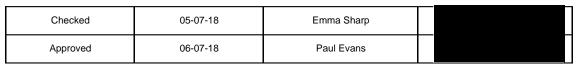


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY with shell fragments.	Depth Top (m)	27.00
	BIOWITSHIY CLAT WITTSHIEL Hagments.	Depth Base (m)	27.45
		Sample Type	U



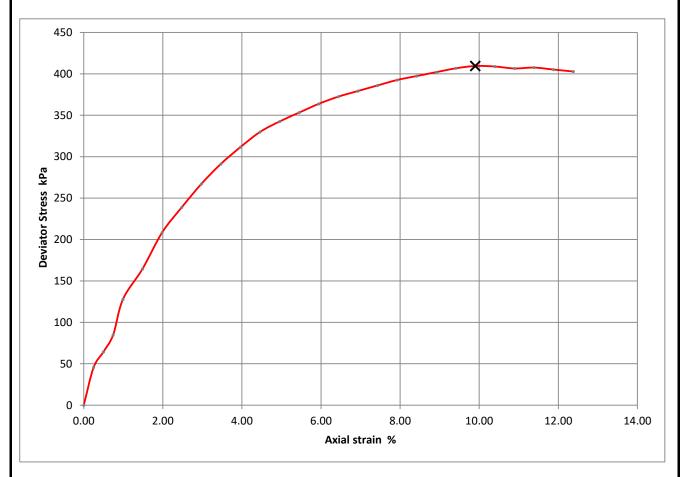
Moisture Content (%)	21
. ,	
Bulk Density (Mg/m ³)	2.08
Dry Density (Mg/m ³)	1.72
Specimen Length (mm)	204
Specimen Diameter (mm)	104
Cell Pressure (kPa)	455
Deviator Stress (kPa)	346
Undrained Shear Strength (kPa)	173
Failure Strain (%)	11.27
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



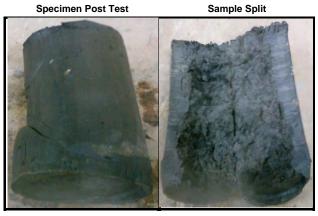




CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH11
Site Name	Riverside	Sample No.	
Soil Description	Grevish brown sandy silty CLAY	Depth Top (m)	30.00
	Greyish blown sandy silty CLAT	Depth Base (m)	30.45
		Sample Type	U



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

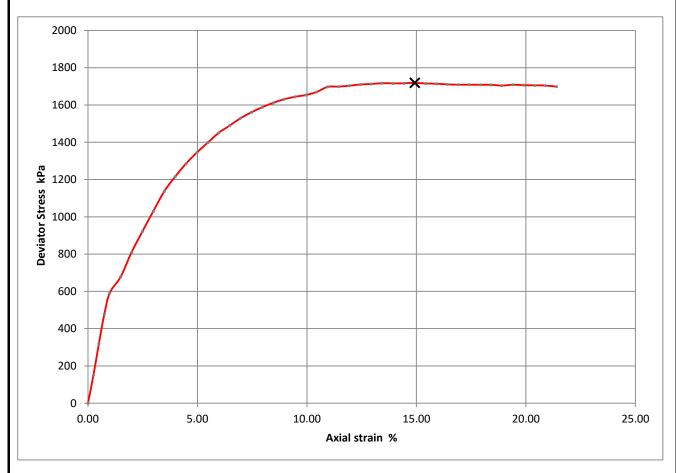




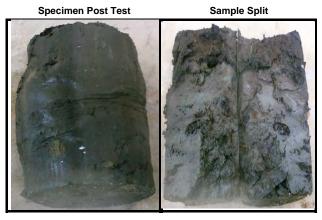


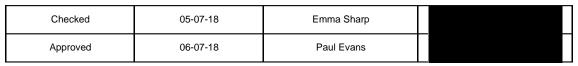


GSTL	Single Stage Unconsolidated-Undrained Triaxial Test BS 1377 : 1990 Part 7 : 8	Contract Number Borehole/Pit No.	39466 BH12
Site Name	Riverside	Sample No.	
Soil Description		Depth Top (m)	4.50
	Greyish brown sandy silty CLAY containing peat material.	Depth Base (m)	4.95
		Sample Type	U



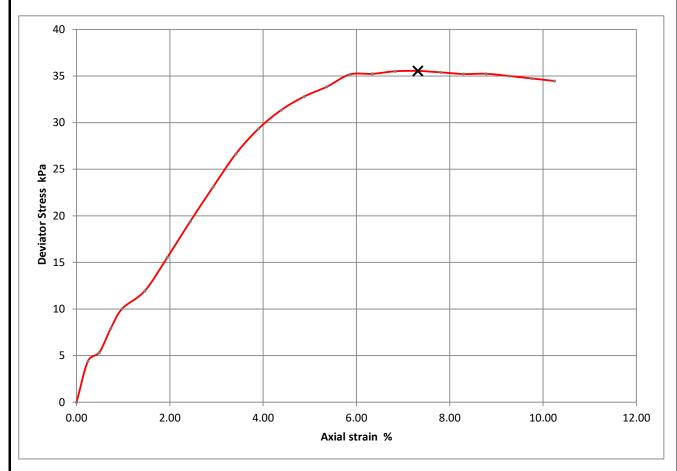
Moisture Content (%)	126
Bulk Density (Mg/m³)	1.26
Dry Density (Mg/m³)	0.56
Specimen Length (mm)	201
Specimen Diameter (mm)	100
Cell Pressure (kPa)	55
Deviator Stress (kPa)	1719
Undrained Shear Strength (kPa)	859
Failure Strain (%)	14.93
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



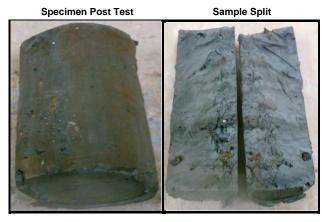


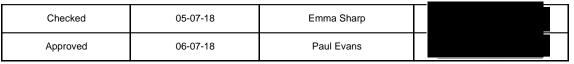


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH12
Site Name	Riverside	Sample No.	
Soil Description	Grey silty CLAY.	Depth Top (m)	7.00
	GIEV SIIIV CLAT.	Depth Base (m)	7.45
		Sample Type	U



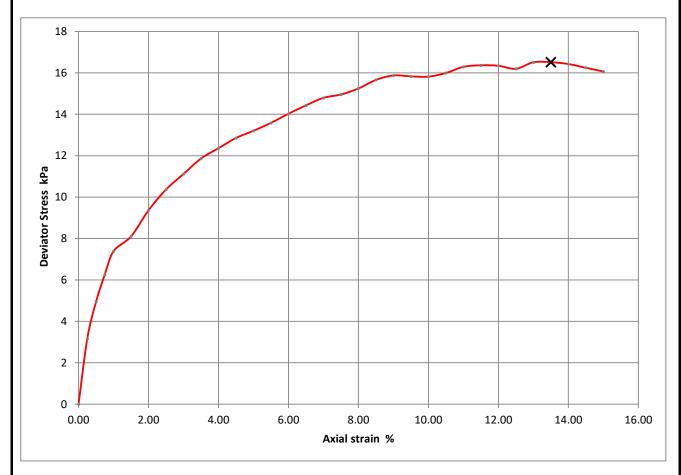
Maiatura Cantant (0/)	02
Moisture Content (%)	93
Bulk Density (Mg/m ³)	1.42
Dry Density (Mg/m ³)	0.74
Specimen Length (mm)	205
Specimen Diameter (mm)	104
Cell Pressure (kPa)	85
Deviator Stress (kPa)	36
Undrained Shear Strength (kPa)	18
Failure Strain (%)	7.32
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



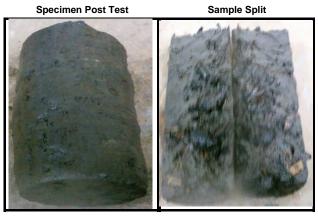


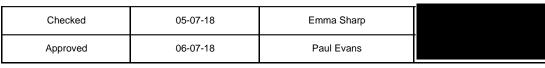


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing peat material.	Depth Top (m)	6.00
	Blown silly CLAT containing peat material.	Depth Base (m)	
		Sample Type	U



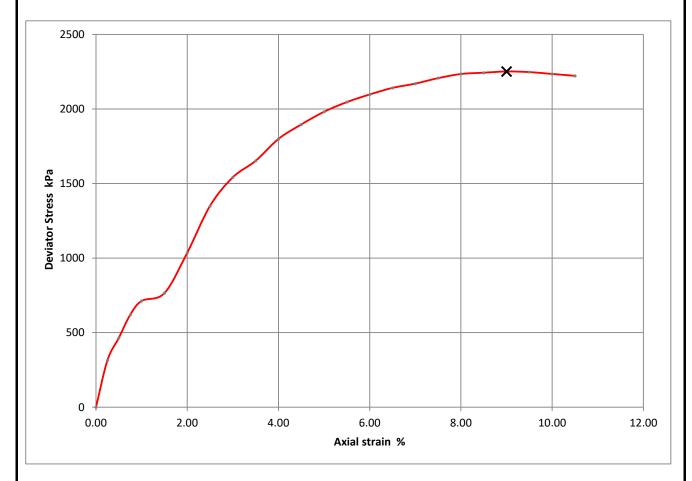
Moisture Content (%)	154
. ,	
Bulk Density (Mg/m³)	1.32
Dry Density (Mg/m³)	0.52
Specimen Length (mm)	200
Specimen Diameter (mm)	99
Cell Pressure (kPa)	80
Deviator Stress (kPa)	17
Undrained Shear Strength (kPa)	8
Failure Strain (%)	13.50
Mode Of Failure	Plastic
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



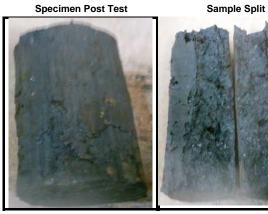


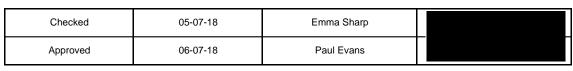


CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Brown silty CLAY containing peat material.	Depth Top (m)	9.00
	Brown sitty CEAT containing peat material.	Depth Base (m)	9.45
		Sample Type	U



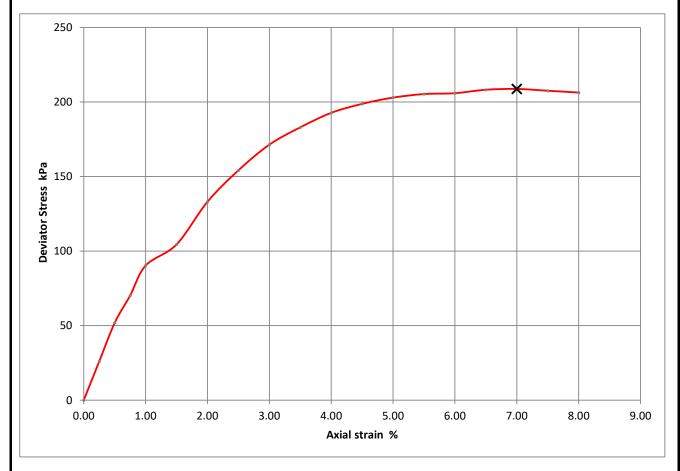
Moisture Content (%)	87
Bulk Density (Mg/m ³)	1.38
Dry Density (Mg/m ³)	0.74
Specimen Length (mm)	200
Specimen Diameter (mm)	95
Cell Pressure (kPa)	115
Deviator Stress (kPa)	2252
Undrained Shear Strength (kPa)	1126
Failure Strain (%)	9.00
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.00



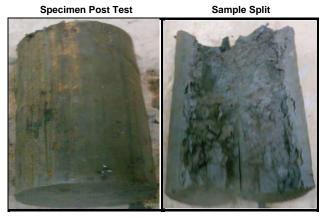




CCTI	Single Stage Unconsolidated-Undrained Triaxial Test	Contract Number	39466
GOIL	BS 1377 : 1990 Part 7 : 8	Borehole/Pit No.	BH13
Site Name	Riverside	Sample No.	
Soil Description	Grevish brown silty LCAY.	Depth Top (m)	16.50
	Greyish blown sity LCAT.	Depth Base (m)	16.95
		Sample Type	U



Moisture Content (%)	25
Bulk Density (Mg/m³)	1.89
Dry Density (Mg/m³)	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 Details

_ :		
Borehole Sample No.		BH02
Depth 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/m³	2.65	2.65	2.65
(assume	(assumed/measured)		assumed	assumed

Final Specimen Conditions

Moisture Content	%	29	28	28
Density	Mg/m ³	2.01	2.12	2.32
Dry Density	Mg/m³	1.56	1.65	1.82



Checked and Approved By

09/07/18 Date

Client Ref

Riverside





Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Test Setup

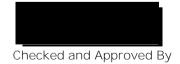
Date started	20/06/2018	20/06/2018	20/06/2018
Date Finished	24/06/2018	24/06/2018	24/06/2018
Top Drain Used	У	У	У
Base Drain Used	У	У	У
Side Drains Used	У	У	У
Pressure System Number	P10	P13	P11
Cell Number	C10	C13	C11

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.	m²/yr.	0.85294	1.44147	12.97326



09/07/18 Date

Client Ref

Riverside

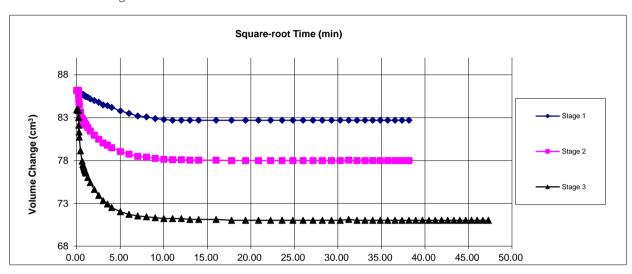
Contract No

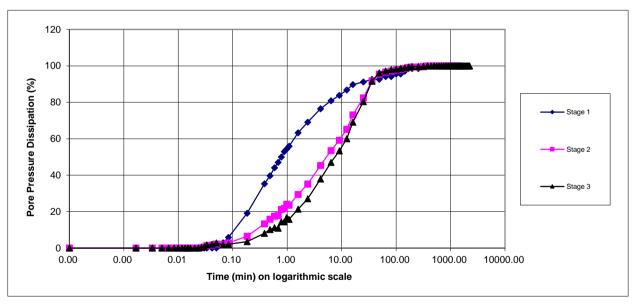


Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Consolidation Stage







09/07/18 Date

Client Ref

Riverside





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 R	atio		
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



09/07/18 Date

Client Ref

Riverside

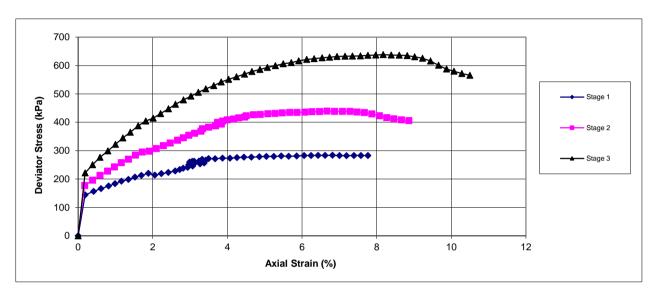
Contract No

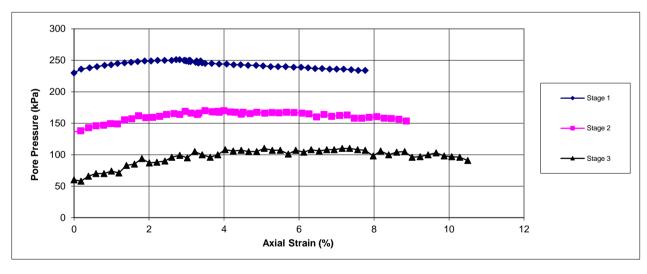


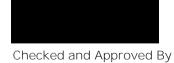
Specimen Details

Borehole		BH02	
Sample No.			
Depth	from(m)	19.50	
Depth	to(m)		

Shearing Stage







09/07/18 Date

Client Ref

Riverside

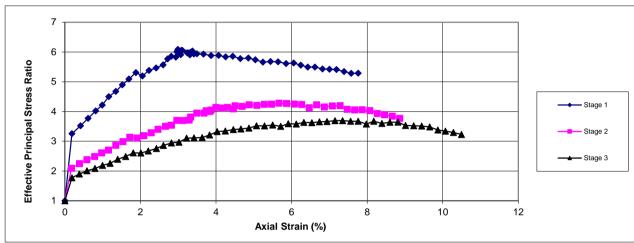


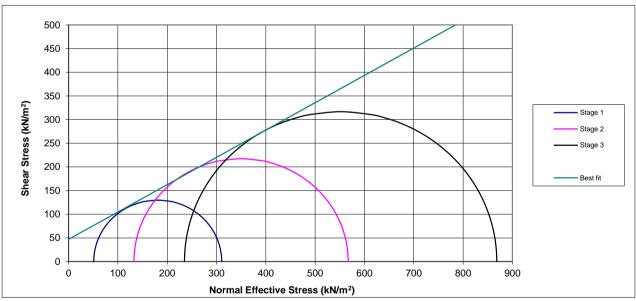


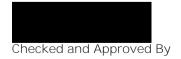
Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth	to(m)	

Shearing Stage







09/07/18 Date

Client Ref

Riverside

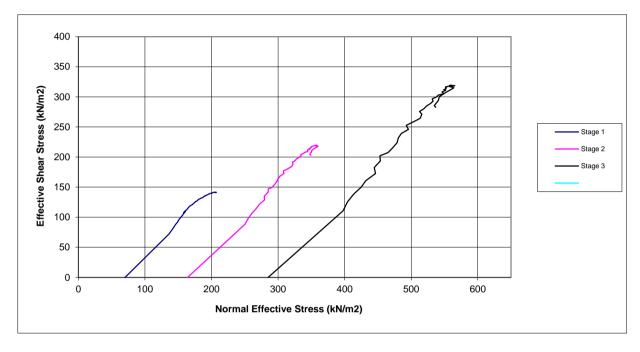
Contract No

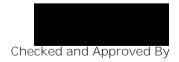


Specimen Details

Borehole		BH02
Sample No.		
Depth	from(m)	19.50
Depth Depth	to(m)	

Shearing Stage





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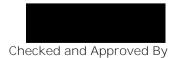


Specimen Details

Borehole		BH02	
Sample No.			
Depth	from(m)	19.50	
Depth	to(m)		







09/07/18 Date

Client Ref



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Specimen Details

_ :		
Borehole Sample No.		BH03
Depth 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

Thirtial openition contactions				
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
(assume	d/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/m³	1.67	1.72	1.80



Checked and Approved By

09/07/18 Date

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Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Test Setup

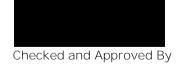
Date started	14/06/2018	14/06/2018	14/06/2018
Date Finished	17/06/2018	17/06/2018	17/06/2018
Top Drain Used	у	У	у
Base Drain Used	у	У	у
Side Drains Used	у	У	у
Pressure System Number	P10	P8	P9
Cell Number	C10	C8	С9

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.	m²/yr.	29.18983	29.18983	20.27071



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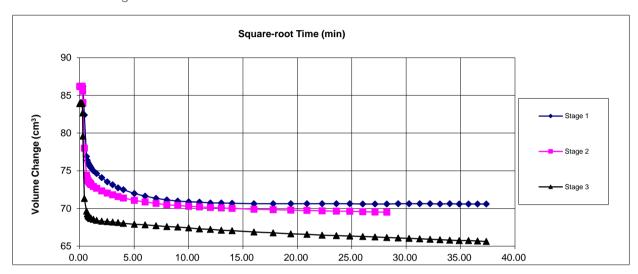
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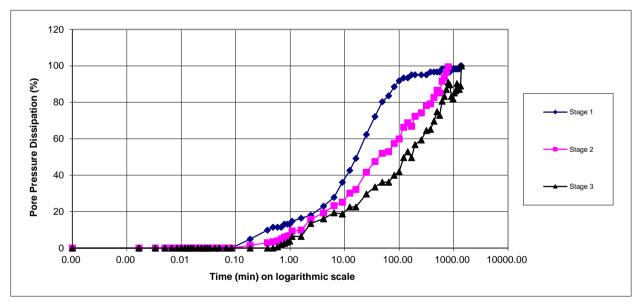


Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Consolidation Stage







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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 R	atio		
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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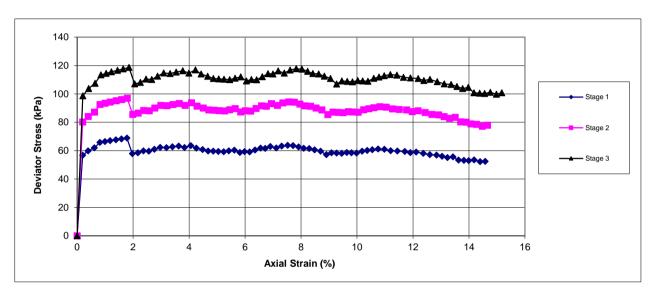
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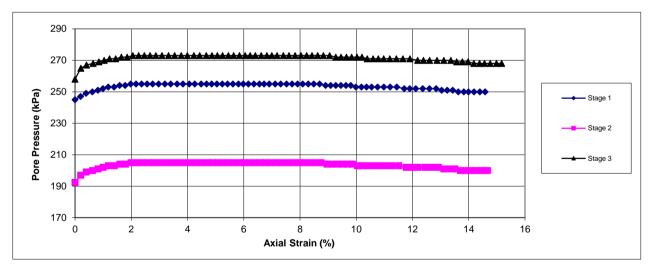


Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Shearing Stage







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Client Ref

Riverside

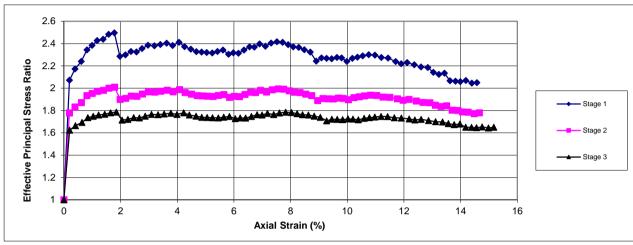


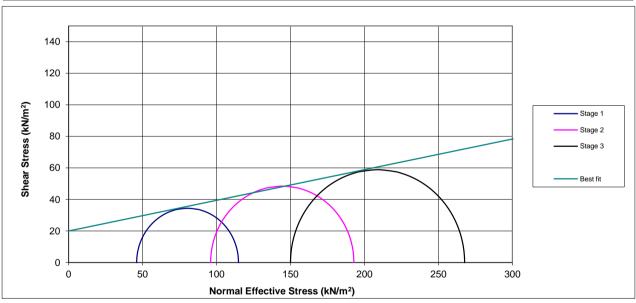


Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	14.50
Depth	to(m)	

Shearing Stage







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Client Ref

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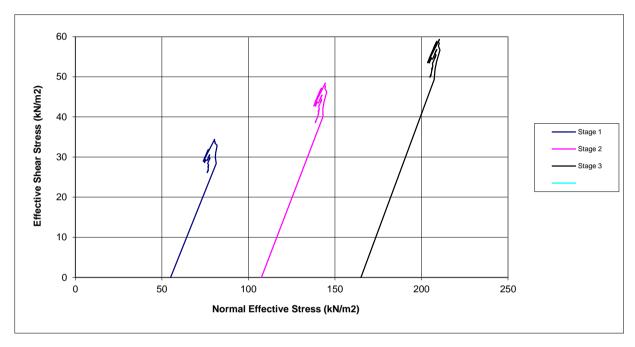
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Specimen Details

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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Client Ref



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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
(assume	d/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/m³	1.03	1.08	1.12



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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	У	У	У
Base Drain Used	У	У	У
Side Drains Used	У	У	У
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.	m²/yr.	36.03683	4.58192	4.00409



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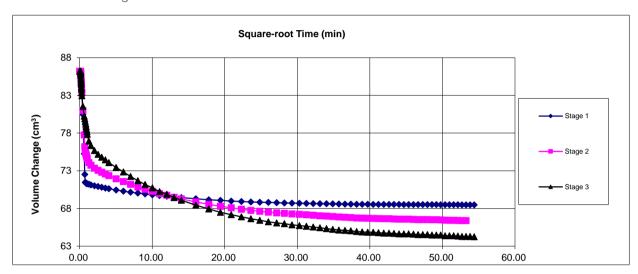
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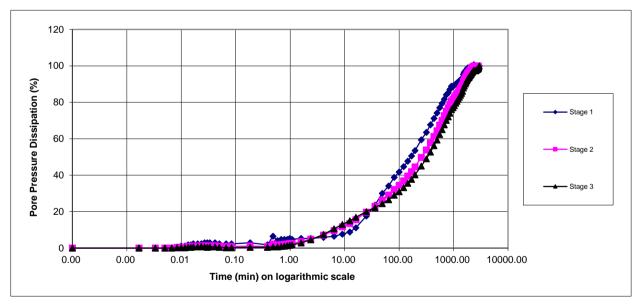


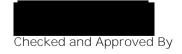
Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Consolidation Stage







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Client Ref

Riverside



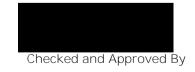


Specimen Details

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 R	atio		
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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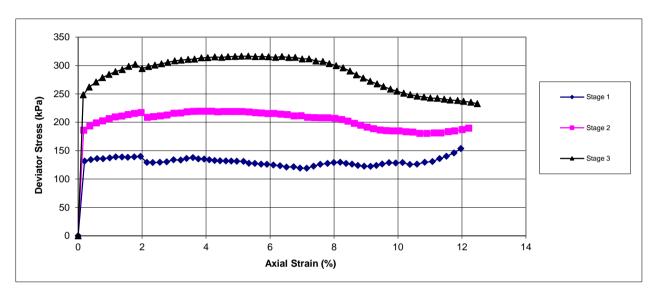
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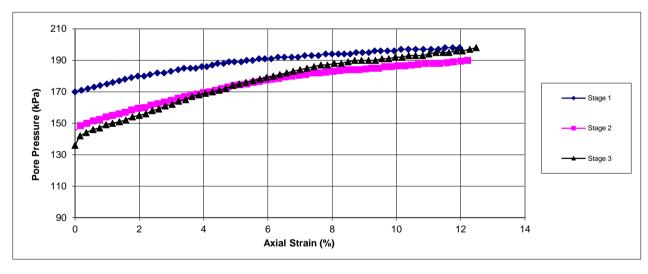


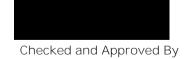
Specimen Details

Borehole		BH03	
Sample No.			
Depth	from(m)	29.50	
Depth	to(m)		

Shearing Stage







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Client Ref

Riverside

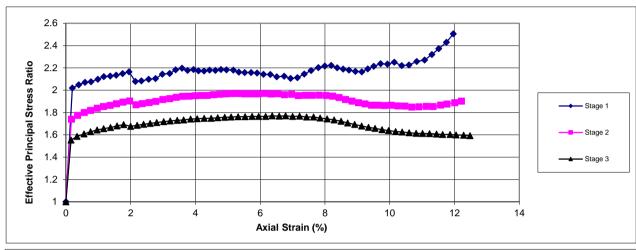


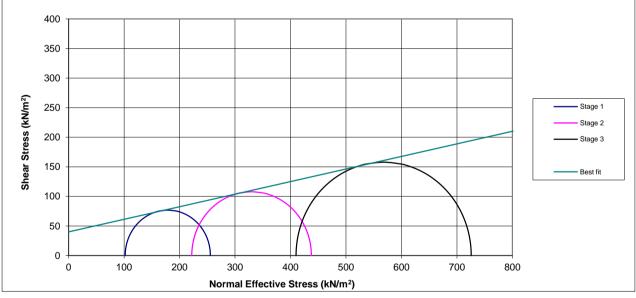


Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Shearing Stage







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Client Ref

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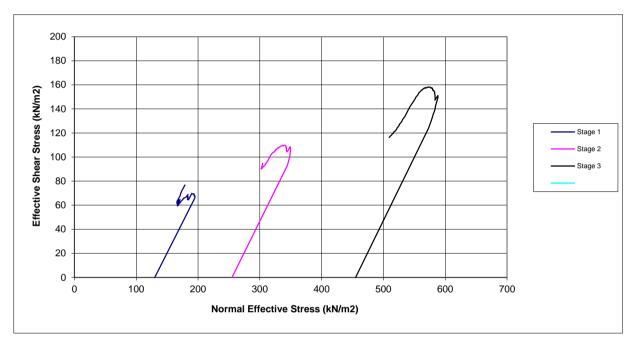




Specimen Details

Borehole		BH03
Sample No.		
Depth	from(m)	29.50
Depth	to(m)	

Shearing Stage





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Client Ref

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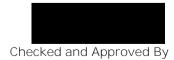


Specimen Details

Borehole		BH03	
Sample No.			
Depth	from(m)	29.50	
Depth	to(m)		







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Client Ref



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Specimen Details

Borehole Sample No.		BH04
Depth	from(m)	16.50
Depth	to(m)	
Date		18/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Brown sI silty soft CLAY

Initial Specimen Conditions

Thirtial epochition contactions				
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
(assume	ed/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/m³	1.82	1.88	1.98



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Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

Test Setup

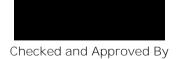
Date started	14/06/2018	14/06/2018	14/06/2018
Date Finished	17/06/2018	17/06/2018	17/06/2018
Top Drain Used	У	У	У
Base Drain Used	У	У	У
Side Drains Used	У	У	У
Pressure System Number	P12	P13	P11
Cell Number	C12	C13	C11

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.	m²/yr.	81.08286	29.18983	14.89277



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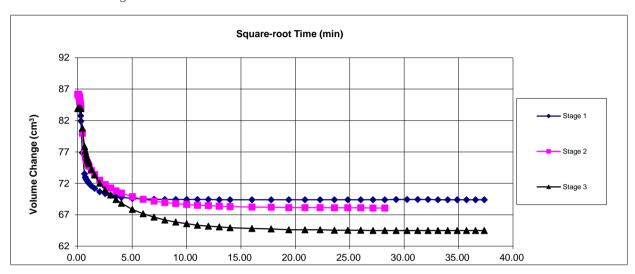
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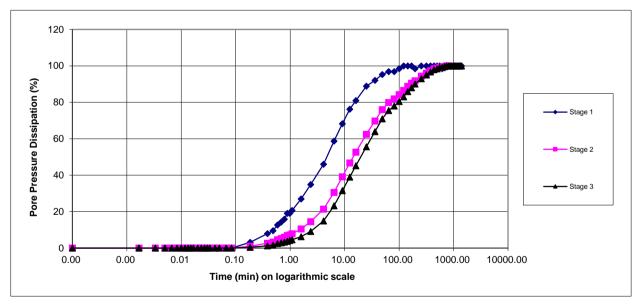


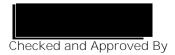
Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	

Consolidation Stage







09/07/18 Date

Client Ref

Riverside





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				<u> </u>
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	e Stress R	atio		
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



09/07/18 Date

Client Ref

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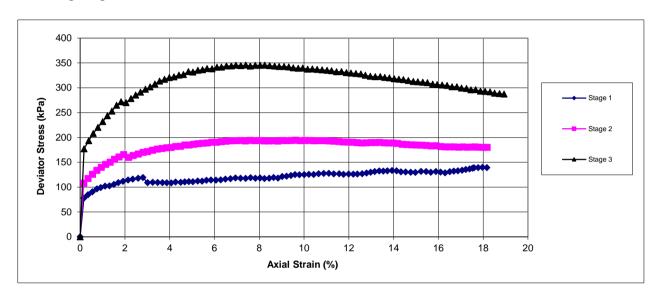
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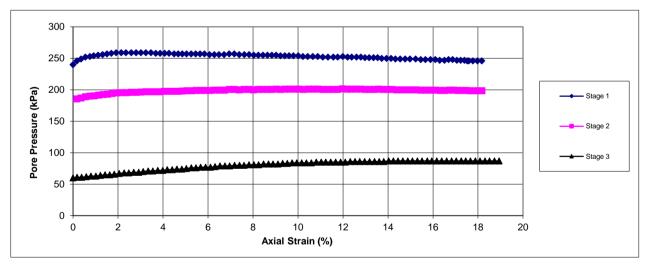


Specimen Details

Borehole		BH04	
Sample No.			
Depth	from(m)	16.50	
Depth	to(m)		

Shearing Stage







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Client Ref

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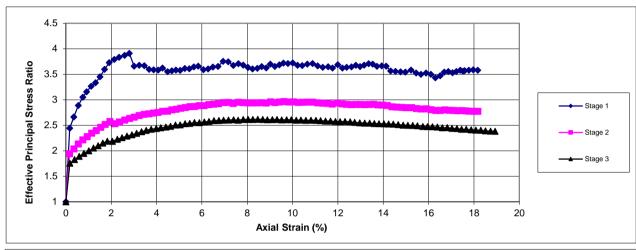


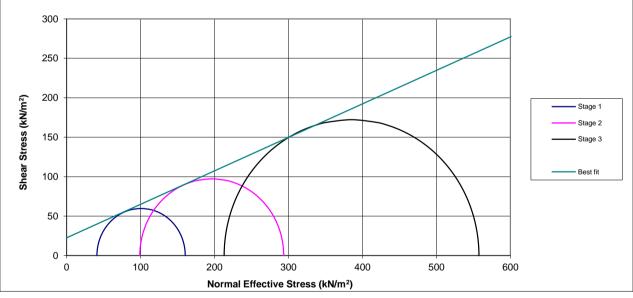


Specimen Details

Borehole		BH04	
Sample No.			
Depth	from(m)	16.50	
Depth Depth	to(m)		

Shearing Stage







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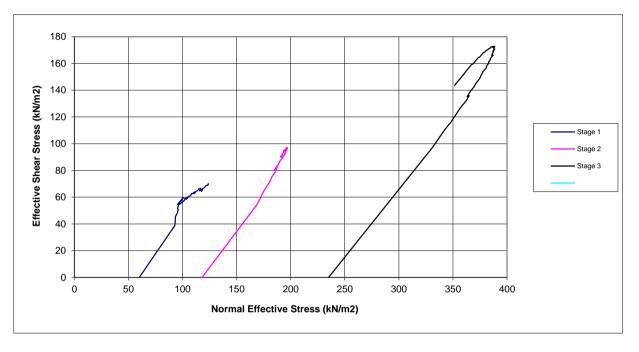




Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth Depth	to(m)	

Shearing Stage





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Client Ref

Riverside

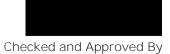


Specimen Details

Borehole		BH04
Sample No.		
Depth	from(m)	16.50
Depth	to(m)	







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Client Ref



Riverside

Specimen Details

Borehole Sample No.		BH05
Depth	from(m)	28.00
Depth	to(m)	
Date		06/07/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Bescription of specimen	
	Brown silty CLAY
	· · · · · · · · · · · · · · · · · · ·

Initial Specimen Conditions

Trittal openition 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
(assume	ed/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/m³	1.82	2.15	2.82



09/07/18 Date

Client Ref

Riverside





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	у	У	у
Base Drain Used	у	У	у
Side Drains Used	У	У	У
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.	m²/yr.	45.60911	63.36702	81.08286



09/07/18 Date

Client Ref

Riverside

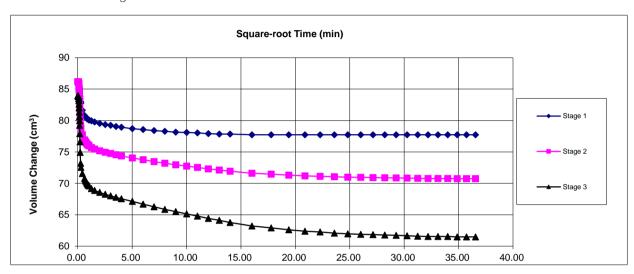
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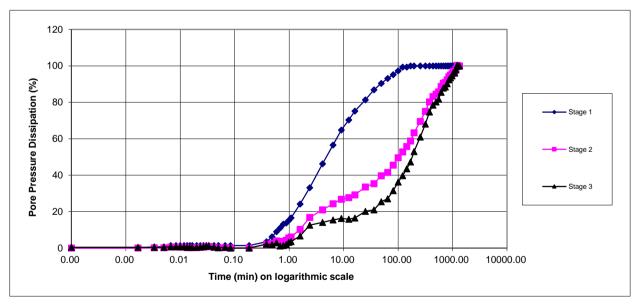


Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Consolidation Stage







09/07/18 Date

Client Ref

Riverside





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 R	atio		
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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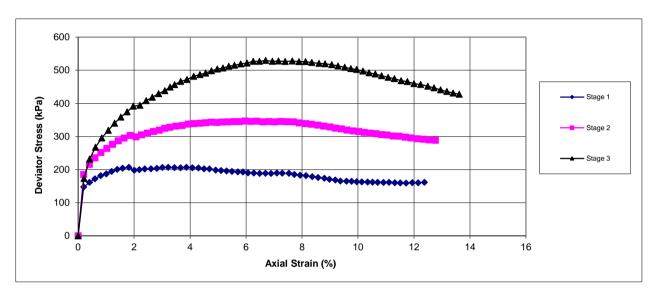
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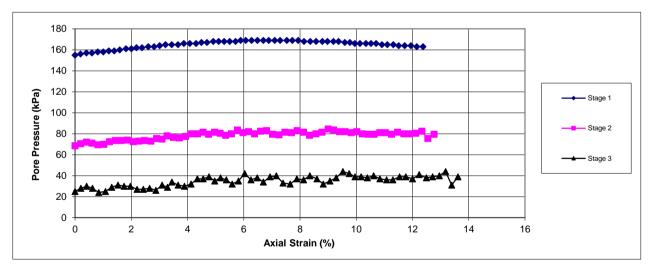


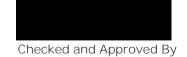
Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Shearing Stage







09/07/18 Date

Client Ref

Riverside

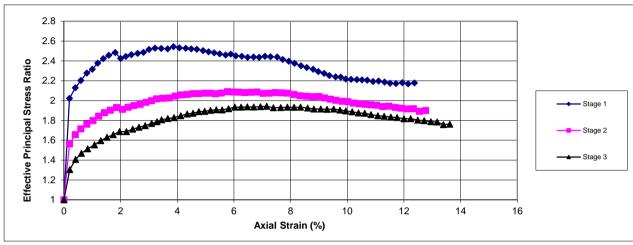


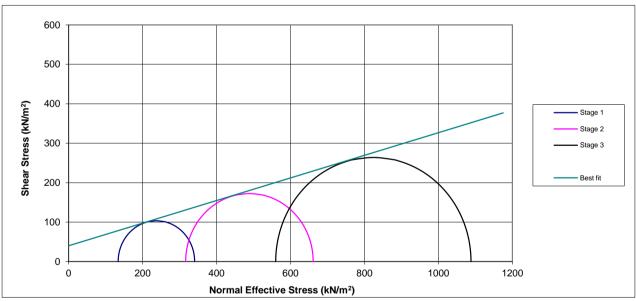


Specimen Details

Borehole		BH05
Sample No.		
Depth	from(m)	28.00
Depth	to(m)	

Shearing Stage







09/07/18 Date

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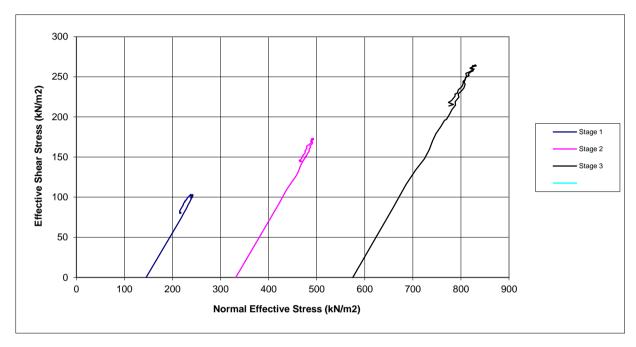




Specimen Details

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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Client Ref



Riverside

Specimen Details

Borehole Sample No.		BH08
Depth Depth	from(m) to(m)	18.00
Date	,	06/07/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

2000.191.011.01.0900	
	Description and the CLAV
	Brown sandy silty CLAY

Initial Specimen Conditions

Thirtial e pecimien containence				
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
(assume	d/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/m³	1.71	1.83	2.02



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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	у	У	у
Base Drain Used	у	У	у
Side Drains Used	у	У	У
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.	m²/yr.	45.60911	1.44147	14.89277



Checked and Approved By

09/07/18 Date

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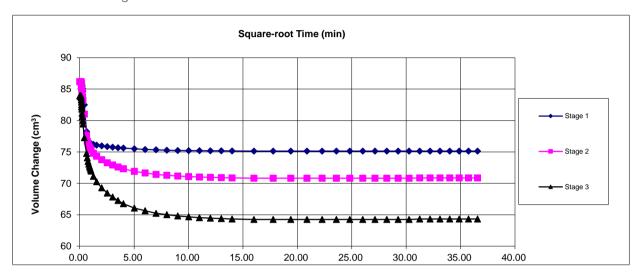
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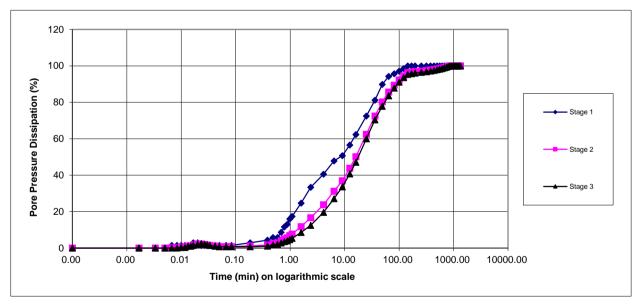


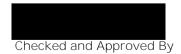
Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Consolidation Stage







09/07/18 Date

Client Ref

Riverside





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	e Stress R	atio		
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



09/07/18 Date

Client Ref

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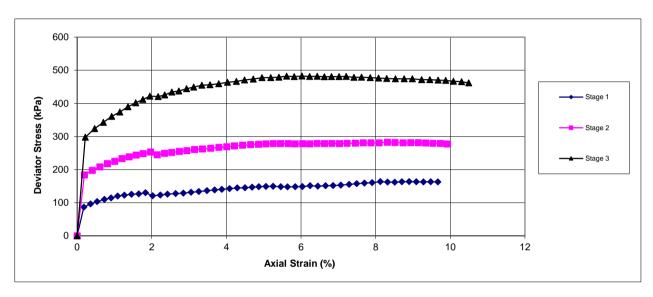
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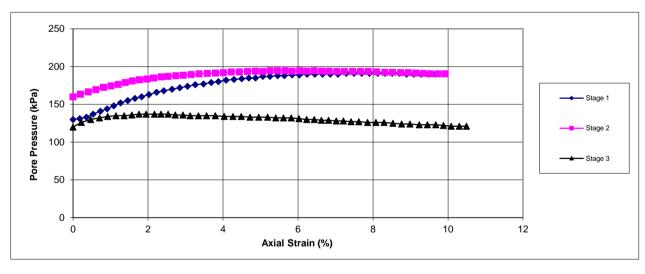


Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Shearing Stage







09/07/18 Date

Client Ref

Riverside

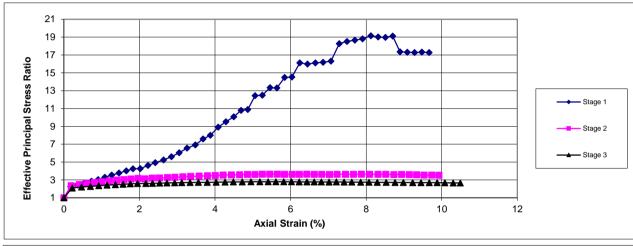


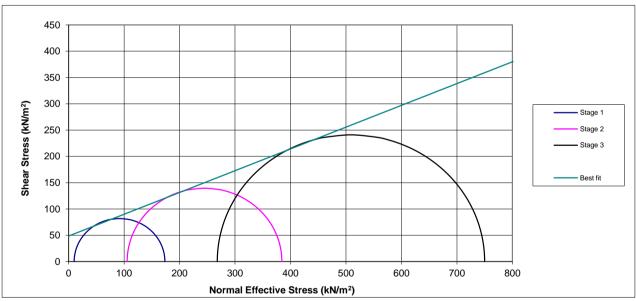


Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Shearing Stage







09/07/18 Date

Client Ref

Riverside

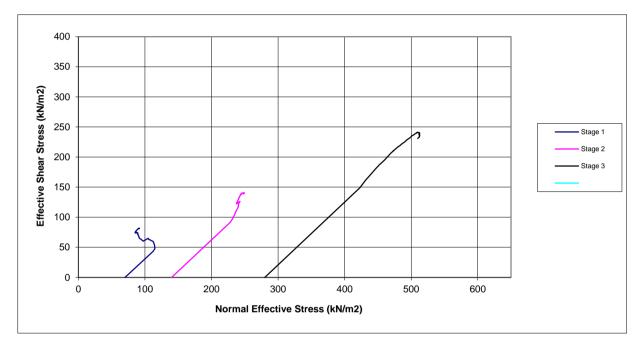




Specimen Details

Borehole		BH08
Sample No.		
Depth	from(m)	18.00
Depth	to(m)	

Shearing Stage





09/07/18 Date

Client Ref

Riverside

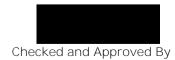


Specimen Details

Borehole		BH08	
Sample No.			
Depth	from(m)	18.00	
Depth	to(m)		







09/07/18 Date

Client Ref



Riverside

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	kN/m ³	2.65	2.65	2.65
(assumed	d/measured)	assumed	assumed	assumed

Final Specimen Conditions

Moisture Content	%	14	13	13
Density	Mg/m ³	2.13	2.19	2.34
Dry Density	Mg/m³	1.86	1.94	2.07



09/07/18 Date

Client Ref

Riverside





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	У	У	у
Base Drain Used	У	У	У
Side Drains Used	У	У	У
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

0011001101011				
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.	m²/yr.	1.00102	0.32686	0.18386



09/07/18 Date

Client Ref

Riverside

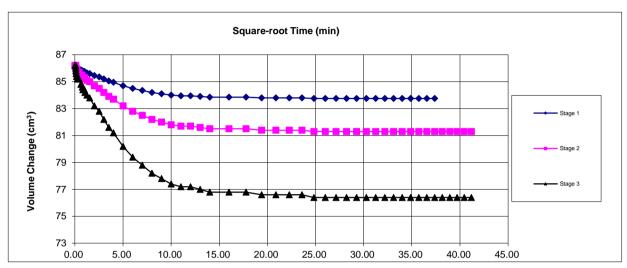
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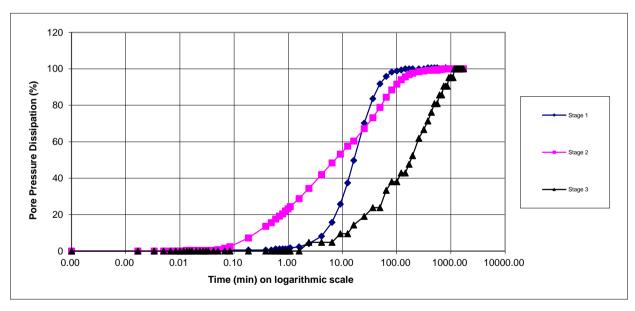


Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Consolidation Stage







09/07/18 Date

Client Ref

Riverside



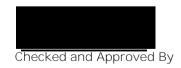


Specimen Details

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	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



09/07/18 Date

Client Ref

Riverside

Contract No

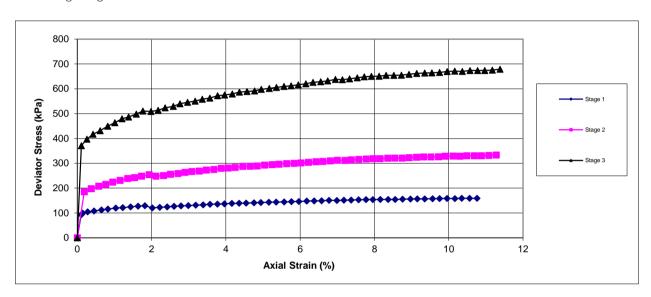


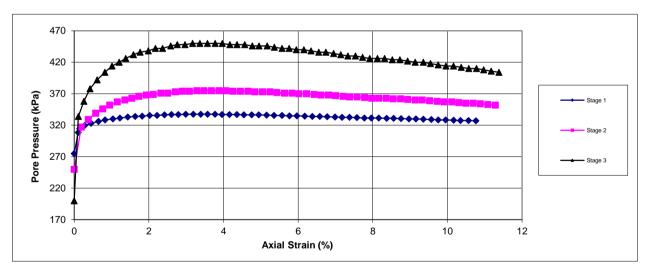
Stage 1

Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Shearing Stage







09/07/18 Date

Client Ref

Riverside

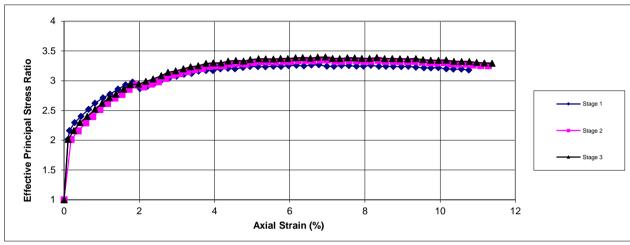


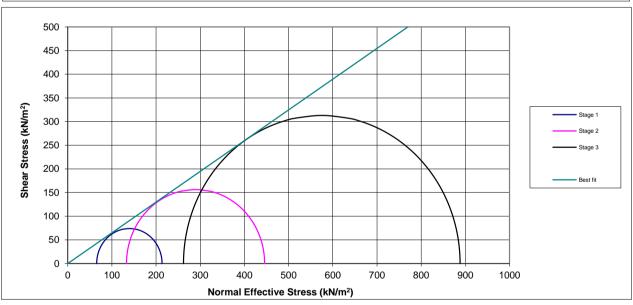


Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Shearing Stage







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Client Ref

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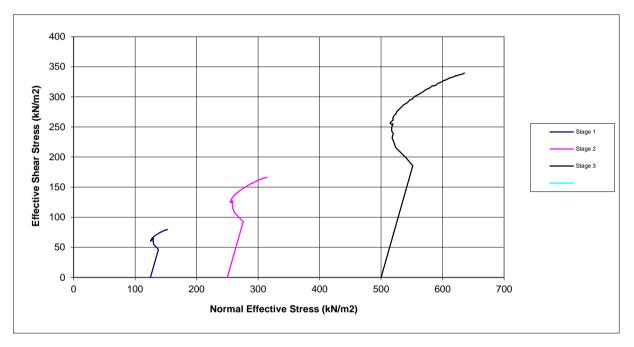




Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018

Shearing Stage





09/07/18 Date

Client Ref

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Specimen Details

Borehole		BH09
Sample No.		
Depth	m	30.5
Date		02/07/2018







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Specimen Details

Borehole Sample No.		BH10
Depth	from(m)	15.00
Depth	to(m)	
Date		14/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

2 ded. priori di apadimen	
Grey s	ilty CLAY
Grey s	11.5 05.11

Initial Specimen Conditions

Trittial opeciments.	0110110110			
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
(assume	ed/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/m³	1.84	1.95	2.20



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Client Ref

Riverside





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	у	У	У
Base Drain Used	y	У	y
Side Drains Used	y	У	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.	m²/yr.	59.57108	59.57108	38.12549



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Client Ref

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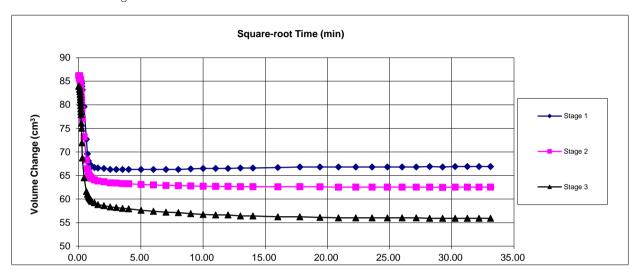
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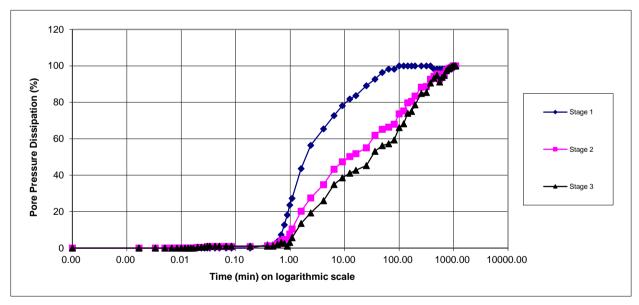


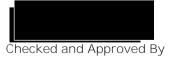
Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Consolidation Stage







09/07/18 Date

Client Ref

Riverside



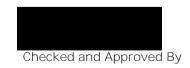


Specimen Details

Borehole		BH10	
Sample No.			
Depth	from(m)	15.00	
Depth	to(m)		

Shearing

Initial Cell Pressure Initial Pore Pressure	kPa kPa	300 250	300 200	300 100
Rate of Strain	mm/min	3.0619	3.0024	1.8303
Rate of Strain	111111/1111111	3.0019	3.0024	1.0303
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 R	atio		
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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Client Ref

Riverside

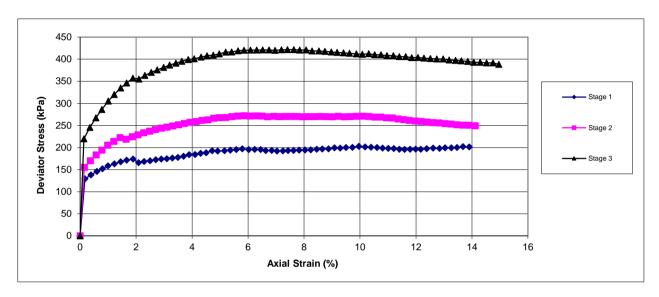
Contract No

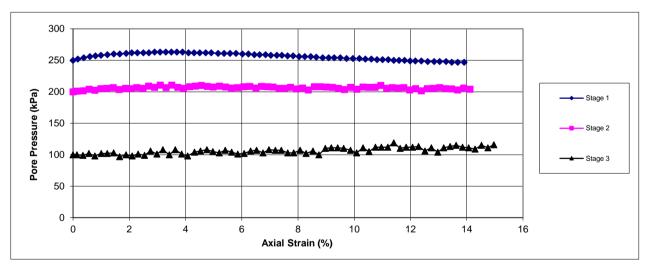


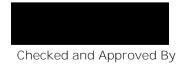
Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage







09/07/18 Date

Client Ref

Riverside

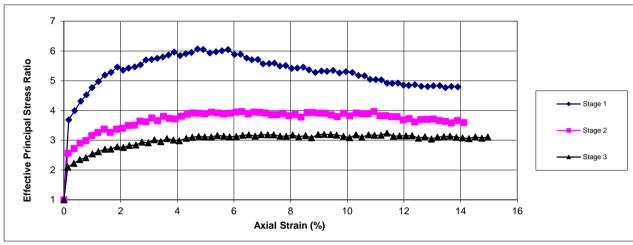


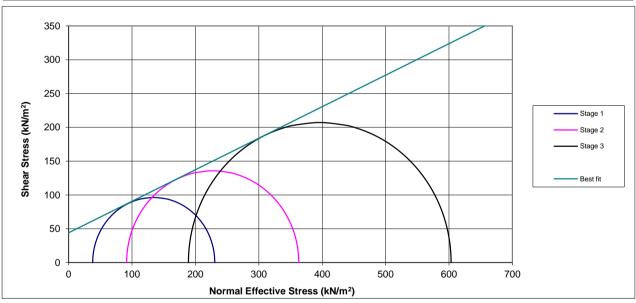


Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage







09/07/18 Date

Client Ref

Riverside

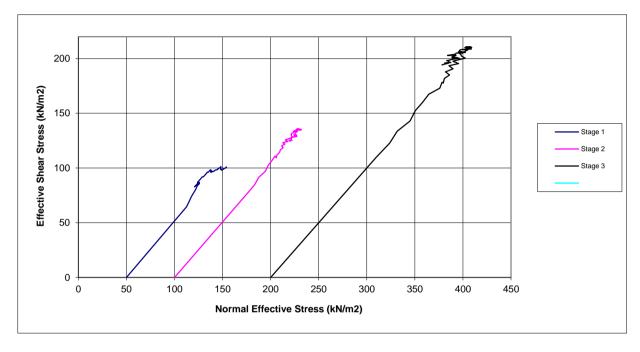
Contract No



Specimen Details

Borehole		BH10
Sample No.		
Depth	from(m)	15.00
Depth Depth	to(m)	

Shearing Stage





09/07/18 Date

Client Ref

Riverside



Specimen Details

Borehole		BH10	
Sample No.			
Depth	from(m)	15.00	
Depth	to(m)		







09/07/18 Date

Client Ref



Riverside

Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

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/m³	2.65	2.65	2.65
(assumed	d/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/m³	1.17	1.22	1.35



09/07/18 Date

> Client Ref GSI 0435 Contract No

Riverside



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	у	У	у
Base Drain Used	у	У	У
Side Drains Used	у	У	У
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

0011001101011				
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.	m²/yr.	0.29190	0.02043	0.24124



09/07/18

Date

Client Ref GSI 0435 Contract No

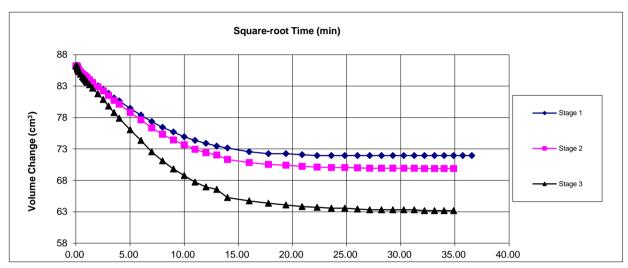
Riverside

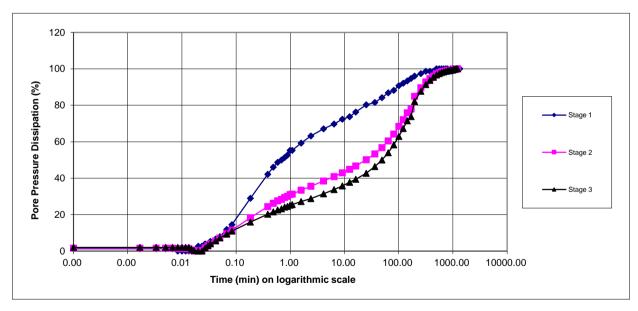


Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Consolidation Stage







09/07/18 Date

Client Ref GSI 0435 Contract No





Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Shearing

Silicaring						
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	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 R	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		



09/07/18 Date

Client Ref GSI 0435 Contract No

Riverside

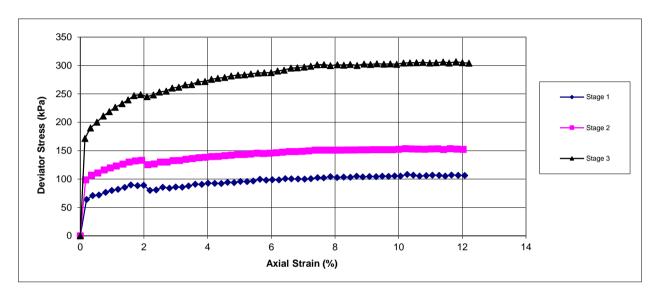


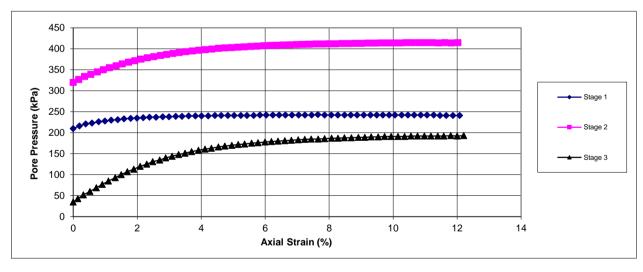
Stage 1

Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Shearing Stage







09/07/18 Date

Client Ref GSI 0435 Contract No

39466

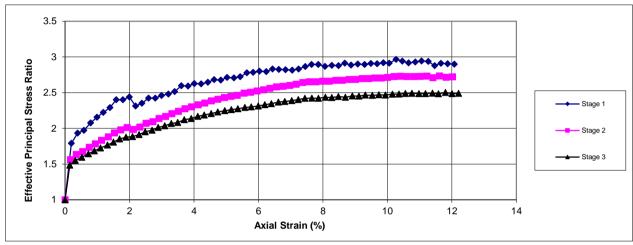


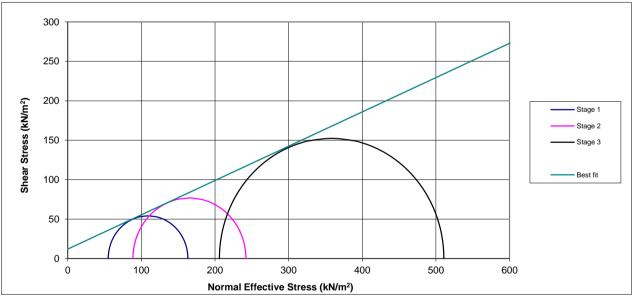


Specimen Details

_		
Borehole		BH12
Sample No.		
Danth		27
Depth	[1]	26
Date		02/06/2018
Date		02/00/2010

Shearing Stage







09/07/18 Date

> Client Ref GSI 0435 Contract No

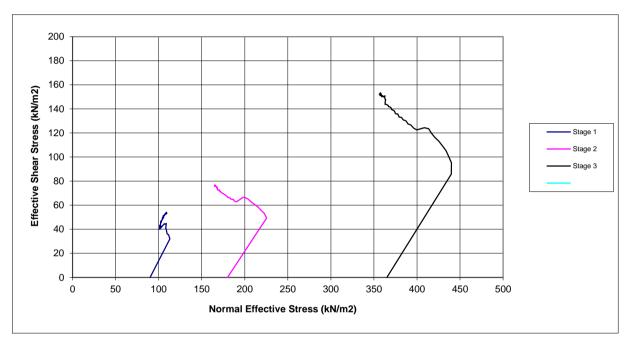




Specimen Details

Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018

Shearing Stage





09/07/18 Date

Client Ref GSI 0435 Contract No 39466



Specimen Details

Specimen betans		
Borehole		BH12
Sample No.		
Depth	m	26
Date		02/06/2018





Checked and Approved By

09/07/18 Date



Client Ref GSI 0435 Contract No 39466

Specimen Details

Borehole Sample No.		BH13
Depth	from(m)	15.00
Depth	to(m)	
Date		14/06/2018
Disturbed / Undisturbed		Undisturbed

Description of Specimen

Grey silty CLAY
3 3

Initial Specimen Conditions

Third observed contactions				
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
(assume	ed/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/m³	1.52	1.66	2.02



09/07/18 Date

Client Ref

Riverside





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	у	у	У
Base Drain Used	у	у	У
Side Drains Used	у	у	У
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.	m²/yr.	38.12549	26.47603	14.89277



09/07/18 Date

Client Ref

Riverside

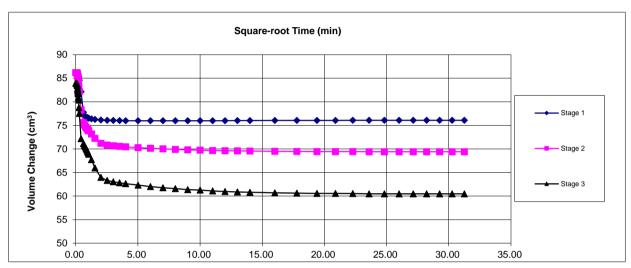
Contract No

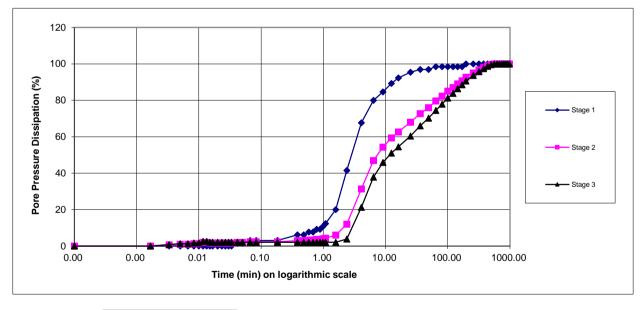


Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Consolidation Stage







09/07/18 Date

Client Ref

Riverside





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
May Daylatar Ctross				l
Max Deviator Stress	1	5.007	5.040	1.000
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 R	atio		_
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



09/07/18 Date

Client Ref

Riverside

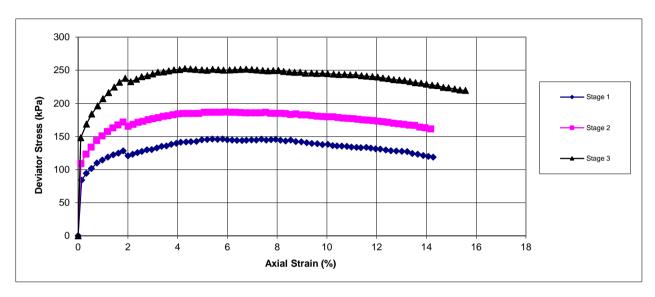
Contract No

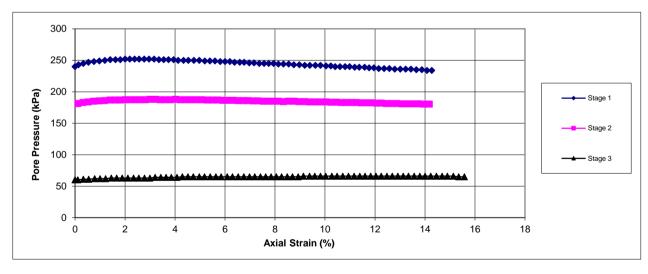


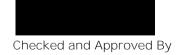
Specimen Details

Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	

Shearing Stage







09/07/18 Date

Client Ref

Riverside

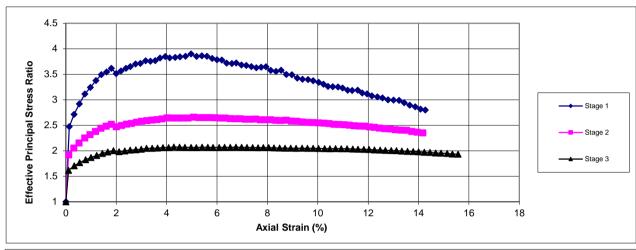


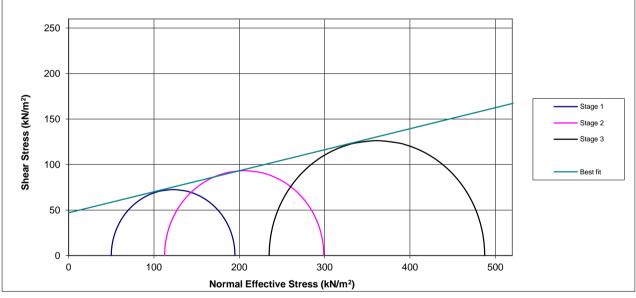


Specimen Details

Borehole		BH13	
Sample No.			
Depth	from(m)	15.00	
Depth	to(m)		

Shearing Stage







09/07/18 Date

Client Ref

Riverside

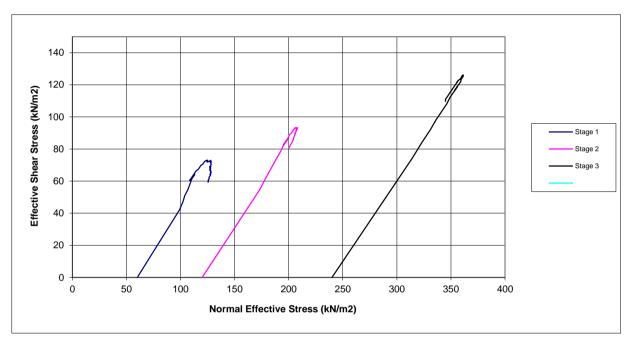




Specimen Details

Borehole		BH13	
Sample No.			
Depth	from(m)	15.00	
Depth	to(m)		

Shearing Stage





09/07/18 Date

Client Ref

Riverside

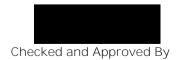


Specimen Details

	~	
Borehole		BH13
Sample No.		
Depth	from(m)	15.00
Depth	to(m)	







09/07/18 Date

Client Ref



Riverside

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

July 2018 Report No 3765R001-2





Derek Daniels

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t: 01925 291111 **f:** 01925 291191

e: derekdaniels@terraconsult.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
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:

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	
•				930131	930132	930133	930134	
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		1		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	
1			I					
Asbestos in Soil	Туре	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
Conoral Inorganies								
General Inorganics pH - Automated	pH Units	N/A	MCERTS	8.9	8.0	7.7	8.1	
Total Cyanide	mg/kg	1 1	MCERTS	< 1	< 1	< 1	< 1	
Total Cyanide	mg/kg		MCERTS	\ 1	\ 1	\ 1	\1	
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS	280	510	860	380	
Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate	g/l	0.00125	MCERTS	0.14	0.26	0.43	0.19	
Equivalent)	mg/l	1.25	MCERTS	141	257	429	191	
Organic Matter	//////////////////////////////////////	0.1	MCERTS	4.0	2.4	5.8	1.7	
organic Fluttoi	70	U.1	PICENTO	1.0	۷.٦	5.0	1./	
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 < 0.05	0.29	< 0.05	
Benzo(a)pyrene Indeno(1,2,3-cd)pyrene	mg/kg mg/kg	0.05 0.05	MCERTS MCERTS	< 0.05 < 0.05	< 0.05 < 0.05	0.56 0.31	< 0.05 < 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	
series (3.1.)per frence	mg/kg	0.03	. ICERTS	1 0.00	. 0.03	0.51	1 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.09	< 0.80	6.85	< 0.80	
	2. 2		<u> </u>				•	-
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	72 760	84	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	180	760	95	





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					
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	-	-	-	
ΓPH-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	-	-	ı	
PH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	8.9	-	-	ı	
PH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	27	-	-	ı	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	280	-	-	ı	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	920	-	-	-	
PH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	320	-	-	-	
PH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	1200	-	-	-	
PH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	-	1	
PH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	1	
PH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	
PH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	
PH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.1	-	-	1	
PH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	24	-	-	-	
PH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	760	-	-	1	
PH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	2700	-	-	-	
PH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	790	-	-	-	
PH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	3500	-	-	-	





I - L CI- Norm-L				026121	026122	026122	026124	
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	1			None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs	<u> </u>							
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 Cis-1,2-dichloroethene	μg/kg μg/kg	1	ISO 17025 MCERTS	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	μg/kg μg/kg	1	MCERTS	< 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0	
1.1-Dichloroethane	μg/kg 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 Tetrachloromethane	μg/kg	1	MCERTS MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	μg/kg μg/kg	1	MCERTS	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
Trichloroethene	μg/kg 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 ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	
Dibromochloromethane Tetrachloroethene	μg/kg μg/kg	1	NONE	< 1.0	< 1.0 < 1.0	< 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	ļ <u></u>
o-Xylene	μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane Isopropylbenzene	μg/kg μg/kg	1	MCERTS MCERTS	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
Bromobenzene	μg/kg μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
n-Propylbenzene	μg/kg 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	<u> </u>
1,3-Dichlorobenzene	μg/kg	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0	
p-Isopropyltoluene 1,2-Dichlorobenzene	μg/kg μg/kg	1	ISO 17025 MCERTS	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
1,4-Dichlorobenzene	μg/kg μg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Butylbenzene	μg/kg 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	





Lab Cample Number				936131	026122	936133	026124	
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) Date Sampled				0.50 27/03/2018	1.00 27/03/2018	0.40 27/03/2018	1.00 27/03/2018	
Date Sampled Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Time raken			b	тчопе заррнеа	None Supplied	топе заррнеа	тчопе заррнеа	
		de Li	S					
Analytical Parameter	Units	mit	creditat Status					
(Soil Analysis)	S	Limit of detection	Accreditation Status					
SVOCs	<u> </u>		3					
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 Bis(2-chloroisopropyl)ether	mg/kg	0.2	MCERTS	< 0.2 < 0.1	< 0.2 < 0.1	< 0.2 < 0.1	< 0.2 < 0.1	
Bis(2-cnioroisopropyr)etner 2-Methylphenol	mg/kg mg/kg	0.1	MCERTS MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
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	< 0.3 < 0.3	< 0.3	
1,2,4-Trichlorobenzene Naphthalene	mg/kg mg/kg	0.05	MCERTS MCERTS	< 0.05	< 0.05	< 0.05	< 0.3 < 0.05	
2,4-Dichlorophenol	mg/kg	0.03	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 2-Chloronaphthalene	mg/kg mg/kg	0.1	NONE MCERTS	< 0.1 < 0.1	< 0.1 < 0.1	< 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 < 0.2	< 0.3 < 0.2	< 0.3 < 0.2	< 0.3 < 0.2	
Diethyl phthalate 4-Nitroaniline	mg/kg mg/kg	0.2	MCERTS MCERTS	< 0.2 < 0.2	< 0.2 < 0.2	< 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 Dibutyl phthalate	mg/kg mg/kg	0.3	MCERTS MCERTS	< 0.3 < 0.2	< 0.3 < 0.2	< 0.3 < 0.2	< 0.3 < 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 MCERTS	< 0.05 < 0.05	< 0.05 < 0.05	0.71 0.29	< 0.05 < 0.05	
Benzo(k)fluoranthene Benzo(a)pyrene	mg/kg mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05 < 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	





Analytical Report Number : 18-80943 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	С	Total cyanide in soil	L080-PL	С
BH11		S	18-80943	936132	С	Total cyanide in soil	L080-PL	С
BH12		S	18-80943	936133	С	Total cyanide in soil	L080-PL	С
BH12		S	18-80943	936134	С	Total cyanide in soil	L080-PL	С





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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:

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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Lab Sample Number				937197	937198	937199	937200	937201
Sample Reference				937197 BH01	937196 BH01	937199 BH08	937200 BH08	937201 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	Туре	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Conord Increasing								
General Inorganics pH - Automated	pH Units	N/A	MCERTS	8.4	7.7	9.0	8.3	9.2
Total Cyanide	mg/kg	1 1	MCERTS	< 1	< 1	9.0 < 1	< 1	9.2 < 1
·								
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS	2300	1000	900	370	27
Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate	g/l	0.00125	MCERTS	1.1	0.52	0.45	0.19	0.014
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
Constituted PALLs								
Speciated PAHs		0.05			ı	2.25	1	0.05
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 0.05	MCERTS	-	-	< 0.05 < 0.05	-	< 0.05 < 0.05
Fluorene Phenanthrene	mg/kg mg/kg	0.05	MCERTS 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) Zinc (aqua regia extractable)	mg/kg mg/kg	1	MCERTS MCERTS	1.1 320	1.9 66	< 1.0 250	1.8 140	< 1.0 14
Enic (aqua regia extractable)	mg/kg	1 1	LICEVIO	320	50	230	1 TU	17





TPH-CWG - Aromatic >EC5 - EC7

TPH-CWG - Aromatic >EC7 - EC8

TPH-CWG - Aromatic >EC8 - EC10

TPH-CWG - Aromatic >EC10 - EC12

TPH-CWG - Aromatic >EC12 - EC16

TPH-CWG - Aromatic >EC16 - EC21

TPH-CWG - Aromatic > EC21 - EC35 TPH-CWG - Aromatic > EC35 - EC44

TPH-CWG - Aromatic (EC5 - EC35)

TPH-CWG - Aromatic (EC5 - EC44)

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	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	μg/kg	1	MCERTS			< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons		1							
TPH C10 - C40	mg/kg	10	MCERTS	130	< 10	-	-	-	
TOU CAIC Alimberia FCF FCC	1 "	0.001	MOEDEC		ı	. 0.001	. 0.001	. 0.001	
TPH-CWG - Aliphatic > EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001 < 0.001	< 0.001 < 0.001	< 0.001 < 0.001	
TPH-CWG - Aliphatic > EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	< 0.001 < 0.001	
TPH-CWG - Aliphatic > EC8 - EC10	mg/kg		MCERTS	-	-				
TPH-CWG - Aliphatic >EC10 - EC12 TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS MCERTS	-	-	2.4 16	< 1.0 < 2.0	< 1.0 < 2.0	
TPH-CWG - Aliphatic >EC12 - EC16 TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS			32	< 2.0 < 8.0	< 2.0 < 8.0	
TPH-CWG - Aliphatic >EC16 - EC21 TPH-CWG - Aliphatic >EC21 - EC35	mg/kg mg/kg	8	MCERTS	-	-	230	< 8.0 < 8.0	< 8.0 < 8.0	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg mg/kg	8.4	NONE	-	-	280	< 8.0 < 8.4	< 8.0 < 8.4	
TPH-CWG - Aliphatic (EC5 - EC35)		10				280	< 10		
TPH-CWG - Aliphatic (EC5 - EC35) TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg		MCERTS	-	-			< 10	
I PR-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	560	< 10	< 10	

< 0.001

< 0.001

< 0.001

2.2

6.8

26

360 760

400

< 0.001

< 0.001

< 0.001

< 1.0

< 2.0

< 10

< 10 < 8.4

< 10

< 0.001

< 0.001

< 0.001

< 1.0

< 2.0

< 10

< 10 < 8.4

< 10

0.001

0.001

0.001

1

2

10

10 8.4

10

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg mg/kg

mg/kg

MCERTS

MCERTS

MCERTS

MCERTS

MCERTS

MCERTS

NONE

MCERTS

NONE





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		
Time Taken				None Supplied	тионе варрнеа	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	T	.					•	
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		0.00125	MOERTO	0.50	0.024	0.050		
Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate	g/l	0.00125	MCERTS	0.58	0.024	0.059		
Equivalent)	mg/l	1.25	MCERTS	584	23.8	58.5		
Organic Matter	%	0.1	MCERTS	3.1	1.1	1.6		
Organic Platter	70	0.1	PICERTS	J.1	1.1	1.0		
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	-		1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-		
	2. 2		<u> </u>					
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		
						-		





TPH-CWG - Aromatic (EC5 - EC35)

TPH-CWG - Aromatic (EC5 - EC44)

Lab Sample Number				937202	937203	937204	I
Sample Reference		937202 BH02	937203 BH09	937204 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	
Time taken	1			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	-	
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 >EC12 - EC10	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	_	
c c Anphado (200 2011)	mg/kg	10	HOHE				1
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	ma/ka	8.4	NONE	-	320	_	

mg/kg

MCERTS





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 Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
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
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, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
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
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
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
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
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
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
Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding.	L076-PL	W	MCERTS
Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques. Determination of water soluble boron in soil by hot water extract followed by ICP-OES. Determination of BTEX in soil by headspace GC-MS. Dependent option for Gravimetric Quant if Screen/ID positive scheduled. Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. Determination of metals in soil by aqua-regia digestion followed by ICP-OES. Moisture content, determined gravimetrically. Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. Determination of pH in soil by addition of water followed by automated electrometric measurement. Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). Determination of total cyanide by distillation followed by colorimetry. Determination of hexane extractable hydrocarbons in soil by GC-FID.	Asbestos Identification with the use of polarised light microscopy in conjunction with disperson staining techniques. Determination of water soluble boron in soil by hot water extract followed by ICP-OES. Determination of BTEX in soil by headspace GC-MS. Determination of BTEX in soil by headspace GC-MS. Dependent option for Gravimetric Quant if Screen/ID positive scheduled. Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. Determination of metals in soil by aqua-regia digestion followed by ICP-OES. Moisture content, determined gravimetrically. Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. Determination of water soluble sulphate by ICP-OES. Determination of total cyanide by distillation followed by colorimetry. Determination of total cyanide by distillation followed by colorimetry. Determination of total cyanide by distillation followed by colorimetry. Determination of total cyanide by distillation followed by colorimetry. Determination of total cyanide by distillation followed by colorimetry. Determination of total cyanide by distillation in soil by GC-FID. Determination of TPH bands by HS-GC-MS/GC-FID In-house method, TPH with carbon banding. Determination of fexane extractable hydrocarbons in soil by GC-FID.	Analytical Method Description Abestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques. Determination of water soluble boron in soil by hot water extract followed by ICP-OES. Determination of BTEX in soil by headspace GC-MS. Determination of BTEX in soil by headspace GC-MS. Determination of BTEX in soil by headspace GC-MS. Determination of hexavalent chromium in soil by extraction in water then by addification, addition of 1,5 diphenylcarbazide followed by colorimetry. Determination of metals in soil by aqua-regia digestion followed by ICP-OES. Moisture content, determined gravimetrically. Determination of organic matter in soil by with polassium dichromate followed by thration with iron (II) sulphate. Determination of pH in soil by addition of water followed by automated electrometric measurement. Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by CP-OES. Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by CP-OES and MCERTS requirements. Determination of VAH compounds in soil by extraction in dichloromethane and hexane followed by CP-OES. Determination of value and in exame followed by CP-OES. Determination of the period based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests was a considerable and a considerable soluble sulphate by CP-OES. Determination of the period based on BS1377 Part 3, 1099-PL followed by colorimetry determination of water followed by CP-OES. Determination of water soluble sulphate by ICP-OES. Determination of the period based on Examination of water soluble sulphate by ICP-OES. Determination of the period based on Examination of water soluble sulphate by ICP-OES. Determination of the period by distillation	Analytical Method Description Analytical Method Nereferice Inhouse method based on HSG 248 An01-PL D D D D D D D D D D D D D

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.

Iss No 18-81153-2 Riverside EfW 3765





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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



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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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	Туре	N/A	ISO 17025	-	-	Chrysotile	-	
Asbestos in Soil	Туре	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	1		1					
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 Phenois								
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	_		T I		T			
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	41.2	< 0.80	





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	11	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	11	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	





Lab Sample Number	ab Sample Number						941653	
Sample Reference				941650 BH10	941651 BH10	941652 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 μg/kg	1	MCERTS	_	_	< 1.0	< 1.0	
Tribromomethane	μg/kg μg/kg	1	NONE	-	_	< 1.0	< 1.0	
o-Xylene	μg/kg μg/kg	1	MCERTS	_	_	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	μg/kg μg/kg	1	MCERTS	-	_	< 1.0	< 1.0	
1,1,2,2 1 Ca actilor occidence	µg/kg	1	MICERIA	_	_	< 1.0	< 1.0	





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	





Lab Sample Number 941650 941651 941652 941653											
Lab Sample Number											
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 TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	ND	ND				
VOC % Match	%	N/A	NONE	1	-	-	-				
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				





Sample Number	
None Supplied None Supplie	
Date Sampled	
None Supplied None Supplied Supplied Supplied None Supplied S	
SyoCs	
Aniline	
Aniline	
Phenol mg/kg 0.2 ISO 17025 - < 0.2 < 0.2 < 0.2	
2-Chlorophenol	
Bis(2-chloroethyl)ether	
1,3-Dichlorobenzene mg/kg 0.2 MCERTS - - < 0.2	
1,2-Dichlorobenzene	
1,4-Dichlorobenzene	
Bis(2-chloroisopropyl)ether	
2-Methylphenol mg/kg 0.3 MCERTS - < 0.3 < 0.3 Hexachloroethane mg/kg 0.05 MCERTS - < 0.05	
Hexachloroethane	
4-Methylphenol mg/kg 0.2 NONE - - < 0.2 < 0.2 Isophorone mg/kg 0.2 MCERTS - - < 0.2	
Isophorone	
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 - <	
1,2,4-Trichlorobenzene mg/kg 0.3 MCERTS - - <0.3	
Naphthalene	
2,4-Dichlorophenol mg/kg 0.3 MCERTS - - <0.3	
Hexachlorobutadiene	
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 - - 1.1 < 0.1 2-Chloronaphthalene mg/kg 0.1 MCERTS - - < 0.1	
2-Chloronaphthalene mg/kg 0.1 MCERTS - - < 0.1 < 0.1 Dimethylphthalate mg/kg 0.1 MCERTS - - < 0.1	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
2,6-Dinitrotoluene mg/kg 0.1 MCERTS - - < 0.1	
Acenaphthene mg/kg 0.05 MCERTS - - 1.1 < 0.05	
 	
0.4 Dinitural lung	
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	
remorphismy, priemly earlier	
Diethyl phthalate mg/kg 0.2 MCERTS - - < 0.2 < 0.2 4-Nitroaniline mg/kg 0.2 MCERTS - - < 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	
Diddyl phthalate Illig/kg 0.2 McERTS - - < 0.2 < 0.2 Anthraquinone mg/kg 0.3 MCERTS - - < 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(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	





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								
GVOC TTO C						Naphthalene,		
SVOCs TICs Compound Name	0/	N/A	NONE	-	-	1,6,7-trimethyl-	ND	
SVOC % Match	%	N/A	NONE	-	-	98 Azulene, 4,6,8-	-	
SVOCs TICs Compound Name		N/A	NONE	_		trimethyl-	_	
SVOC % Match	%	N/A	NONE			98		
SVOCs TICs Compound Name	70	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	-	
						Naphthalene, 1,4-		
SVOCs TICs Compound Name		N/A	NONE	-	-	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)	ma/ka	0.1	NONE	-	-	< 0.10	< 0.10	





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

Iss No 18-81926-1 Riverside EfW 3765





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



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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Lab Sample Number	941718						
Sample Reference	Sample Reference						
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			
oisture Content % N/A NONE				6.6			
otal 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



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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Lab Carrella Neuroban				042105	042100	042107	042100	042100
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	1		1	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	Туре	N/A	ISO 17025	Chrysotile	-	Chrysotile	Chrysotile	Crocidolite
Asbestos in Soil	Туре	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
Constant Tonor and Tonor a								
General Inorganics pH - Automated	nH Hait-	N/A	MCEDIC	9.5	8.2	9.3	<u> </u>	0.7
pri - Automated Total Cyanide	pH Units mg/kg	N/A 1	MCERTS MCERTS	9.5	8.2 < 1	9.3	-	8.2 < 1
Total Cyalliae	mg/kg		PICERIO	<u> </u>		<u> </u>	-	\ \ 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS	350	1000	4400	-	780
Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate	g/l	0.00125	MCERTS	0.18	0.52	2.2	-	0.39
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	T ,	0.05	MOEDEO	. 0.05	. 0.05	. 0.05	I	0.00
Naphthalene Acenaphthylene	mg/kg mg/kg	0.05	MCERTS MCERTS	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	-	0.90 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 Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	<u>-</u>	0.30 1.9
benzo(gni)peryiene	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	, J, J					-		-
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





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) Accreditation Status Units								
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
-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	-	-
	515				l l			
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





Lab Sample Number				943190	943191	943192	943193	
Sample Reference								
<u> </u>				BH03	BH04	BH04 None Supplied	BH04 None Supplied	
Sample Number Depth (m)				None Supplied 2.80	None Supplied 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	
			>					
Annalistical Bernanden	_	e L	Accreditation Status					
Analytical Parameter	Units	Limit of detection	creditat Status					
(Soil Analysis)	is.	g 으	us atio					
		_	9					
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 &	-	-	
<u>'</u>					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 Cvanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
	9/109	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	J. J.							
Equivalent)	g/l	0.00125	MCERTS	0.26	2.0	2.3	0.66	
Water Soluble SO4 16hr extraction (2:1 Leachate	/I	1.25	MCERTS	258	2010	2300	CC1	
Equivalent) Organic Matter	mg/l %	0.1	MCERTS	5.6	2.3	2.3	664 2.4	
Organic Matter	%0	0.1	MCERTS	5.0	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(x)fluoranthene	mg/kg	0.05	MCERTS MCERTS	0.13 0.40	0.97 3.1	-	< 0.05 < 0.05	
Benzo(a)pyrene Indeno(1,2,3-cd)pyrene	mg/kg mg/kg	0.05	MCERTS	< 0.40	0.89	-	< 0.05 < 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	
Source/Subber Arene	ı mg/kg	0.05	LICENTO	` 0.05	0.01		` 0.05	1
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	





Lab Sample Number		943190	943191	943192	943193			
Sample Reference	Sample Reference					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) Accreditation Status Units								
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	-	-	·
ο & 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	
					1			
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	-	-	





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



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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Sample Reference	Lab Sample Number				951938	951939	951940	951941	951942
Sample Number None Suppled Non									
Depth (m)									
None Supplied None Supplie	Depth (m)				1.45	1.65			0.80
Analytical Parameter	Date Sampled				25/04/2018	25/04/2018		26/04/2018	
Stone Content	Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Mosture Content	Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Total present Leg 0.001 Nove 1.4 1.4 1.9 2.0 0.51	Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Asbestos in Soil Screen / Identification Name	Moisture Content	%	N/A	NONE	0.93	27	24	10	9.7
Asbestos in Soil	Total mass of sample received	kg	0.001	NONE	1.4	1.4	1.9	2.0	0.51
Asheetiss Quantification (Stane 2)	Asbestos in Soil Screen / Identification Name	Туре	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos Quantification Total % 0.001 ISO 17025 		Type		ISO 17025	-	Not-detected	Not-detected		-
Comman					-	-	-		-
Def - Automated	Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-
Total Cyanide				-	 	· · · · · · · · · · · · · · · · · · ·			
Water Soluble Subhate as SO, 16 in extraction (2:1) mg/kg 2.5 MCRETS - 540 1400 1600 3600 Water Soluble SO4 16 in extraction (2:1 Leachate Equivalent) g/l 0.00125 MCRETS - 0.27 0.70 0.82 1.8 Equivalent) g/l 0.00125 MCRETS - 0.27 0.70 0.82 1.8 Equivalent) mg/l 1.25 MCRETS - 0.27 0.70 0.82 1.8 Equivalent) mg/l 1.25 MCRETS - 2.68 698 824 1800 Organic Nature Mg/l 0.1 MCRETS - 3.0 2.2 2.0 - Total Phenois Total Pheno			_						
Water Soluble SO4 16th extraction (2:1 Leachate Equivalent)	Total Cyanide	mg/kg	1	MCERTS	-	< 1	< 1	< 1	< 1
Equivalent	Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS	-	540	1400	1600	3600
Equivalent	Equivalent)	g/l	0.00125	MCERTS	-	0.27	0.70	0.82	1.8
Total Phenols Total Phenols (monohydric) mg/kg 1 MCERTS	Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)		1.25		-	268	698	824	1800
Total Phenols (monohydric) mg/kg 1 MCERTS - - - - - - - - -	Organic Matter	%	0.1	MCERTS	-	3.0	2.2	2.0	-
Total Phenols (monohydric) mg/kg 1 MCERTS - - - - - - - - -									
Speciated PAHs									
Nephthalene	Total Phenois (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
Nephthalene	Speciated DAHs								
Acenaphthylene	-	ma/ka	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	_
Acenaphthene									-
Fluorene									-
Anthracene	Fluorene		0.05	MCERTS		< 0.05	< 0.05	< 0.05	-
Fluoranthene	Phenanthrene	mg/kg	0.05	MCERTS	30	< 0.05	0.16	1.2	-
Pyrene	Anthracene	mg/kg	0.05	MCERTS		< 0.05	< 0.05	0.37	-
Benzo(a)anthracene									
Chrysene									
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									
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									
Benzo(a)pyrene									
Indeno(1,2,3-cd)pyrene									-
Dibenz(a,h)anthracene mg/kg 0.05 MCERTS < 0.05 < 0.05 0.20 - Benzo(ghi)perylene mg/kg 0.05 MCERTS 0.51 < 0.05									-
Total PAH Speciated Total EPA-16 PAHs mg/kg 0.8 MCERTS 99.9 < 0.80 2.10 17.4 -	Dibenz(a,h)anthracene		0.05		< 0.05	< 0.05	< 0.05	0.20	-
Material Region	Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	< 0.05	< 0.05	0.90	-
Material Region									
Heavy Metals / Metalloids Macana regia extractable Macana regia extra	Total PAH					1			
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	Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	99.9	< 0.80	2.10	17.4	-
Boron (water soluble) mg/kg 0.2 MCERTS - 27 34 110 1600 Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS - < 0.2	Heavy Metals / Metalloids			.		T			
Cadmium (aqua regia extractable) mg/kg 0.2 MCERTS - < 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 < 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 < 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 < 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 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3 < 0.3									
Chromium (hexavalent) mg/kg 4 MCERTS - < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 4.0 < 2.3 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									
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	· · · · ·								
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									
Lead (aqua regia extractable) mg/kg 1 MCERTS - 40 54 88 130 Mercury (aqua regia extractable) mg/kg 0.3 MCERTS - < 0.3									
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									
Nickel (aqua regia extractable) mg/kg 1 MCERTS - 26 24 17 14 Selenium (aqua regia extractable) mg/kg 1 MCERTS - < 1.0	Mercury (aqua regia extractable)								
Selenium (aqua regia extractable) mg/kg 1 MCERTS - < 1.0 < 1.0 < 1.0 < 1.0	Nickel (aqua regia extractable)				-				
Zinc (aqua regia extractable) mg/kg 1 MCERTS - 85 68 130 230	Selenium (aqua regia extractable)		1		-			< 1.0	< 1.0
	Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	85	68	130	230





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
			A					
Analytical Davameter	_	Limit of detection	Accreditation Status					
Analytical Parameter	Units	iect mit	edit					
(Soil Analysis)	ió.	할 육	us					
			9					
	-		-					
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		-	
1111 010 010	mg/kg		HICERTS		110			
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	-





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 25/04/2018	1.65 25/04/2018	2.55 25/04/2018	0.50 26/04/2018	0.80 26/04/2018
Date Sampled Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Tille Takell	1			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 NONE	-	-	-	-	-
1,1-Dichloroethene 1,1,2-Trichloro 1,2,2-Trifluoroethane	μg/kg	1	ISO 17025		-	-	-	-
Cis-1,2-dichloroethene	μg/kg μg/kg	1	MCERTS	- -	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	μg/kg μg/kg	1	MCERTS	-	<u> </u>	<u> </u>	<u> </u>	-
1,1-Dichloroethane	μg/kg 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 MCERTS	-	-	-	-	-
1,2-Dichloropropane Trichloroethene	μg/kg μg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	μg/kg μg/kg	1	MCERTS		-	-	-	-
Bromodichloromethane	μg/kg μg/kg	1	MCERTS	<u>-</u>	-	-	-	-
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 Ethylbenzene	μg/kg	1	MCERTS	-	-	-	-	-
p & m-Xylene	μg/kg μg/kg	1	MCERTS MCERTS					-
Styrene	μg/kg 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 1,2,4-Trimethylbenzene	μg/kg	1	MCERTS	-	<u>-</u>	<u>-</u>	-	-
sec-Butylbenzene	μg/kg μg/kg	1	ISO 17025 MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	μg/kg μg/kg	1	ISO 17025	-	-	-	-	-
p-Isopropyltoluene	μg/kg μg/kg	1	ISO 17025	-	-	-	-	-
1,2-Dichlorobenzene	μg/kg 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	-	-	-	-	-





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	-	-	-	-	-





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	-	-	-	-	-





Lab Sample Number				951938	951939	951940	951941	951942
Sample Reference				TP01	TP01 None Supplied	TP01 None Supplied	TP02 None Supplied	TP02 None Supplied
Sample Number Depth (m)				None Supplied 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				
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	-	-	<u>-</u> -	-	-
1,2-Dichlorobenzene 1,4-Dichlorobenzene	mg/kg	0.1	MCERTS MCERTS	-		-	-	-
Bis(2-chloroisopropyl)ether	mg/kg mg/kg	0.2	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 1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	<u>-</u> -	<u>-</u> -	- -	-
Naphthalene	mg/kg mg/kg	0.05	MCERTS MCERTS	-		-		_
2,4-Dichlorophenol	mg/kg	0.03	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 Dimethylphthalate	mg/kg	0.1	MCERTS MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg 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	-	-	<u>-</u>	-	<u>-</u> -
Azobenzene Bromophenyl phenyl ether	mg/kg mg/kg	0.3	MCERTS 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 Butyl benzyl phthalate	mg/kg mg/kg	0.05	MCERTS ISO 17025	-	<u>-</u> -	-	-	<u>-</u>
Benzo(a)anthracene	mg/kg 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	-	-	-	-	-





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 SVOC % Match	%	N/A N/A	NONE NONE	- -	<u>-</u>	- -	<i>-</i>	<u>-</u>
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	-	-	-	-	-





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
rotal mass of sample received	9	0.002	HOHE	2.0	2.0		2.7	2.0
Asbestos in Soil Screen / Identification Name	Туре	N/A	ISO 17025	-	-	Chrysotile	-	Chrysotile
Asbestos in Soil	Туре	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) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS	3600	650	3600	400	2200
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 Phenois						4.0		
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
opeciated Total ELA TOTALIS	ilig/kg	0.0	PICENTO	12.0	_	31.2	_	10.0
Heavy Metals / Metalloids								
Arsenic (agua regia extractable)	mg/kg	1	MCERTS	310	37	100	14	60
Arsenic (aqua regia extractable) Boron (water soluble)	mg/kg mg/kg	0.2	MCERTS MCERTS	310 1700	37 170	100 1200	14 150	60 150
		_						
Boron (water soluble)	mg/kg	0.2	MCERTS	1700	170	1200	150	150
Boron (water soluble) Cadmium (aqua regia extractable)	mg/kg mg/kg	0.2	MCERTS MCERTS	1700 < 0.2	170 < 0.2	1200 < 0.2	150 < 0.2	150 < 0.2
Boron (water soluble) Cadmium (aqua regia extractable) Chromium (hexavalent)	mg/kg mg/kg mg/kg	0.2 0.2 4	MCERTS MCERTS MCERTS	1700 < 0.2 < 4.0 20 37	170 < 0.2 < 4.0 47	1200 < 0.2 < 4.0	150 < 0.2 < 4.0	150 < 0.2 < 4.0
Boron (water soluble) Cadmium (aqua regia extractable) Chromium (hexavalent) Chromium (aqua regia extractable) Copper (aqua regia extractable) Lead (aqua regia extractable)	mg/kg mg/kg mg/kg mg/kg	0.2 0.2 4 1 1	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS	1700 < 0.2 < 4.0 20 37 360	170 < 0.2 < 4.0 47 17 27	1200 < 0.2 < 4.0 21 110 300	150 < 0.2 < 4.0 47 15 24	150 < 0.2 < 4.0 22 36 300
Boron (water soluble) Cadmium (aqua regia extractable) Chromium (hexavalent) Chromium (aqua regia extractable) Copper (aqua regia extractable) Lead (aqua regia extractable) Mercury (aqua regia extractable)	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	0.2 0.2 4 1 1 0.3	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS	1700 < 0.2 < 4.0 20 37 360 2.3	170 < 0.2 < 4.0 47 17 27 0.4	1200 < 0.2 < 4.0 21 110 300 < 0.3	150 < 0.2 < 4.0 47 15 24 < 0.3	150 < 0.2 < 4.0 22 36 300 0.5
Boron (water soluble) Cadmium (aqua regia extractable) Chromium (hexavalent) Chromium (aqua regia extractable) Copper (aqua regia extractable) Lead (aqua regia extractable) Mercury (aqua regia extractable) Nickel (aqua regia extractable)	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	0.2 0.2 4 1 1 0.3 1	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS	1700 < 0.2 < 4.0 20 37 360 2.3 15	170 < 0.2 < 4.0 47 17 27 0.4 32	1200 < 0.2 < 4.0 21 110 300 < 0.3 45	150 < 0.2 < 4.0 47 15 24 < 0.3 31	150 < 0.2 < 4.0 22 36 300 0.5 20
Boron (water soluble) Cadmium (aqua regia extractable) Chromium (hexavalent) Chromium (aqua regia extractable) Copper (aqua regia extractable) Lead (aqua regia extractable) Mercury (aqua regia extractable)	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	0.2 0.2 4 1 1 0.3	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS	1700 < 0.2 < 4.0 20 37 360 2.3	170 < 0.2 < 4.0 47 17 27 0.4	1200 < 0.2 < 4.0 21 110 300 < 0.3	150 < 0.2 < 4.0 47 15 24 < 0.3	150 < 0.2 < 4.0 22 36 300 0.5





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
TDH-CWG - Alinhatic (FC5 - FC35)	ma/ka	10	MCERTS	120	_	240	_	120

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





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 26/04/2018	1.30 26/04/2018	0.80 26/04/2018	1.50 26/04/2018	0.60 25/04/2018
Date Sampled Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Tille Takell	ī			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 MCERTS	- -	-	< 1.0	-	-
Cis-1,2-dichloroethene MTBE (Methyl Tertiary Butyl Ether)	μg/kg μg/kg	1	MCERTS	-	-	< 1.0 < 1.0	-	-
1,1-Dichloroethane	μg/kg μg/kg	1	MCERTS		-	< 1.0	-	-
2,2-Dichloropropane	μg/kg 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 Bromodichloromethane	μg/kg	1	MCERTS MCERTS	-	-	< 1.0	-	-
Cis-1,3-dichloropropene	μg/kg μg/kg	1	ISO 17025	-	-	< 1.0 < 1.0	-	-
Trans-1,3-dichloropropene	μg/kg 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 p & m-Xylene	μg/kg	1	MCERTS	-	-	< 1.0	-	-
Styrene	μg/kg	1	MCERTS MCERTS	-	-	< 1.0 < 1.0	-	-
Tribromomethane	μg/kg μg/kg	1	NONE	-	-	< 1.0	-	-
o-Xylene	μg/kg μg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	μg/kg 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 sec-Butylbenzene	μg/kg	1	ISO 17025 MCERTS	-	-	< 1.0 < 1.0	-	-
1.3-Dichlorobenzene	μg/kg μg/kg	1	ISO 17025	<u>-</u>	<u>-</u>	< 1.0	<u>-</u>	-
p-Isopropyltoluene	μg/kg μg/kg	1	ISO 17025	-	-	< 1.0	-	-
1.2-Dichlorobenzene	μg/kg μg/kg	1	MCERTS	-	-	< 1.0	-	_
1,4-Dichlorobenzene	μg/kg 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	-	-





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	-	-





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	-	-





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 1,4-Dichlorobenzene	mg/kg mg/kg	0.1	MCERTS MCERTS	-	<u>-</u>	< 0.1 < 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 1.2.4-Trichlorobenzene	mg/kg mg/kg	0.3	MCERTS MCERTS	-	-	< 0.3 < 0.3	<u>-</u>	-
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 2-Methylnaphthalene	mg/kg	0.2	MCERTS	-	-	< 0.2 < 0.1	<u>-</u>	-
2-Chloronaphthalene	mg/kg mg/kg	0.1	NONE 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 Diethyl phthalate	mg/kg mg/kg	0.3	ISO 17025 MCERTS	-	<u>-</u> -	< 0.3 < 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 Carbazole	mg/kg	0.05	MCERTS	-	<u>-</u> -	1.5 < 0.3	-	-
Cardazole Dibutyl phthalate	mg/kg mg/kg	0.3	MCERTS MCERTS	-	-	< 0.3	-	-
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	-	<u>-</u>
Benzo(k)fluoranthene Benzo(a)pyrene	mg/kg mg/kg	0.05	MCERTS MCERTS	-	-	1.7 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	-	-





Lab Sample Number				951943	951944	951945	951946	951947
Sample Reference				751945 TP02	751944 TP02	751943 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
Time Taken		1		None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
SVOCs TICs		l						
SVOCs TICs Compound Name		N/A	NONE	_	-	Benzo[e]pyrene	-	_
SVOC % Match	%	N/A	NONE			98		
5100 /51/dtd1	70	11/7	INOINE			Naphthalene,		
SVOCs TICs Compound Name		N/A	NONE	_	_	1,6,7-trimethyl-	_	_
SVOC % Match	%	N/A	NONE	_	-	97	_	_
0100 701 lates.		.,,,,	110112			3,4:9,10-		
SVOCs TICs Compound Name		N/A	NONE	_	_	Dibenzopyrene	_	_
SVOC % Match	%	N/A	NONE	-	-	97	_	-
		,				Phenanthrene, 4-		
SVOCs TICs Compound Name		N/A	NONE	-	-	methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Pyrene, 1-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	_	-
						Benz[i]aceanthryl		
SVOCs TICs Compound Name		N/A	NONE	-	-	ene, 3-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
						Benzo[b]triphenyl		
SVOCs TICs Compound Name		N/A	NONE	-	-	ene	-	-
SVOC % Match	%	N/A	NONE	-	-	96	-	-
						Naphthalene, 2,7-		
SVOCs TICs Compound Name		N/A	NONE	-	-	dimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-
				_		Naphthalene, 2,6-		
SVOCs TICs Compound Name		N/A	NONE	_	-	dimethyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-
				_		Benz[a]anthracen		
SVOCs TICs Compound Name		N/A	NONE		-	e, 7-methyl-	-	-
SVOC % Match	%	N/A	NONE	-	-	95	-	-

Environmental Forensics

Chlorophenols								
Pentachlorophenol (PCP)	ma/ka	0.1	NONE	_	_	< 0.10	-	-





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 Time Taken				25/04/2018	25/04/2018	25/04/2018				
Time Taken	T	ı		None Supplied	None Supplied	None Supplied				
		2 _	Accreditation Status							
Analytical Parameter	Units	Limit of detection	red Sta							
(Soil Analysis)	ţ	tio t	itat							
		5 7	ion							
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	Туре	N/A	ISO 17025	-	Chrysotile	-				
Asbestos in Soil	Туре	N/A	ISO 17025	-	Detected	_				
Asbestos (III 3011 Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.004	-				
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.004	-				
							•			
General Inorganics					<u></u>					
pH - Automated	pH Units	N/A	MCERTS	8.3	8.3	7.6				
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1				
L	I	l .								
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS	1400	190	190	1			
Equivalent)	g/l	0.00125	MCERTS	0.71	0.097	0.094				
Water Soluble SO4 16hr extraction (2:1 Leachate	9/1	0.00123	PICENTO	0.71	0.097	0.094				
Equivalent)	mg/l	1.25	MCERTS	713	96.8	94.1				
Organic Matter	%	0.1	MCERTS	3.0	2.0	2.0				
Total Phenois						1	1	1		
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-				
Speciated PAHs										
Naphthalene	mg/kg	0.05	MCERTS	_	_	_		I		
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 Ponze/h)fluoranthana	mg/kg	0.05	MCERTS	-	<u>-</u>	-		ł		
Benzo(b)fluoranthene Benzo(k)fluoranthene	mg/kg mg/kg	0.05	MCERTS 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	1	-	-				
Total PAH								-		
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-				
Heavy Metals / Metalloids				27	2.	16	I	1		
Arsenic (aqua regia extractable) Boron (water soluble)	mg/kg	0.2	MCERTS	27	21 5.1	16 43				
Boron (water soluble) Cadmium (aqua regia extractable)	mg/kg mg/kg	0.2	MCERTS MCERTS	440 < 0.2	< 0.2	< 0.2		1		
Chromium (hexavalent)	mg/kg mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		1		
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				





TPH-CWG - Aromatic (EC5 - EC35) TPH-CWG - Aromatic (EC5 - EC44)

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					
		<u> </u>	<u> </u>					
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	-		
TPH C10 - C40	mg/kg	10	MCERTS	< 10	-	< 10		
TOU CMC Alimbatia > FCF FCC		0.001	MCEDIC	_	. 0.001	_	1	
TPH-CWG - Aliphatic >EC5 - EC6 TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS		< 0.001 < 0.001			
TPH-CWG - Aliphatic >EC6 - EC8 TPH-CWG - Aliphatic >EC8 - EC10	mg/kg mg/kg	0.001	MCERTS MCERTS	-	< 0.001	-		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS		< 1.0			
TPH-CWG - Aliphatic >EC10 - EC12 TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	5.9	-		
TPH-CWG - Aliphatic >EC12 - EC10	mg/kg	8	MCERTS	-	< 8.0	_		
TPH-CWG - Aliphatic >EC10 - EC21 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	_		
TFTI-CWG - Aliphatic (LCS - LC++)	IIIg/kg	10	NONL		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	_		

mg/kg

MCERTS





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 Time Taken				25/04/2018 None Supplied	25/04/2018 None Supplied	25/04/2018 None Supplied		
Time Taken	1	l		None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
VOCs								
Chloromethane	μg/kg	1	ISO 17025	-	_	_	I	
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 MCERTS	-	-	-		
2,2-Dichloropropane Trichloromethane	μg/kg μg/kg	1	MCERTS	-	-	-		
1,1,1-Trichloroethane	μg/kg μg/kg	1	MCERTS			-		
1,2-Dichloroethane	μg/kg 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 MCERTS	-	-	-		
Toluene 1,1,2-Trichloroethane	μg/kg μg/kg	1	MCERTS	-	-	-		
1,3-Dichloropropane	μg/kg μg/kg	1	ISO 17025		-	-		
Dibromochloromethane	μg/kg 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 1,1,2,2-Tetrachloroethane	μg/kg μg/kg	1	MCERTS MCERTS	-	-	-		
1,1,2,2-1 etrachioroethane Isopropylbenzene	μg/kg μg/kg	1	MCERTS	-	-	<u>-</u>		
Bromobenzene	μg/kg μg/kg	1	MCERTS	-	-	-		
n-Propylbenzene	μg/kg 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 1,4-Dichlorobenzene	μg/kg	1	MCERTS	-	-	<u>-</u>		
1,4-Dichlorobenzene Butylbenzene	μg/kg μg/kg	1	MCERTS MCERTS	-	-	<u>-</u>		
1,2-Dibromo-3-chloropropane	μg/kg μg/kg	1	ISO 17025	-	-	-		
1,2,4-Trichlorobenzene	μg/kg μg/kg	1	MCERTS	_	-	-		
Hexachlorobutadiene	μg/kg	1	MCERTS	-	-	-		
1,2,3-Trichlorobenzene	μg/kg	1	ISO 17025	-	-	-		
			_					





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) Accreditation Status Units							
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	-	-	-	





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	
Tille Takeli				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	-	-	-	





				,				-
Lab Sample Number				951948	951949	951950 TD06		
Sample Reference				TP05	TP06	TP06		
Sample Number Depth (m)				None Supplied 1.30	None Supplied 0.30	None Supplied 0.70		
Date Sampled				25/04/2018	25/04/2018	25/04/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Time raken			Ac	Hone Supplied	None Supplied	Hone Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
SVOCs							I	
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 1,2-Dichlorobenzene	mg/kg mg/kg	0.2	MCERTS MCERTS	-	-	-		
1,4-Dichlorobenzene	mg/kg	0.1	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 Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-		
1,2,4-Trichlorobenzene	mg/kg mg/kg	0.3	MCERTS 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 Dimethylphthalate	mg/kg mg/kg	0.1	MCERTS 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 Azobenzene	mg/kg mg/kg	0.05	MCERTS MCERTS	-	-	-		
Bromophenyl phenyl ether	mg/kg mg/kg	0.3	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 Butyl benzyl phthalate	mg/kg mg/kg	0.05	MCERTS 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	-	-	-	l]





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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		l					
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)	ma/ka	0.1	NONE	-	-	-	





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.





Analytical Report Number : 18-83760 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.





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
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

Iss No 18-83760-1 Riverside EfW 3765





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:

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.





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	
			_	rtone supplied	топе варянса	топе варриса	Hone 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	Туре	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	-1111-%-	NI/A	MCEDIC	11.6	9.6	9.3	7.7	
pH - Automated	pH Units	N/A	MCERTS					
Total Cyanide Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
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 Phenois								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	1.0	-	
Speciated PAHs		0.05		0.05	1 0.05	0.05	l oos l	
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 0.05	MCERTS	< 0.05 < 0.05	0.24 < 0.05	4.1 2.7	< 0.05 < 0.05	
Fluorene	mg/kg		MCERTS					
Phenanthrene Anthresene	mg/kg	0.05	MCERTS	1.9	1.0	11	< 0.05	
Anthracene Fluoranthene	mg/kg	0.05 0.05	MCERTS MCERTS	0.43 3.2	0.20 1.5	3.0 6.8	< 0.05 < 0.05	
	mg/kg	0.05		2.8	1.3	4.9	< 0.05	
Pyrene Benzo(a)anthracene	mg/kg	0.05	MCERTS MCERTS	1.6	0.67	1.5	< 0.05 < 0.05	-
Chrysene	mg/kg mg/kg	0.05	MCERTS	1.5	0.67	1.2	< 0.05	-
Benzo(b)fluoranthene		0.05	MCERTS	1.8	1.2	1.3	< 0.05	
Benzo(k)fluoranthene	mg/kg mg/kg	0.05	MCERTS	0.91	0.35	0.54	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.6	0.33	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	ma/ka	0.05	MCERTS	0.90	0.66	0.52	< 0.05	
Denzo(giii/pei yierie	my/ky	0.03	PICENTO	0.30	0.00	0.32	< 0.0J	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	17.3	9.16	39.2	< 0.80	





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					
leavy 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	
o & m-xylene o-xylene 4TBE (Methyl Tertiary Butyl Ether)	µg/kg µg/kg µg/kg	1 1 1	MCERTS MCERTS MCERTS	< 1.0 < 1.0 < 1.0	-	< 1.0 < 1.0 < 1.0	- - -	
Petroleum Hydrocarbons IPH C10 - C40	mg/kg	10	MCERTS	440	210	780	< 10	
THE CIO	ilig/kg	10	PICEICIS	110	210	700	V 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	-	
ΓPH-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	-	
FRU CINC Assessment FCF FCF		0.001		. 0 001		. 0.001	1	
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 > 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 TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	29	-	140	-	
TPH-CWG - Aromatic > EC21 - EC35 TPH-CWG - Aromatic > EC35 - EC44	mg/kg mg/kg	10 8.4	MCERTS NONE	170 81	-	180 150	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	200	-	400	-	
TPH-CWG - Aromatic (ECS - EC35)	mg/kg	10	NONE	280		560	-	





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	
Time taken	I			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	-	
	μg/kg	1	NONE	-	-	< 1.0	-	
o-Xylene	μg/kg	1	MCERTS	-	-	< 1.0	-	
Tribromomethane	μg/kg	1	NONE	-	-	< 1.0	-	





Sample Reference Sample Number Depth (m) Date Sampled Time Taken Analytical Parameter				BH06 None Supplied 0.50 11/06/2018	BH06 None Supplied 1.50	BH06 None Supplied	BH06 None Supplied	
Sample Number Depth (m) Date Sampled Time Taken				None Supplied 0.50	None Supplied	None Supplied		
Depth (m) Date Sampled Time Taken				0.50	- ''			
Date Sampled Time Taken						2.00	3.00	
Time Taken	_			11/06/2018	11/06/2018	11/06/2018	11/06/2018	
	_			None Supplied	None Supplied	None Supplied	None Supplied	
(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							ı	
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	-	





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 1,2-Dichlorobenzene	mg/kg mg/kg	0.2	MCERTS MCERTS	-	-	< 0.2 < 0.1	-	
1,4-Dichlorobenzene	mg/kg	0.1	MCERTS		-	< 0.1	-	
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 Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS MCERTS	-	-	< 0.3 < 0.3	<u>-</u>	
1,2,4-Trichlorobenzene	mg/kg mg/kg	0.3	MCERTS		-	< 0.3	<u> </u>	
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 < 0.1	-	
2-Chloronaphthalene Dimethylphthalate	mg/kg mg/kg	0.1	MCERTS 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 Fluorene	mg/kg mg/kg	0.2	MCERTS MCERTS	-	-	< 0.2 2.7	-	
Azobenzene	mg/kg	0.03	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 6.8	-	
Fluoranthene Pyrene	mg/kg mg/kg	0.05	MCERTS MCERTS	-	-	4.9	-	
Butyl benzyl phthalate	mg/kg	0.03	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	-	





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	топе зарряев	толе зарряев	топе зарряев	чоне зарряев	
SVOCs TICs	•	•	•	•	•	•	•	
SVOCs TICs Compound Name SVOC % Match	%	N/A N/A	NONE NONE	-	-	Naphthalene, 1,6,7-trimethyl- 98	-	
SVOCs TICs Compound Name	70	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 SVOC % Match	%	N/A N/A	NONE NONE	<u>-</u>	<u>-</u>	Naphthalene, 1,4,6-trimethyl- 97	<u>-</u>	
SVOCs TICs Compound Name	96	N/A	NONE	-	-	Naphthalene, 2,3,6-trimethyl-	<u>-</u>	
SVOC % Match	%	N/A	NONE	-	-	97	-	
SVOCs TICs Compound Name		N/A	NONE	-	-	Cyclopropa[I]phen anthrene,1a,9b-	-	
SVOC % Match	%	N/A	NONE	<u>-</u>	-	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)	ma/ka	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.





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

Analytical rest name Analytical restriction and absence of polarised light microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction with dependent plight microscopy in conjunction in plight microscopy in conjunctio		ace water (5W) Fotable water (FW) Ground W				· · · · · · · · · · · · · · · · · · ·
slatif microscopy in conjunction with dispersion staining exchinages. Alabestos Quantification - Gravimetric Adhestos quantification by gravmetric method - in house method based on references. Bioron, water soluble, in soil Determination of water soluble boron in soil by hot water extract followed by ICP-OES. Birt And MTBE in soil Observation of BTEX in soil by headspace GC. In house method based on USEPA8260 U2736-Pt. W MCSR1 (Monascrandics) Dio for Gravmetric Quant if Screen/ID positive Achdud. Dio for Gravmetric Quant if Dependent option for Gravimetric Quant if Screen/ID positive Achdud. Determination of RTEX in soil by headspace GC. In house assestos methods A001 8, A006. A006-Pt. D NORE Screen/ID positive Achdud. In house assestos methods A001 8, A006. A006-Pt. D NORE Screen/ID positive Achdud. In house method based on USEPA8260 U2736-Pt. D NORE Screen/ID positive Achdud. In house method based on MENAM 2006. A006-Pt. D NORE Screen/ID positive Achdud. In house method based on MENAM 2006. A006-Pt. D NORE Screen/ID positive Achdud. In house method based on MENAM 2006. A006-Pt. D NORE Screen/ID positive Achdud. In house method based on MENAM 2006. A006-Pt. D NORE Screen/ID positive Achdud. In house method based on MENAM 2006. Micst in soil by ICP-OES. Determination of Inertials in soil by apula-regal digestion followed by ICP-OES. Moisture Content, determined gravimetrically. In house method based on BESI377 Part 2, 1019-UVPI. W NORE Screen/ID positive Achderinate Ac	Analytical Test Name	Analytical Method Description	Analytical Method Reference			Accreditation Status
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with potassium dichromate followed by titration with iron (II) sulphate. Determination of oxygenates in soil by headspace GC-MS.	Monohydric phenols in soil	sodium hydroxide followed by distillation followed	Water and Wastewater 20th Edition:	L080-PL	W	MCERTS
Determination of pH in soil by addition of water followed by automated electrometric measurement. Semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS. 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. Stones content of soil Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. Sulphate, water soluble, in soil (16hr extraction) Determination of water soluble sulphate by ICP-extraction in dichloromethane and felectrochemical Tests. In-house method based on USEPA 8270 L064-PL D MCERT In-house method based on USEPA 8270 L064-PL D NONE In-house method based on British Standard Methods and MCERTS requirements.	Organic matter (Automated) in soil	with potassium dichromate followed by titration		L009-PL	D	MCERTS
followed by automated electrometric measurement. Semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS. Speciated EPA-16 PAHs in soil Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS. 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. Stones content of soil Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. Sulphate, water soluble, in soil (16hr extraction) Determination of semi-volatile organic compounds in soil by entraction in dichloromethane and hexane followed by GC-MS. In-house method based on USEPA 8270 L064-PL D MCERT In-house method based on British Standard Methods and MCERTS requirements. L019-UK/PL D NONE NONE Sulphate, water soluble, in soil (16hr extraction) Determination of water soluble sulphate by ICP- OES. Results reported directly (leachate 1990, Chemical and Electrochemical Tests,	Oxygenates in soil by HS-GC-MS		In house method	L052B-PL	W	NONE
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otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. Sulphate, water soluble, in soil (16hr extraction) Determination of water soluble sulphate by ICP-extraction) Methods and MCERTS requirements. In-house method based on BS1377 Part 3, 1038-PL Determination of water soluble sulphate by ICP-extraction) Methods and MCERTS requirements.	Speciated EPA-16 PAHs in soil	extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal	In-house method based on USEPA 8270	L064-PL	D	MCERTS
extraction) OES. Results reported directly (leachate 1990, Chemical and Electrochemical Tests,	Stones content of soil	otherwise detailed. Gravimetric determination of		L019-UK/PL	D	NONE
equivalent) and corrected for extraction ratio (soil 2:1 water:soil extraction, analysis by ICP-equivalent).		OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil	1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-	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	,	total ion count in soil by extraction with dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064-PL	D	NONE

Iss No 18-88953-1 Riverside EfW 3765





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.





Derek Daniels

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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:

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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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	1		1	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 SO₄	μg/l	45	ISO 17025	125000	209000	760000	695000	460000
Sulphate as SO₄	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/I	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) Speciated PAHs	µg/l	1	ISO 17025	< 1.0	7.6	80	15	17
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 Phenanthrene	μg/l	0.01	ISO 17025 ISO 17025	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 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 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
<u> </u>	FSI							
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	0.13	ISO 17025	0.03	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	μg/l mg/l	0.012	ISO 17025	98	430	240	230	420
Chromium (dissolved)	mg/l μg/l	0.012	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)	μg/l	0.005	ISO 17025	21	270	330	310	290
Mercury (dissolved)	μg/l	0.005	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	μg/l	0.05	ISO 17025	2.8	4.1	1.1	< 0.5	< 0.5
Potassium (dissolved)		0.025	ISO 17025	8.2	34	110	83	69
Selenium (dissolved)	mg/l μg/l	0.025	ISO 17025	2.9	28	40	34	35
Sodium (dissolved)	μg/l mg/l	0.01	ISO 17025	76	1700	2500	2400	2400
Zinc (dissolved)	mg/l μg/l	0.01	ISO 17025	7.2	5.1	0.8	3.0	3.0
(4.5501704)	μ9/1	0.5	100 1/023	/ . 4	5.1	0.0	5.0	5.0





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

MIDE (Metriyi Terdary Butyi Ediler)	μg/i		130 17023	< 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





	Your Order No: PO-002715								
None Suppled None	·				960223	960224	960225	960226	960227
Depth (m) Date Sampled None Supplied N									
Date Sampled	•								None Supplied
Analytical Parameter									None Supplied
Voca									
VoCa	Time Taken		I		1530	0915	1325	1220	1045
Discomethane		Units	Limit of detection	Accreditation Status					
Solorostane	VOCs			•					
Bromomethane	Chloromethane	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vand Chloride						< 1.0	< 1.0	< 1.0	< 1.0
Tichlorofuromethane		μg/l	1	_					
1.1-Dictolorophene	,								
11,21-Trichloro-12,2-Irmfororethane									
GS-12_2dichlorechene	-								
MIES (Methyl Tertary Butyl Ether)									
11-Dichloroethane									
1 150 17025 1.0									
тickloromethane µg/l 1 150 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0									
1.1.1-trichforcethane									
1.1-Dichloropropene			1	ISO 17025	< 1.0				
Trans-1,2-dichloroethene	1,2-Dichloroethane	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Perzene	1,1-Dichloropropene	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	Trans-1,2-dichloroethene	μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane µg/l 1 ISO 17025 < 1.0									
Trichloroethene									
Dibromomethane									
Bromodichloromethane									
Cis-1,3-dichloropropene									
Trans-1,3-dichloropropene									
Tolluene									
1,1,2-Trichloroethane									
1,3-Dichloropropane			1						
Tetrachloroethene µg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0			1	ISO 17025	< 1.0				
1,2-Dibromoethane	Dibromochloromethane	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	Tetrachloroethene	μg/l	1			< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane									
Ethylbenzene									
P & m-Xylene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0	, , ,								
Styrene	,								
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$									
o-Xylene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0									
$\begin{array}{cccccccccccccccccccccccccccccccccccc$									
Isopropylbenzene	,								
Bromobenzene μg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0			11	ISO 17025					
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			1						
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		μg/l	1						
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$ \begin{array}{cccccccccccccccccccccccccccccccccccc$, , , , , ,								
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$									
1,2-Dichlorobenzene µg/l 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0	,								
,	-								
Butylbenzene $\mu g/l$ 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0	,								
$\mu g/l$ 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 $\mu g/l$ 1 ISO 17025 < 1.0 < 1.0 < 1.0 < 1.0 < 1.0	Hexachlorobutadiene		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 < 1.0	1,2,3-Trichlorobenzene	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0





Tour Order No. 1 O GOZ7 15								
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/I	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	T	1	<u> </u>					<u> </u>
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-





Your Order No: PO-002715					T	ī	T	ī
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		1	1	1530	0915	1325	1220	1045
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
SVOCs					1		1	
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 2,4-Dimethylphenol	μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
Bis(2-chloroethoxy)methane	μg/l μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	μg/I	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	μg/l	0.03	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
<u>Dibenzofuran</u>	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	< 0.05	< 0.05 < 0.05
Diethyl phthalate 4-Nitroaniline	μg/l	0.05	NONE NONE	< 0.05	< 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05
Fluorene	μg/l μg/l	0.03	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	μg/l	0.01	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 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01
Dibenz(a,h)anthracene Benzo(ghi)perylene	μg/l μg/l	0.01	ISO 17025 ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01





Your Order No: PO-002715

1041 01401 1011 0 0027 25								
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





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				
Depth (m) Date Sampled				None Supplied 10/05/2018	None Supplied 11/05/2018	None Supplied 11/05/2018	None Supplied 11/05/2018	None Supplied 11/05/2018
Time Taken				1745	1144	1120	1052	1036
			>	27 10		1120	1002	1000
	_	Limit of detection	Accreditation Status					
Analytical Parameter (Water Analysis)	Units	mit	reditat Status					
(Water Analysis)	v	of ion	atio					
			ă					
C								
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 Ammoniacal Nitrogen as N	μg/l μg/l	50 15	ISO 17025 ISO 17025	2900 25000	960 1800	730 250	320 33	400 180
Dissolved Organic Carbon (DOC)	μg/i 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/I	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) Total Suspended Solids	mg/l	0.3 2	NONE NONE	< 0.3 360	< 0.3 68	< 0.3 14	5.6 22	4.4 52
Dissolved Oxygen	mg/l 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 Fluoranthene	μg/l	0.01	ISO 17025 ISO 17025	< 0.01 < 0.01				
Pyrene	μg/l μg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	μg/I	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 Dibenz(a,h)anthracene	μg/l μg/l	0.01	ISO 17025 ISO 17025	< 0.01 < 0.01				
Benzo(ghi)perylene	μg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	1 F3/							
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/I	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) Mercury (dissolved)	mg/l μg/l	0.005	ISO 17025 ISO 17025	240 < 0.05	28 < 0.05	37 < 0.05	170 < 0.05	250 < 0.05
Nickel (dissolved)	μg/l	0.03	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
	μg/l mg/l	0.6 0.01 0.5	ISO 17025 ISO 17025 ISO 17025	34 2400 7.0	3.1 68 7.5	5.7 220 16	21 1500 9.3	29 2000 3.8





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

Petroleum Hydrocarbons								
TRU CIVIC AND AND AND AND AND AND AND AND AND AND				1.0	1.0	1.0	1.0	1.0
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





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	I	1		1745	1144	1120	1052	1036
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
VOCs	I.							
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 MTBE (Methyl Tertiary Butyl Ether)	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
MTBE (Methyl Tertiary Butyl Ether) 1,1-Dichloroethane	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0 < 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 Trichloroethene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	μg/l μg/l	1	ISO 17025	< 1.0	< 1.0 < 1.0	< 1.0 < 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 Tatro de la constitución	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene 1,2-Dibromoethane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 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	< 1.0 < 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
Isopropylbenzene Bromobenzene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
n-Propylbenzene	μg/I μg/I	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 1,4-Dichlorobenzene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
Butylbenzene	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	μg/I μg/I	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





Lab Sample Number	Lab Sample Number						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	μq/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	-	-	-	-	-





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	<u> </u>	<u> </u>	<u> </u>					
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 Isophorone	μg/l μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
2-Nitrophenol		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 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	0.03	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 Diethyl phthalate	μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
4-Nitroaniline	μg/l μg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	μg/l	0.03	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





Your Order No: PO-002715

Tour Order No. PO-002713								
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





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





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.

 $\label{lem:continuous} \mbox{For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. }$

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	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH02		W	18-85315	960223	С	Dissolved Oxygen in water	L086-PL	С
BH02		W	18-85315	960223	С	Electrical conductivity at 20oC of water	L031-PL	С
BH02		W	18-85315	960223	С	pH at 20oC in water (automated)	L099-PL	С
BH03		W	18-85315	960224	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH03		W	18-85315	960224	С	Dissolved Oxygen in water	L086-PL	С
BH03		W	18-85315	960224	С	Electrical conductivity at 20oC of water	L031-PL	С
BH03		W	18-85315	960224	С	pH at 20oC in water (automated)	L099-PL	С
BH05		W	18-85315	960225	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH05		W	18-85315	960225	С	Dissolved Oxygen in water	L086-PL	С
BH05		W	18-85315	960225	С	Electrical conductivity at 20oC of water	L031-PL	С
BH05		W	18-85315	960225	С	pH at 20oC in water (automated)	L099-PL	С
BH08		W	18-85315	960226	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH08		W	18-85315	960226	С	Dissolved Oxygen in water	L086-PL	С
BH08		W	18-85315	960226	С	Electrical conductivity at 20oC of water	L031-PL	С
BH08		W	18-85315	960226	С	pH at 20oC in water (automated)	L099-PL	С
BH12		W	18-85315	960227	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH12		W	18-85315	960227	С	Dissolved Oxygen in water	L086-PL	С
BH12		W	18-85315	960227	С	Electrical conductivity at 20oC of water	L031-PL	С
BH12		W	18-85315	960227	С	pH at 20oC in water (automated)	L099-PL	С
BH13		W	18-85315	960228	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH13		W	18-85315	960228	С	Dissolved Oxygen in water	L086-PL	С
BH13		W	18-85315	960228	С	Electrical conductivity at 20oC of water	L031-PL	С
BH13		W	18-85315	960228	С	pH at 20oC in water (automated)	L099-PL	С
DS		W	18-85315	960232	С	Ammoniacal Nitrogen as N in water	L082-PL	С
DS		W	18-85315	960232	С	Dissolved Oxygen in water	L086-PL	С
DS		W	18-85315	960232	С	Electrical conductivity at 20oC of water	L031-PL	С
DS		W	18-85315	960232	С	pH at 20oC in water (automated)	L099-PL	С
S DITCH		W	18-85315	960230	С	Ammoniacal Nitrogen as N in water	L082-PL	С
S DITCH		W	18-85315	960230	С	Dissolved Oxygen in water	L086-PL	С
S DITCH		W	18-85315	960230	С	Electrical conductivity at 20oC of water	L031-PL	С
S DITCH		W	18-85315	960230	С	pH at 20oC in water (automated)	L099-PL	С
US		W	18-85315	960231	С	Ammoniacal Nitrogen as N in water	L082-PL	С
US		W	18-85315	960231	С	Dissolved Oxygen in water	L086-PL	С
US		W	18-85315	960231	С	Electrical conductivity at 20oC of water	L031-PL	С
US		W	18-85315	960231	С	pH at 20oC in water (automated)	L099-PL	С
W DITCH		W	18-85315	960229	С	Ammoniacal Nitrogen as N in water	L082-PL	С
W DITCH		W	18-85315	960229	С	Dissolved Oxygen in water	L086-PL	С
W DITCH		W	18-85315	960229	С	Electrical conductivity at 20oC of water	L031-PL	С
W DITCH		W	18-85315	960229	С	pH at 20oC in water (automated)	L099-PL	С





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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:

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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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
			>					
	_	Limit of detection	Accreditation Status					i
Analytical Parameter	Units	mit	creditat Status					i
(Water Analysis)	ស	tio of	us tati					i
		,	9					i
General Inorganics								
рН	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 Cvanide	μg/I	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/I	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 Phenois								
Total Phenols (monohydric)	μg/l	1	ISO 17025	< 1.0	7.5	14	10	6.5
, , , , , , , , , , , , , , , , , , , ,	1 1 3				•			
Speciated PAHs								
Naphthalene	μq/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
	Fai:			****		****		
Total PAH								
Total EPA-16 PAHs	μg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
	- F-31 ·							





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
		_	Ac					
Analytical Parameter	_	Limit of detection	Accreditation Status					
(Water Analysis)	Units	ecti nii	creditat Status					
(114101711417010)	v,	을 약	s					
			š					
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 25	63
Selenium (dissolved)	μg/l	0.6	ISO 17025	2.4	17	29	25	21
Sodium (dissolved) Zinc (dissolved)	mg/l	0.01	ISO 17025 ISO 17025	85 4.3	1700 3.6	3100 0.7	2700 < 0.5	2100 1.8
ziric (dissolved)	μg/l	0.5	150 17025	4.3	3.0	0.7	< 0.5	1.0
Monoaromatics								
Benzene	!!	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	- 10
Toluene	μg/l μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0 < 1.0
Ethylbenzene	μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribe (richt) reladiy bacyrealery	P9/1		150 17025	11.0	11.0	11.0	11.0	11.0
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
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





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 1,1,2,2-Tetrachloroethane	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	μg/l	1	ISO 17025		< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene Bromobenzene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0
n-Propylbenzene		1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	μg/l μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	μg/l μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	μg/I μg/I	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 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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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					
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					ı	T	ı	
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	1	I	1	1530	0915	1325	1220	1045
		۰_	Accreditation Status					
Analytical Parameter	Units	Limit of detection	creditat Status					
(Water Analysis)	ढ	etio of	itat tus					
		5 7	ion					
SVOCs		<u> </u>	<u> </u>					
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 Hexachloroethane	μg/l	0.05	NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
Nitrobenzene	μg/l μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
4-Methylphenol	μg/I μg/I	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 4-Chloro-3-methylphenol	μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
2,4,6-Trichlorophenol	μg/l 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 Diethyl phthalate	μg/l μg/l	0.05	NONE NONE	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05	< 0.05 < 0.05
4-Nitroaniline	μg/I μg/I	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 < 0.01	< 0.05 < 0.01	< 0.05	< 0.05	< 0.05
Fluoranthene Pyrene	μg/l μg/l	0.01	ISO 17025 ISO 17025	< 0.01	< 0.01	< 0.01 < 0.01	< 0.01 < 0.01	< 0.01 < 0.01
Butvl benzvl phthalate	μg/l μg/l	0.01	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





Your Order No: PO-002715

1001 Order No. FO-002/13								
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) Accreditation Status Units Onits								
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





1001 Oluei No. PO-002/13	Your	Order	No:	PO-002715
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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				
			4					
		de L	(0)					
Analytical Parameter	Units	Limit of detection	creditat Status					
(Water Analysis)	द्ध	t of	tus					
		'n	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	μs/cm μg/l	10	ISO 17025	-				
Sulphate as SO ₄	μg/I	45	ISO 17025	64400				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	64.4				
Chloride		0.043	ISO 17025	4500		1	1	
	mg/l							
Total Phosphate as P Fluoride	μg/l μg/l	20 50	ISO 17025 ISO 17025	71 2300				
Ammoniacal Nitrogen as N		15	ISO 17025	24000				
	μg/l	0.1		72.7				
Dissolved Organic Carbon (DOC)	mg/l		NONE	0.79				
Nitrate as N	mg/l	0.01	ISO 17025					
Nitrite as N	μg/l	1	ISO 17025	27				
Alkalinity	mgCaCO3/I	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								
		- 1	ISO 17025	11				
Total Phenols (monohydric)	μg/l	1	150 17025	11		l .	l .	
Speciated PAHs								
Naphthalene	μg/l	0.01	ISO 17025	< 0.01		I	I	
Acenaphthylene		0.01	ISO 17025	< 0.01				
Acenaphthene	μg/l	0.01	ISO 17025 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 ISO 17025	< 0.01				
	μg/l					1	1	
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		 	<u> </u>	
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		<u> </u>	1	
Benzo(ghi)perylene	μg/l	0.01	ISO 17025	< 0.01]]	
Total PAH	1	_			1	1	1	
Total EPA-16 PAHs	μg/l	0.16	ISO 17025	< 0.16				





	Your	Order	No:	PO-	0027	15
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Your Order No: PO-002/15							
Lab Sample Number				979026			
Sample Reference				BH13			
Sample Number				None Supplied			
Depth (m)				None Supplied			
Date Sampled				10/05/2018			
Time Taken				1745			
Tille Takeli				1773			
		۵_	Accreditation Status				
Analytical Parameter	_	Limit of detection	St Cre				
(Water Analysis)	Units	£ ≓	at t				
(Water Analysis)	o,	할 역	atio				
			9				
Heavy Metals / Metalloids							
Arsenic (dissolved)	μg/l	0.15	ISO 17025	4.16			
Boron (dissolved)	μg/l	10	ISO 17025	-			
Cadmium (dissolved)		0.02		0.02			
` ,	μg/l		ISO 17025			-	
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		ļ	
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	Ì	1	
Potassium (dissolved)	1	0.025	ISO 17025	39			
Selenium (dissolved)	mg/l	0.023	ISO 17025	27			
	μg/l "						
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/I	1	ISO 17025	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)		1	ISO 17025				
MTBE (Metrly) Tertiary Butyl Ether)	μg/l	1	150 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/I	10	NONE	< 10		1	
				< 10			
TPH-CWG - Aliphatic > C21 - C35	μg/l	10 10	NONE	< 10			
TPH-CWG - Aliphatic >C35 - C44	μg/l		NONE				
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	1	1	
TPH-CWG - Aromatic >C12 - C10 TPH-CWG - Aromatic >C16 - C21		10	NONE	< 10	}	 	
TPH-CWG - Aromatic >C16 - C21 TPH-CWG - Aromatic >C21 - C35	μg/l	10					-
	μg/l		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			





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			
			Ac				
Analytical Parameter	_	Limit of detection	Accreditation Status				
(Water Analysis)	Units	eti i	at dita				
()	•	의 역	s itio				
			5				
VOCs							
Chloromethane	μg/l	1	ISO 17025	< 1.0			
Chloroethane	μg/l	1	ISO 17025	< 1.0		1	
Bromomethane	μg/l	1	ISO 17025	< 1.0			
Vinyl Chloride Trichlorofluoromethane	μg/l μg/l	1	NONE NONE	< 1.0 < 1.0			
1,1-Dichloroethene	μg/I	1	ISO 17025	< 1.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	μg/I	1	ISO 17025	< 1.0			
Cis-1,2-dichloroethene	μg/I	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		1	
Tetrachloromethane	μg/l	1	ISO 17025 ISO 17025	< 1.0			
1,2-Dichloropropane	μg/l	1	ISO 17025	< 1.0 < 1.0			
Trichloroethene Dibromomethane	μg/l μg/l	1	ISO 17025	< 1.0		+	
Bromodichloromethane	μg/I	1	ISO 17025	< 1.0			
Cis-1,3-dichloropropene	μg/l	1	ISO 17025	< 1.0		1	
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		1	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0			
p & m-Xylene Styrene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0		+	
Tribromomethane	μg/l μg/l	1	ISO 17025	< 1.0			
o-Xylene	рд/1 µд/I	1	ISO 17025	< 1.0		1	
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		<u> </u>	
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 p-Isopropyltoluene	μg/l	1	ISO 17025	< 1.0 < 1.0		 	1
p-Isopropyitoluene 1,2-Dichlorobenzene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0		 	
1,4-Dichlorobenzene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0		1	
Butylbenzene	μg/I μg/I	1	ISO 17025	< 1.0			
1,2-Dibromo-3-chloropropane	μg/I μg/I	1	ISO 17025	< 1.0		1	1
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			





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	<u> </u>		
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	ug/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	1		





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			
			A				
Annalistical Parameters	_	Limit of detection	Accreditation Status				
Analytical Parameter	Units	ied m	edit				
(Water Analysis)	ίν.	할 역	ati				
		_	9				
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	.	1	
2-Methylphenol	μg/l	0.05	NONE	< 0.05	 	1	
Hexachloroethane	μg/l	0.05	NONE	< 0.05	 	1	<u> </u>
Nitrobenzene	μg/l	0.05	NONE	< 0.05	-	 	
4-Methylphenol Isophorone	μg/l	0.05	NONE NONE	< 0.05 < 0.05		 	
2-Nitrophenol	μg/l	0.05		< 0.05			
2,4-Dimethylphenol	μg/l μg/l	0.05	NONE NONE	< 0.05			
Bis(2-chloroethoxy)methane	μg/I	0.05	NONE	< 0.05			
1.2.4-Trichlorobenzene	μg/l	0.05	NONE	< 0.05	1		
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 Diethyl phthalate	μg/l μg/l	0.05	NONE NONE	< 0.05 < 0.05			
4-Nitroaniline	μg/I μg/I	0.05	NONE	< 0.05			
Fluorene	μg/l	0.01	ISO 17025	< 0.01			
Azobenzene	μg/I	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	!	1	1
Butyl benzyl phthalate	μg/l	0.05	NONE	< 0.05	 	1	<u> </u>
Benzo(a)anthracene	μg/l	0.01	ISO 17025	< 0.01	<u> </u>	 	
Chrysene Rope (h) fluorenthone	μg/l	0.01	ISO 17025 ISO 17025	< 0.01	-	 	
Benzo(b)fluoranthene Benzo(k)fluoranthene	μg/l	0.01	ISO 17025 ISO 17025	< 0.01 < 0.01	 	1	1
Benzo(k)nuorantnene Benzo(a)pyrene	μg/l	0.01	ISO 17025 ISO 17025	< 0.01	 	1	
Indeno(1,2,3-cd)pyrene	μg/l μg/l	0.01	ISO 17025	< 0.01		 	
Dibenz(a,h)anthracene	μg/I μg/I	0.01	ISO 17025	< 0.01		t	
				· 0.01		Ī	





Your Order No: PO-002715

Tour Order No: PO-002/15							
Lab Sample Number							
Sample Reference				BH13			
Sample Number	None Supplied						
Depth (m)				None Supplied			
Date Sampled				10/05/2018			
Time Taken	1745						
Analytical Parameter (Water Analysis) Accreditation Status Units Units							
SVOCs TICs							
VOCs 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





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

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Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
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
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
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
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
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
Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
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
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
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
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
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
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
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
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
	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW. Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW. Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW. Determination of Chloride colorimetrically by discrete analyser. Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser. Determination of dissolved oxygen. Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW. Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations. 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. Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW. Determination of nitrate by reaction with sodium salicy and colorimetry. Accredited matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn). Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW. Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW. Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetry) accilientations of brown in water by addification followed by ICP-OES. Accredited matrices: SW PW GW Determination of brown in water by addification followed by ICP-OES. Accredited matrices: SW PW GW Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW Determination of total CCD in water by reflux oxidation with acidified K2C2/207 followed by colorimetry. Accredited matrices: SW, PW, GW. Determination of Chloride colorimetrically by colorimetry. Accredited matrices: SW, PW, GW. Determination of Gissolved inorganic carbon in water by TOC/DOC NDIR Analyser. Determination of dissolved oxygen. In-house method based on USEPA8260 headspace analyser (Colorimetry Accredited matrices: SW, PW, GW. Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser. Determination of dissolved oxygen. In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW. Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. Calculated as the difference between the sums of the equivalent masses of the major individual anions and cations. Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW. Determination of phenols in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW. Determination of phenols in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW. AE-SW, PW. Determination of phenols in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW. AE-SW, PW. Determination of nitrate by reaction with sodium salicylate and color	Determination of Alkalnity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW. Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetry). Accredited matrices: SW, PW, GW. Determination of Determination of Determination of Determination of Determination of Determination of Determination of Determination of Determination of Determination of Determination of Determination of Determination of BTEX and MT9E in water by headspace GC-MS. Accredited matrices: SW PW GW Determination of BTEX and MT9E in water by headspace GC-MS. Accredited matrices: SW PW GW Determination of BTEX and MT9E in water by headspace GC-MS. Accredited matrices: SW PW GW Determination of Of Determination of total COD in water by reflux oxidation with addified K2C/207 followed by colorimetry. Accredited matrices: SW, PW, GW. Determination of Chloride colorimetrically by discrete analyser. Determination of Chloride colorimetrically by discrete analyser. Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser. Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser. Determination of dissolved oxygen. In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode, Accredited Matrices SW, KGW, PW. Determination of Fluoride in water by 2:1 ratio with a buffer solution followed by Ion Selective Electrode, Accredited Matrices: SW, PW, GW. Determination of metals in water by acidification followed by Ion-Selective Electrode Determination of Water and Wastewater 20th Edition: Clescord, Greenberg & Eaton Determination of phenois in water by acidification followed by Ion-Selective Electrode Determination of Water and Wastewater 20th Edition: Clescord, Greenberg & Eaton (Kalar) Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices SW, GW, PW. Wexept Ba-SW, CW, PW, PW,	Determination of Alkalinity by discreet analyser (colorimetry). According matrices: SW, PW, GW. Determination of Ammonium/Ammonial/ Ammoniacan Nitrogen by the discreet analyser (colorimetry). According the property of the colorimetry of the





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
	IV analysis have been sawied out in our labora	I.			

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.

Iss No 18-88577-2 Riverside EfW 3765



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02		W	18-88577	979021	С	BTEX and MTBE in water (Monoaromatics)	L073B-PL	С
BH02		W	18-88577	979021	С	Hexavalent chromium in water	L080-PL	С
BH02		W	18-88577	979021	С	Alkalinity in Water	L082-PL	С
BH02		W	18-88577	979021		Ammoniacal Nitrogen as N in water	L082-PL	С
BH02		W	18-88577	979021	c	Boron in water	L039-PL	С
BH02		W	18-88577	979021		Chemical Oxygen Demand in Water (Total)	L065-PL	c
BH02		W	18-88577	979021		Chloride in water	L082-PL	С
BH02		W	18-88577	979021		Dissolved Organic Carbon in water	L037-PL	C
BH02		W	18-88577	979021		Dissolved Oxygen in water	L086-PL	c
BH02		W	18-88577	979021		Electrical conductivity at 20oC of water	L031-PL	С
BH02		W	18-88577	979021		Fluoride in water	L033B-PL	c
BH02		W	18-88577	979021		Metals in water by ICP-MS (dissolved)	L012-PL	C
BH02		W	18-88577	979021		Metals in water by ICP-OES (dissolved)	L039-PL	c
BH02		W	18-88577	979021		Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
BH02		W	18-88577	979021		Nitrate as N in water	L078-PL	c
BH02		W	18-88577	979021		Nitrite as N in water	L082-PL	c
BH02		W	18-88577	979021		Oxygenates in water by HS-GC-MS	L052B-PL	C
BH02		W	18-88577	979021		Semi-volatile organic compounds in water	L102B-PL	c
BH02		W	18-88577	979021		Settleable Solids in water	L004-PL	С
BH02		W	18-88577	979021		Speciated EPA-16 PAHs in water	L102B-PL	С
BH02		W	18-88577	979021		Sulphate in water	L039-PL	С
BH02		W	18-88577	979021		Suspended solids in water	L039-PL L004-PL	C
BH02		W	18-88577	979021		TO - Chlorophenols in water	LUU4-PL	C
						'	1.070 DI	
BH02 BH02		W	18-88577	979021		TPH in (Water)	L070-PL	C
		W	18-88577	979021		TPHCWG (Waters)	L070-PL	C
BH02		W	18-88577	979021		Tentatively identified compounds (SVOC) in water	L070-PL	С
BH02		W	18-88577	979021		Tentatively identified compounds (VOC) in water	L073B-PL	С
BH02		W	18-88577	979021		Total Phosphate as P in water	L082-PL	С
BH02		W	18-88577	979021		Total Phosphate in water	L082-PL	С
BH02		W	18-88577	979021		Total cyanide in water	L080-PL	С
BH02		W	18-88577	979021		Total oxidised nitrogen in water	L078-PL	С
BH02		W	18-88577	979021	-	Volatile organic compounds in water	L073B-PL	С
BH02		W	18-88577	979021		Volatile organic compounds in water extended	L073B-PL	С
BH02		W	18-88577	979021		pH at 20oC in water (automated)	L099-PL	С
BH03		W	18-88577	979022		BTEX and MTBE in water (Monoaromatics)	L073B-PL	С
BH03		W	18-88577	979022		Hexavalent chromium in water	L080-PL	С
BH03		W	18-88577	979022		Alkalinity in Water	L082-PL	С
BH03		W	18-88577	979022		Ammoniacal Nitrogen as N in water	L082-PL	С
BH03		W	18-88577	979022		Boron in water	L039-PL	С
BH03		W	18-88577	979022		Chemical Oxygen Demand in Water (Total)	L065-PL	С
BH03		W	18-88577	979022		Chloride in water	L082-PL	С
BH03		W	18-88577	979022		Dissolved Organic Carbon in water	L037-PL	С
BH03		W	18-88577	979022		Dissolved Oxygen in water	L086-PL	С
BH03		W	18-88577	979022		Electrical conductivity at 20oC of water	L031-PL	С
BH03		W	18-88577	979022		Fluoride in water	L033B-PL	С
BH03		W	18-88577	979022		Metals in water by ICP-MS (dissolved)	L012-PL	С
BH03		W	18-88577	979022		Metals in water by ICP-OES (dissolved)	L039-PL	С
BH03		W	18-88577	979022		Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	С
BH03		W	18-88577	979022	С	Nitrate as N in water	L078-PL	С
BH03		W	18-88577	979022	С	Nitrite as N in water	L082-PL	С
BH03		W	18-88577	979022	С	Oxygenates in water by HS-GC-MS	L052B-PL	С



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	L004-FL	C
BH03	W	18-88577	979022 c	TPH in (Water)	L070-PL	c
				, ,		· ·
BH03	W	18-88577	979022 c	TPHCWG (Waters)	L070-PL	С
BH03	W	18-88577	979022 c	Tentatively identified compounds (SVOC) in water	L070-PL	С
BH03	W	18-88577	979022 c	Tentatively identified compounds (VOC) in water	L073B-PL	С
BH03	W	18-88577	979022 c	Total Phosphate as P in water	L082-PL	С
BH03	W	18-88577	979022 c	Total Phosphate in water	L082-PL	С
BH03	W	18-88577	979022 c	Total cyanide in water	L080-PL	С
BH03	W	18-88577	979022 c	Total oxidised nitrogen in water	L078-PL	С
BH03	W	18-88577	979022 c	Volatile organic compounds in water	L073B-PL	С
BH03	W	18-88577	979022 c	Volatile organic compounds in water extended	L073B-PL	С
BH03	W	18-88577	979022 c	pH at 20oC in water (automated)	L099-PL	С
BH05	W	18-88577	979023 c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	С
BH05	W	18-88577	979023 c	Alkalinity in Water	L082-PL	С
BH05	W	18-88577	979023 c	Ammoniacal Nitrogen as N in water	L082-PL	С
BH05	W	18-88577	979023 c	Chemical Oxygen Demand in Water (Total)	L065-PL	С
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-0ES (dissolved)	L039-PL	C
BH05	W	18-88577	979023 c	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	c
	l W		979023 c	, i		-
BH05 BH05	l W	18-88577	979023 c	Nitrate as N in water	L078-PL	C
		18-88577		Nitrite as N in water	L082-PL	· ·
BH05	W	18-88577	979023 c	Oxygenates in water by HS-GC-MS	L052B-PL	С
BH05	W	18-88577	979023 c	Semi-volatile organic compounds in water	L102B-PL	С
BH05	W	18-88577	979023 c	Settleable Solids in water	L004-PL	С
BH05	W	18-88577	979023 c	Speciated EPA-16 PAHs in water	L102B-PL	С
BH05	W	18-88577	979023 c	Sulphate in water	L039-PL	С
BH05	W	18-88577	979023 c	Suspended solids in water	L004-PL	С
BH05	W	18-88577	979023 c	TO - Chlorophenols in water		С
BH05	W	18-88577	979023 c	TPH in (Water)	L070-PL	С
BH05	W	18-88577	979023 c	TPHCWG (Waters)	L070-PL	С
BH05	W	18-88577	979023 c	Tentatively identified compounds (SVOC) in water	L070-PL	С
BH05	W	18-88577	979023 c	Tentatively identified compounds (VOC) in water	L073B-PL	С
BH05	W	18-88577	979023 c	Total Phosphate as P in water	L082-PL	С
BH05	W	18-88577	979023 c	Total Phosphate in water	L082-PL	С
BH05	W	18-88577	979023 c	Total oxidised nitrogen in water	L078-PL	С
BH05	W	18-88577	979023 c	Volatile organic compounds in water	L073B-PL	С
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 W	18-88577	979024 c 979024 c	- V	L082-PL L065-PL	C
				Chemical Oxygen Demand in Water (Total)		<u> </u>
BH08	W	18-88577	979024 c	Chloride in water	L082-PL	С
BH08	W	18-88577	979024 c	Dissolved Organic Carbon in water	L037-PL	С



BH08	W	18-88577	979024	С	Dissolved Oxygen in water	L086-PL	С
BH08	W	18-88577	979024		Electrical conductivity at 20oC of water	L031-PL	С
BH08	W	18-88577	979024	С	Fluoride in water	L033B-PL	С
BH08	W	18-88577	979024		Metals in water by ICP-MS (dissolved)	L012-PL	С
BH08	W	18-88577	979024		Metals in water by ICP-OES (dissolved)	L039-PL	С
BH08	W	18-88577	979024		Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	C
BH08	W	18-88577	979024		Nitrate as N in water	L078-PL	С
BH08	W	18-88577	979024		Nitrite as N in water	L082-PL	С
BH08	W	18-88577	979024		Oxygenates in water by HS-GC-MS	L052B-PL	C
BH08	W	18-88577	979024		Semi-volatile organic compounds in water	L102B-PL	С
BH08	W	18-88577	979024		Settleable Solids in water	L004-PL	c
BH08	W	18-88577	979024		Speciated EPA-16 PAHs in water	L102B-PL	C
BH08	W	18-88577	979024		Sulphate in water	L039-PL	C
BH08	W	18-88577	979024		Suspended solids in water	L004-PL	С
BH08	W	18-88577	979024		TO - Chlorophenols in water	L0041L	C
BH08	W	18-88577	979024		TPH in (Water)	L070-PL	c
BH08	W	18-88577	979024		TPHCWG (Waters)	L070-PL	С
BH08	W	18-88577	979024		Tentatively identified compounds (SVOC) in water	L070-PL	C
BH08	W	18-88577	979024		Tentatively identified compounds (VOC) in water	L073B-PL	C
BH08	W	18-88577	979024		Total Phosphate as P in water	L082-PL	С
BH08	W	18-88577	979024		Total Phosphate in water	L082-PL	С
BH08	W	18-88577	979024		Total oxidised nitrogen in water	L078-PL	C
BH08	W	18-88577	979024		Volatile organic compounds in water	L073B-PL	С
BH08	W	18-88577	979024		ŭ i	L073B-PL	c
BH08	W W	18-88577	979024		Volatile organic compounds in water extended pH at 20oC in water (automated)	L073B-PL	C
BH12	W	18-88577	979024		BTEX and MTBE in water (Monoaromatics)	L099-PL	c
BH12	W	18-88577	979025		Alkalinity in Water	L073B-PL	C
BH12	W	18-88577	979025		Ammoniacal Nitrogen as N in water	L082-PL	C
BH12	W	18-88577	979025		Chemical Oxygen Demand in Water (Total)	L062-PL	C
BH12	W	18-88577	979025		Chloride in water	L082-PL	C
BH12	W	18-88577	979025		Dissolved Organic Carbon in water	L082-PL L037-PL	C
BH12	W	18-88577	979025			L037-PL L086-PL	
BH12 BH12	W	18-88577	979025		Dissolved Oxygen in water	L086-PL L031-PL	C
	W				Electrical conductivity at 20oC of water		С
BH12		18-88577	979025		Fluoride in water	L033B-PL	С
BH12 BH12	W	18-88577	979025		Metals in water by ICP-MS (dissolved)	L012-PL	С
	W	18-88577	979025		Metals in water by ICP-OES (dissolved)	L039-PL	C
BH12	W	18-88577	979025		Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	С
BH12	W	18-88577	979025		Nitrate as N in water	L078-PL	С
BH12	W	18-88577	979025		Nitrite as N in water	L082-PL	С
BH12	W	18-88577	979025		Oxygenates in water by HS-GC-MS	L052B-PL	С
BH12	W	18-88577	979025		Semi-volatile organic compounds in water	L102B-PL	С
BH12	W	18-88577	979025		Settleable Solids in water	L004-PL	С
BH12	W	18-88577	979025		Speciated EPA-16 PAHs in water	L102B-PL	С
BH12	W	18-88577	979025		Sulphate in water	L039-PL	С
BH12	W	18-88577	979025		Suspended solids in water	L004-PL	С
BH12	W	18-88577	979025		TO - Chlorophenols in water	1 0=0 DI	С
BH12	W	18-88577	979025		TPH in (Water)	L070-PL	С
BH12	W	18-88577	979025		TPHCWG (Waters)	L070-PL	С
BH12	W	18-88577	979025		Tentatively identified compounds (SVOC) in water	L070-PL	С
BH12	W	18-88577	979025		Tentatively identified compounds (VOC) in water	L073B-PL	С
BH12	W	18-88577	979025		Total Phosphate as P in water	L082-PL	С
BH12	W	18-88577	979025		Total Phosphate in water	L082-PL	С
BH12	W	18-88577	979025		Total oxidised nitrogen in water	L078-PL	С
BH12	W	18-88577	979025	c	Volatile organic compounds in water	L073B-PL	С



BH12	W	18-88577	979025	С	Volatile organic compounds in water extended	L073B-PL	С
BH12	W	18-88577	979025	С	pH at 20oC in water (automated)	L099-PL	С
BH13	W	18-88577	979026		BTEX and MTBE in water (Monoaromatics)	L073B-PL	С
BH13	W	18-88577	979026	С	Alkalinity in Water	L082-PL	С
BH13	W	18-88577	979026	С	Ammoniacal Nitrogen as N in water	L082-PL	С
BH13	W	18-88577	979026	С	Chemical Oxygen Demand in Water (Total)	L065-PL	С
BH13	W	18-88577	979026	С	Chloride in water	L082-PL	С
BH13	W	18-88577	979026	С	Dissolved Organic Carbon in water	L037-PL	С
BH13	W	18-88577	979026	С	Dissolved Oxygen in water	L086-PL	С
BH13	W	18-88577	979026	С	Electrical conductivity at 20oC of water	L031-PL	С
BH13	W	18-88577	979026	С	Fluoride in water	L033B-PL	С
BH13	W	18-88577	979026	С	Metals in water by ICP-MS (dissolved)	L012-PL	С
BH13	W	18-88577	979026	С	Metals in water by ICP-OES (dissolved)	L039-PL	С
BH13	W	18-88577	979026	С	Monohydric phenols in water - LOW LEVEL 1 ug/l	L080-PL	С
BH13	W	18-88577	979026	С	Nitrate as N in water	L078-PL	С
BH13	W	18-88577	979026	С	Nitrite as N in water	L082-PL	С
BH13	W	18-88577	979026	С	Oxygenates in water by HS-GC-MS	L052B-PL	С
BH13	W	18-88577	979026	С	Semi-volatile organic compounds in water	L102B-PL	С
BH13	W	18-88577	979026	С	Settleable Solids in water	L004-PL	С
BH13	W	18-88577	979026	С	Speciated EPA-16 PAHs in water	L102B-PL	С
BH13	W	18-88577	979026	С	Sulphate in water	L039-PL	С
BH13	W	18-88577	979026	С	Suspended solids in water	L004-PL	С
BH13	W	18-88577	979026	С	TO - Chlorophenols in water		С
BH13	W	18-88577	979026	С	TPH in (Water)	L070-PL	С
BH13	W	18-88577	979026	С	TPHCWG (Waters)	L070-PL	С
BH13	W	18-88577	979026	С	Tentatively identified compounds (SVOC) in water	L070-PL	С
BH13	W	18-88577	979026	С	Tentatively identified compounds (VOC) in water	L073B-PL	С
BH13	W	18-88577	979026		Total Phosphate as P in water	L082-PL	С
BH13	W	18-88577	979026	С	Total Phosphate in water	L082-PL	С
BH13	W	18-88577	979026	С	Total oxidised nitrogen in water	L078-PL	С
BH13	W	18-88577	979026	С	Volatile organic compounds in water	L073B-PL	С
BH13	W	18-88577	979026	С	Volatile organic compounds in water extended	L073B-PL	С
BH13	W	18-88577	979026	С	pH at 20oC in water (automated)	L099-PL	С





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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:

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.





Your Order No: PO-002715

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	
			A					
A control December	_	Limit of detection	Accreditation Status					
Analytical Parameter	Units	mit	creditat Status					
(Water Analysis)	™	ci of	us					
			9					
•	•				•			
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/I	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 Phenois								
Total Phenois (monohydric)	//	1	ICO 1702F	3.1	1.4	30	45	
Total Phenois (mononyuric)	μg/l	1	ISO 17025	3.1	1.4	30	45	
Speciated PAHs								
Naphthalene	μq/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/I	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	





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	
			>					
	_	를 드	Accreditation Status					
Analytical Parameter	Units	Limit of detection	ed ed					
(Water Analysis)	द्ध	e e	us					
		_	9					
Heavy Metals / Metalloids	I.		I.					
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	
TRILICING Arematics CF C7			100 1705-	. 1 0	. 10	.10	. 1 0	
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	10	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 10	NONE NONE	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	
TPH-CWG - Aromatic >C35 - C44 TPH-CWG - Aromatic (C5 - C35)	μg/l	10	NONE	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	
` '	μg/l							
TPH-CWG - Aromatic (C5 - C44)	μg/l	10	NONE	< 10	< 10	< 10	< 10	





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 ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether) 1,1-Dichloroethane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
2,2-Dichloropropane	μg/I μg/I	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 Bromodichloromethane	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	μg/I	1	ISO 17025	< 1.0	< 1.0 < 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	
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 Ethylbenzene	μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-Xylene	μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
Styrene	μg/l μg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	μg/I	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 tert-Butylbenzene	μg/l μg/l	1	ISO 17025 ISO 17025	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	< 1.0 < 1.0	
1,2,4-Trimethylbenzene	μg/I μg/I	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
sec-Butylbenzene	μg/I	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	





Your Order No: PO-002715

Tour Order No: PO-002/15								
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	ug/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		0.1	NONE	< 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	





Lab Sample Number Sample Reference Sample Number				986253 W DITCH	986254	986255	986256	
Sample Number				W DITCH	C DITCH	110		
•				W DITCH	S DITCH	US	DS	
				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	< 0.05	< 0.05 < 0.05	
2,4-Dimethylphenol Bis(2-chloroethoxy)methane	μg/l	0.05	NONE 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	
Naphthalene	μg/l μg/l	0.03	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.03	
2,4-Dichlorophenol	μg/I	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 ISO 17025	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	< 0.05 < 0.01	
Fluorene Azobenzene	μg/l μg/l	0.01	NONE	< 0.05	< 0.05	< 0.05	< 0.01	
Bromophenyl phenyl ether	μg/I μα/I	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	
Hexachlorobenzene	μg/I	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	





Your Order No: PO-002715

1001 Older No. FO-002713								
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	
epth (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	-	-	-	-	





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





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

	I	. , , , ,		ı	1
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





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
	IV analysis have been sayvied out in our labors				I

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.

Iss No 18-89740-2 Riverside EfW 3765



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref
DS		W	18-89740	986256	С	Dissolved Oxygen in water	L086-PL
S DITCH		W	18-89740	986254	С	Dissolved Oxygen in water	L086-PL
US		W	18-89740	986255	С	Dissolved Oxygen in water	L086-PL
W DITCH		W	18-89740	986253	С	Dissolved Oxygen in water	L086-PL



Test Deviation code
c
c
c

APPENDIX G Calibration Certificates

SPT hammers

Gas monitor

Photo-Ionisation Device

July 2018 Report No 3765R001-2

SPT Calibration Report



www.equipegroup.com

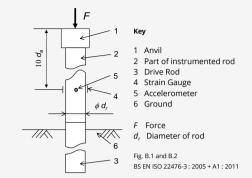
Hammer Energy Measurement Report

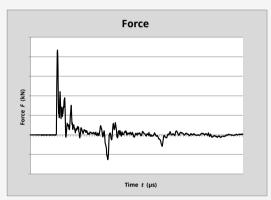
Type of Hammer AUTO HAMMER
Client S M ASSOCIATES
Test No EQU1876

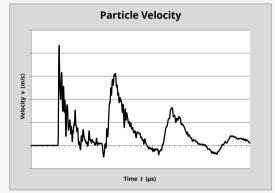
Test Depth (m)20.64Mass of the hamnm = 63.5 kgFalling heighth = 0.76 m E_{theor} = $m \times g \times h = 473 \text{J}$

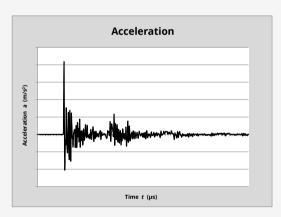
Characteristics of the instrumented rod

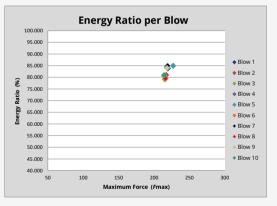
Diameter $d_r = 0.052 \text{ m}$ Length of instrumented rod0.558 mAreaA = 11.61 cm²Modulus $E_a = 206843 \text{ MPa}$













E meas = 0.388 kN-m
 E theor = 0.473 kN-m

Energy Ratio = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$ 82.04% © Copyright 2017

Equipe SPT Analyzer Operators: JML

Prepared by: Checked by: 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 Admade:	D.M.W DI 7 GLENB	ECK CLOSE)	was		Ainleys Industrial Es	g (UK) Ltd tate, Elland,		as made			
Sales orde	er Ref:								aminati	on		
Quantity	ID number	Description	n			•	Test weight	SWL	Date test	of		
1	7 GLENBECK CLOSE HORWICH BL6 6SG AR1909 See order Ref: 1		07.09	07.09.2017								
	Was this	equipment:				Was the examination	on carried o	ut:				_
Supplied n	ew:		Yes	X	No	Before being issued	for the first	time	Yes	X	No	
Supplied re	econditione	d:	Yes		NoX	Within an interval of	6 months		Yes		No	X
Examined	only:		Yes		NoX	Within an interval of	12 months		Yes		No	X
Examined	and tested		Yes	X	No	As part of an examin	ation schen	ne	Yes		No	X
Examined,	repaired a	nd tested	Yes		No X	After an exceptional	circumstand	e	Yes		No	X
description	of the defe	ect. (If no de	fects	fo	und sta	ate "NONE")	me a dange	er to perso				
							CC C d - d		Yes		No	X
									<u> </u> e:			
		IS THE E	QUI	PM	ENT S	SAFE TO OPERATI	5		Yes	X	No	
		ng this repo	rt:				ndaticatina t	ois report:				

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: D.M.W DRILLING LTD 7 GLENBECK CLOSE HORWICH BL6 6SG Address of the premises at which the examination Archway Engineering (UK) Ltd Ainleys Industrial Estate, Elland, West Yorkshire HX5 9JP								amination wa	s made:	
Report Nur Sales orde Date of Re	r Ref:	AR1924 57861 07.09.201				Latest date by which should be carried out			minatio	on
Quantity		Description				<u>U</u>	Test weight	SWL	Date test	of
1	AR1924	SAFETY S	VIVV	EL	HOOK		6532KG	3200KG	07.09	.2017
	Was this	equipment:				Was the examinatio	n carried o	ut:		
Supplied no			Yes	X	No	Before being issued f	or the first t	ime	Yes	(No
Supplied re	conditione	ed:	Yes		NoX	Within an interval of 6	months		Yes	No X
Examined	only:		Yes		No X	Within an interval of	2 months		Yes	No X
Examined	and tested	:	Yes	X	No	As part of an examina			Yes	No X
Examined,			Yes			After an exceptional of			Yes	No X
description NONE Is the abov	of the defe	ect. (If no de defect which	fects	f in	und sta	which is or could becon te "NONE") te danger to persons ons state required recti			Yes Yes	a No X
		air, renewal	or al	tera	ation re	quired to remedy the o	lefect identi	fied above		
				PM	ENT S	SAFE TO OPERATE			Yes	No
S. HOWAF	RTH	ing this repo				Name of person auth		•		

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 OWN	IER: DMW DRILLIN	G		EXAM	I REPORT NO: 108361
DATE OF EXAM: 1	7/10/2017 R NEXT EXAM: 12	DATE OF REPO		+	OF LAST EXAM: 31/10/2016 ER NO:
I.D. NOS	DE	SCRIPTION	(то	SWL ONNES)	DETAIL OF ANY DEFECT WHICH IS OR MAY BECOM A DANGER TO PERSONS
DMW1	1 OFF TRIF	POD DRILLING RIG		1.5 ONNES	NONE
remedy the defect	repair, renewal or alt identified above: N/ liate danger to perso	A ons: N/A	2. Within 3 within If "NO" date b	to new del n an interva an interva y which it	ivery NO al of 6 months NO al of 12 months YES could be a danger: N/A
		f examination: .1.5 T	T		BRAKE TEST AND HELD
Name of inspector DANIEL COUGHL	making this report: IN		Is this equipm	ent safe to	o operate: YES
Name of person at MICHAEL WINTER	uthenticating report:		Signed:		

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: D.M.W DRILLING LTD 7 GLENBECK CLOSE HORWICH BL6 6SG					Address of the premises at which the examination was made: Archway Engineering (UK) Ltd Ainleys Industrial Estate, Elland, West Yorkshire HX5 9JP							
Report Nur Sales orde Date of Re	r Ref:	AR1888 57861 07.09.201				Latest date by which should be carried out			minati	on		
Quantity	ID number	Description	on			•	Test weight	SWL	Date	of		
1	AR1888	SPT ROD	SWI	VE	L		4157KG	2000KG	1	.20	17	
	Was this	equipment:			gw.	Was the examination	n carried o	net.				
Supplied no		equipitions.	Yes	X	No	Before being issued for			Yes	X	No	
Supplied re		d:	Yes	H		Within an interval of 6			Yes	- 1	No	X
Examined			Yes			Within an interval of 1			Yes		No	_
Examined			Yes	X	No	As part of an examina		ie	Yes	_	No	_
Examined,	repaired a	nd tested	Yes		NoX	After an exceptional of	ircumstanc	е	Yes		No	X
description NONE	of the defe	ect. (If no de	fects	fo	und sta	which is or could becor ite "NONE") te danger to persons	ne a dange	r to persor	s and		No	X
				_		ons state required recti	fication date	e:			.,,	-
						quired to remedy the d						
				PM	ENT S	SAFE TO OPERATE			Yes	X I	No	
Name of pe		ng this repo	rt:			Name of person authors	enticating th	nis report:				

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.

											Kepon	T #F
Date of Thorough Examina	ation:	9	09-Mar	-17	Da	te of Report:		09-Mar-	17	ER/O	027	
Name and address of employer fo	r whom th	e thorou	ıgh exar	mination w	ras	Address of pro	emises at v	which the	examina	tion was	made:	
made:						Euro Repair U	n.					
DMW Drilling						Unit 80 Bough		rial Ectato				
7 Glenbeck Close						Boughton	nton maast	ilai Ezrare				
Horwich						Newark						
BL6 6SG	.6 6SG					Notts						
5.0 030						NG22 9LD						
Description and identification of the	ne equipm	ent:			Safe	Working Load:	Date o	f manufac	ture if	Date of	Last Exar	itenin
7-0-12-22-23-33-33-33	100000000000000000000000000000000000000				-		known			1000	Case Entir	miacic
Dando 150										Not Kn	own	
S/N DMW 1						1500kg	Not Kn	own		1.00		
., -, ., ., .,				-		2300K	I ROCK			Not Kn	01100	
Self closing swivel						4000kg	Not Kn	OWN		INOE KIN	OWII	
S/N AR1354						4000%	INOE KE	Own		1		
3,111112337					ľ		1			Nat Va		
D Shackle						20001	Nine W			Not Kno	JWII	
D Snackie S/N APS						2000kg	Not Kn	own				
JIN ATO										1		
480.000						- Carlot				Not Kno	own	
16mm Rope						3000kg	Not Kn	own				
S/N DMW R1										<u></u>		
Is this the first examination after in	astillation (or after a	ssembly	y at a new	Mac the	examination c						
site or	location?				was uie	exammation c	arried out:					
	YES	x	NO		Within a	in interval of 6	months?		YES		NO	
Esha numurus sha a san sa				1						1		-
f the answer to the question above	e is YES,				within a	n interval of 12	z months?		YES	×	NO	
Is the equipment istalled	YES	x	NO		In accord	dance of an exa	amination s	cheme?	YES	×	NO	
correctly?		. ^	1.0					one.ne.		1 ^	100	
						e occuranceof e	exeptional		YES		NO	
**************************************					circumst	ances?			,		<u> </u>	<u> </u>
dentification of any part found to	nave a den	ect Willia	n is or w	ouia becor	ne a van	ger w persons	anu a uesc	ription or	me dere	a.		
s the above a defect which is of im	ımediate d	langer to	person	s:		YES				NO		
s the above defect which is not ye	t but could	become	a dang	er to perso	ons?	YES by:	,			NO		
•	100000000										<u></u>	
Particulars of any repair, renewal o	r alteratio	n require	ed to ren	medy the d	lefect ide	entified above:						
Particulars of any tests carried out	as part of 1	the exam	ination:	: (if none s	tate NON	≬E)						
NONE						en iya sasa sasa sa						
S THIS EQUIPMENT SAFE TO O	PERATE?					YES	(Fas	Х		NO		
lame of the person making this rep J Walker Aproved inspector lice		Name of	the pers		nticating	this report:		1	tion mu	st be carr		
#108834									0	8-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 Ad made:	D.M.W DF	om the examin RILLING LT ECK CLOSE H	D	was		Address of the premises Archway Engineerin Ainleys Industrial Es West Yorkshire HX	g (UK) Ltd state, Elland,		s made	e:		
Report Nur Sales orde Date of Re	r Ref:	AR1598 58442 17.10.201				Latest date by which should be carried or		A THE RESIDENCE OF THE PERSON	minal	tior	l)	
Quantity	ID number	Description	on				Test weight	SWL	Date		F	
1	AR1598	SWIVEL	SINK	ER	BAR		4420KG	2000KG	17.1	0.2	017	
	Was this	l equipment:		-		Was the examinati	on carried o	ut:		_		
Supplied no			Yes		NoX	Before being issued	for the first t	ime	Yes		No	X
Supplied re	conditione	d:	Yes		NoX	Within an interval of	6 months		Yes	X	No	
Examined			Yes		No X	Within an interval of	12 months		Yes		No	X
Examined a	and tested:		Yes	X	No	As part of an exami	nation schem	ne	Yes		No	X
Examined,	repaired a	nd tested	Yes		No X	After an exceptional	circumstand	e	Yes		No	X
MONE Is the abov	of the defe e defect a t is not an	ect. (If no de defect which immediate o	n is c	of im	und sta	which is or could becate "NONE") te danger to persons ons state required rec	tification dat	e:	Yes			X
						quired to remedy the						
		IS THE E	QUI	PM	ENT S	SAFE TO OPERAT	Έ		Yes	X	No	
Name of pe		ng this repo	rt:			Name of person aut	henticating t	his report:				

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

made:	D.M.W DF	om the examina RILLING LTI ECK CLOSE H)	vas		Address of the premises Archway Engineerir Ainleys Industrial Es West Yorkshire HX	ng (UK) Ltd state, Elland,		as made	9:		
Report Num Sales order Date of Rep	Ref:	AR825 58442 17.10.2017				Latest date by whic should be carried o			aminat	ion		
Quantity	ID number	Description					Test weight	SWL	Date	of		
1	AR825	AUTO TRI	PHA	MIV	IER OU	JTER SLEEVE	810KG	300KG	17.1	0.2	017	
	Mae thie	equipment:				Was the examinat	ion carried o) iit.		_		_
Supplied ne	-	equipment.	Yes		NolX	Before being issued		-	Yes		No	X
Supplied red		od.	Yes	H		Within an interval or			Yes	X	No	
Examined of			Yes	-	N B	Within an interval o			Yes		No	
Examined a			Yes	X	No	As part of an exami		ne	Yes		No	_
Examined, I			Yes			After an exceptiona			Yes		No	
NONE Is the above	of the defe	ect. (If no de defect which	fects	f im	und sta	te danger to persons			Yes	la	No	X
			_			ons state required re-						
Particulars of	of any rep					quired to remedy the		ified above				
		IS THE E	QUI	PM	ENT S	SAFE TO OPERAT	E		Yes	X	No	
Name of pe M.GARDNE						Name of person au Signature:						

This report complies with the requirements of the Lifting Operations and Lifting Equipment Regulations 1996. The EC Declaration of conformity is available if the equipment is new and manufactured and supplied by Archway Engineering (UK) Limited

ARCHWAY ENGINEERING

WEST YORKSHIRE

Diameter d_r (mm):

Accelerometer No.1:

Accelerometer No.2:

Instrumented Rod Data

Wall Thickness t_r (mm):

Assumed Modulus Ea (GPa): 200

HX5 9JP

Report Date:

17/10/2017

File Name:

AR825.spt

SH

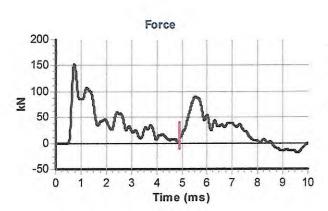
Test Operator:

SPT Hammer Information

Hammer Mass m (kg): 63.5 Falling Height h (mm): 760 SPT String Length L (m): 10.0

Comments / Location

CALIBRATION

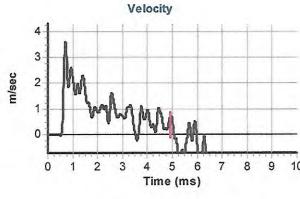


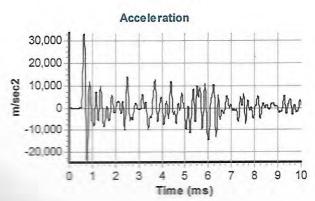
54

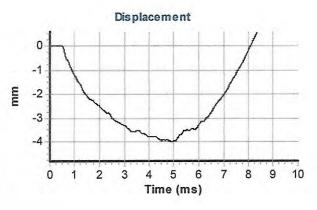
6.0

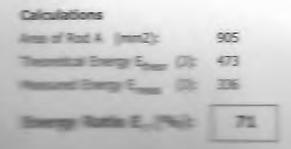
7080

11609











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

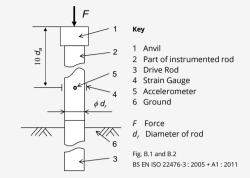
 Mass of the hamn
 m = 63.5 kg

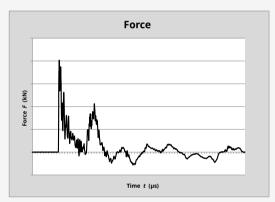
 Falling height
 h = 0.76 m

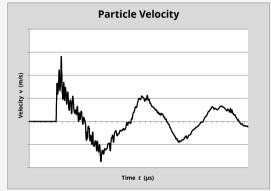
 $E_{\text{theor}} = m \times g \times h = 473 \text{J}$

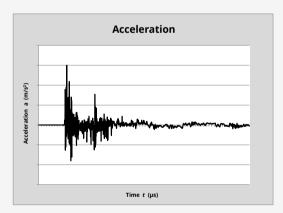
Characteristics of the instrumented rod

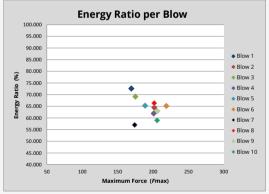
Diameter $d_r = 0.052 \text{ m}$ Length of instrumented rod0.558 mAreaA = 11.61 cm²Modulus $E_n = 206843 \text{ MPa}$













 $E_{\text{meas}} =$ **0.303** kN-m $E_{\text{theor}} =$ **0.473** kN-m

Energy Ratio = $\frac{E_{\text{meas}}}{(E_r)}$ $\frac{E_{\text{theor}}}{E_{\text{theor}}}$ 64.15% © Copyright 2017

Equipe SPT Analyzer Operators: KS

Prepared by: 04/01/2018 Checked by: 04/01/2018 Date: 04/01/2018

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 $E_{theor} = m \times g \times h = 473$ J

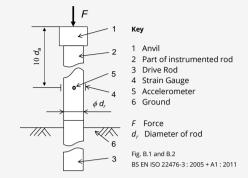
Characteristics of the instrumented rod

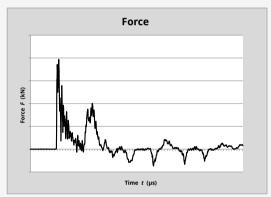
 Diameter
 $d_r = 0.052 \text{ m}$

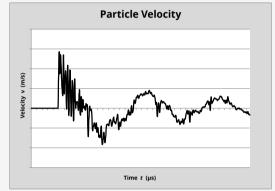
 Length of instrumented rod
 0.558 m

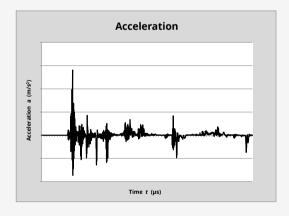
 Area
 A = 11.61 cm²

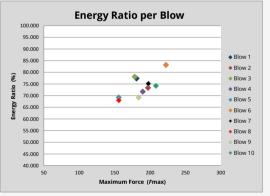
 Modulus
 $E_g = 206843 \text{ MPa}$













 $E_{\text{meas}} =$ **0.348** kN-m $E_{\text{theor}} =$ **0.473** kN-m

Energy Ratio = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$ $\frac{73.67\%}{\text{© Copyright 2017}}$

Equipe SPT Analyzer Operators: KS

Prepared by: 05/01/2018 Checked by: 05/01/2018 Date: 05/01/2018

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 Ea (GPa): 200 Accelerometer No.1:

Accelerometer No.2:

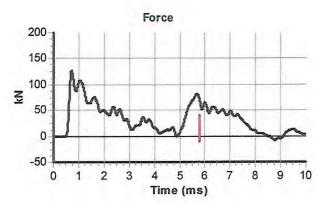
7080

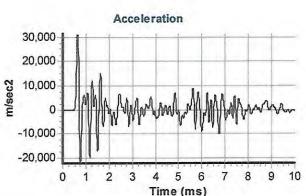
11609

SPT Hammer Information

Hammer Mass m (kg): Falling Height h (mm): 760 SPT String Length L (m): 10.0

Comments / Location





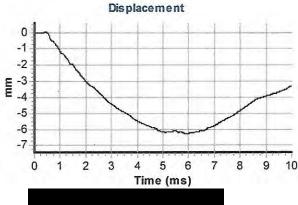
Calculations

Area of Rod A (mm2): 905 Theoretical Energy Etheor (J): 473 351 Measured Energy E_{meas} (J):

Energy Ratio E_r (%):

74

Velocity m/sec 2 0 8 3 5 6 Time (ms)





Signed: S. HOWARTH

Title: FITTER

The recommended calibration interval is 12 months

TEST DATE	AND CO	NDITION	IS								
Date	Date 02/07/18										
Atmospheric Pres	sure	1000	mB								
Ambient Tempera	ture	21.7	°C								
Environics Serial	No.	508	89								

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

GAS DATA LTD	
Unit 4, Fairfield Court	
Seven Stars Estate	
Wheler Rd	
Coventry	
CV3 4LJ	
Tel 02476303311	Fax 02476307711

Recalibration DUE Date
02/07/19

TOTAL VENEZUE		Instrume	ent Checks					
Keyboard ✓ Display Contrast ✓								
Pump Flow In	500	Accept > 200 cc/min	Pump Flow @ -200mB	250	Accept > 200 cc/min			
Clock Set / Running		1	Labels Fitted		✓			

			Gas Checks				
	CH ₄		CO ₂		0 2		
	Instrument Gas	True Gas	Instrument Gas	True Gas	Instrument Gas	True Gas Value %	
	Readings %	Value %	Readings %	Value %	Readings %		
Sensor	60	(0	40	40	20.9		
	Accept ±3.0	60	Accept ±3.0		Accept ±0.5		
	5	5	5	5	6		
	Accept ±0.3	5	Accept ±0.3	3	Accept ±0.3	6	
Zero	0	0	0	0	0	0	
Reading 100% N2	Accept ±0.0	0	Accept ±0.0	0	Accept ±0.1		

Optional Gas Checks								
Applie	d Gas & Range	Concentration Tested @		Instrumen	t Readings (ppm)			
Gas Type	Range (ppm)	(ppm)	ilia -	Zero Reading		Instrument Gas Reading		
H2S	5000	1500	0	Accept ±0.0	1500	Accept ±5.0		
со	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:	со	Toxic 3:	HEX	
H2S	1500	150	00	0		0		
со	1000	40)	100	01	0		
Hexane	2.0%	0		0		1.9	9	

	Pressu	ire Checks	
	Atmospheric P	Pressure [AP] (mB)	
Current Atmospheric	Pressure (mB)	Instrument Atmospher	ic Pressure Reading (mB)
AP Open P	orts	1000	Accept ±2.0
AD Doort (Indoor o)	+800 mB	799	Accept ±5.0
AP Port (Internal)	+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

Temper	Temperature Checks						
Calibration Temperature		0.0					
Applied Temperature ⁰ C	Applied Temperature °C Instrument Temperature Rea						
-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:	
Jack Rutland	

Date Tested:	
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.



91-92 Shrivenham Hundred Business Park

Instrument House

Watchfield

SERVICE / INSPECTION SHEET

JOB NUMBER:

62536

INSTRUMENT:

Phocheck Tiger

SERIAL NUMBER:

T-107423

DATE RECEIVED:

02/01/2018

Oxfordshire FIRMWARE: SN6 8TY

V.8.80

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)		
		<u> </u>
		<u> </u>
	SIGNED:	

		AFTER
TESTS	AS REC'D	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.

TECHNICIAN: Matt Jordison

Instrument has been cleaned, serviced and calibrated.

Operationally tested to manufacturer's standards.

DATE: 11.01.18



CERTIFICATE OF CALIBRATION

Phocheck Tiger

CALIBRATION CERTIFICATE NO:

ISSUED BY:

SHAWCITY LIMITED

DATE:

11.01.18

APPROVED SIGNATORY:

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
	WO157807-2	100 ppm	100 ppm
	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.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS

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

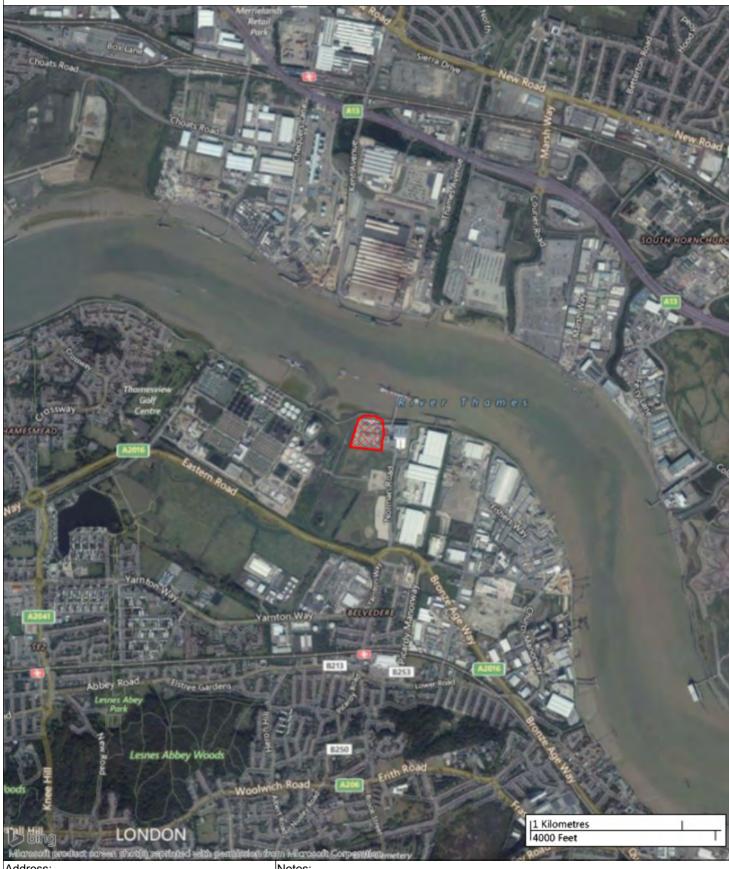
APPENDIX H Drawings

Site location plan 3765D001-1 Exploratory hole location plan 3765D002-1 Surface water monitoring points 3765D003-1

July 2018 Report No 3765R001-2

Site Location Plan

TerraConsult



Address:

Norman Road North, Belvedere, DA17 6JY

Notes:

AGS Riverside EfW Drawing No: Project: Issue: DRAFT Project No: 3765

1:25000 Client: Hitachi Zosen Inova AG Scale:

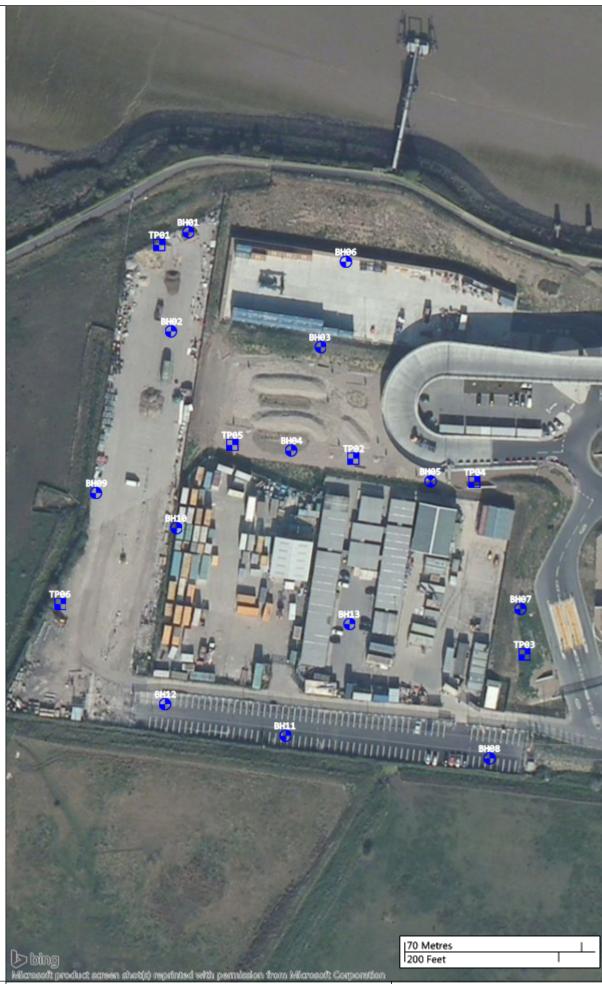
3765D001-1

Exploratory Hole Location Plan

TerraConsult

Legend Key

- Locations By Type CP
- Locations By Type CP +RC
- Locations By Type TP



AGS Issue:

Scale:

DRAFT 1:1500 Project: Riverside EfW

Project No: 3765

Client: Hitachi Zosen Inova AG

Drawing No:

3765D002-1

Surface Water Sample Locations

Legend Key

US - up stream DS - down stream WD - west ditch SD - south ditch



AGS

DRAFT Issue: 1:2500

Project No: 3765

Client: Hitachi Zosen Inova AG 3765D003-1















TerraConsult

Leaders in waste management environmental & ground engineering consultancy

TerraConsult (South) Limited
Dugard House
Peartree Road
Colchester, Essex
CO3 0UL

Tel: +44 (0) 1206 585600

TerraConsult Limited Bold Business Centre Bold Lane, Sutton St. Helens WA9 4TX

Tel: +44 (0) 1925 291111 Fax: +44 (0) 1925 291191

Email: mailbox@terraconsult.co.uk
Website: www.terraconsult.co.uk











Appendix 4 Summary of Soil Geoenvironmental Laboratory Results

					Strata	MG ALV	ALV	ALV	ALV	MG	MG	MG	ALV	MG	MG	MG	ALV	MG	ALV	MG	MG	MG	ALV	MG	ALV	MG
SOM 1%			As	sessment Crit	eria	BH01 BH01	BH01	BH02	BH02	BH03	BH03	BH03	BH03	BH04	BH04	BH04	BH04	BH05	BH05	BH06	BH06	BH06	BH06	BH08	BH08	BH09
Analyto	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	0.7	1.5	0.3	1	0.5	1.5	2	3	0.5	1	0.25
Analyte Stones BG 2.6/3.0	%	-	-	-	-																					
Moisture content at 30 C	%	-	-	-	-																					
Arsenic*	mg/kg	1	640	640	640	16 0.2	25	8.4	18	37		55 1.2	23	31		17	18	230	45	27	98	76	31	15 0.8	25	7.9
Cadmium Chromium Trivalent	mg/kg	0.2	190 8600	190 8600	190 8600	0.2	0.2	0.2	0.2	0.2		1.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.2	0.2	ı	0.0	0.2	0.6
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	4	4
Copper	mg/kg	1	68000	68000	68000	16	13	7.2	15	24		48	27	40		26	17	63	42	56	53	56	25	64	32	7.1
Lead*	mg/kg	1	2300	2300	2300	110	28	6.8	32	71		980	61	88		44	19	220	110	100	180	150	100	380	94	44
Mercury Nickel	mg/kg mg/kg	0.3	1100 980	1100 980	1100 980	0.3	0.4 31	0.3	0.4 32	0.4 27		0.7 40	0.6 29	0.3		0.3	0.3	0.3	0.7 35	0.3	0.3	0.3	0.3 36	18	0.3	0.3
Selenium	mg/kg	1	12000	12000	12000	1.1	1.9	1	1	2.1		1.9	1.9	1.4		1	1.5	1	1.6	1.9	1	1.8	2.5	1	1.8	1
Zinc	mg/kg	1	730000	730000	730000	320	66	14	170	110		1100	110	130		67	52	870	420	140	230	180	3400	250	140	81
Beryllium		0.0	12	12	12	10	0.4		75	000		000	000	100		100	010	1000	000	07	100	070	470	10	00	
Boron Vanadium	mg/kg	0.2	240000 9000	240000 9000	240000 9000	19	34	1.4	75	600		320	300	180		120	210	1200	390	37	120	270	170	10	26	2
Cyanide (Total)	mg/kg	1	-	-	-	1	1	1	1	1		1	1	1		1	1	1	1	1	1	1	1	1	1	1
Organic matter			-	-	-																					
Phenol, Total		0.5	440	440	440	0000	1000	07	1000	4400		700	500	1000		4000	1000	050	1000					000	070	40
Sulphate (Total) as SO4	mg/kg pH Units	2.5	-	-	-	2300 8.4	7.7	9.2	1200 8.2	9.3		780 8.2	520 8.2	4000 10.3		4600 8.3	1300 7.9	350 9.5	1000 8.2	11.6	9.6	9.3	7.7	900	370 8.3	48 8.9
>C5 to C6 Aliphatic	mg/kg	0	3200	3200	3200	0.4	1.1	0.001	0.2	5.3		0.2	0.2	0.01		0.3	7.9	0.001	0.2	0.001	9.0	0 001	1.1	0 001	0.3	0.9
>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	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	0.001	0.001
>C10 to C12 Aliphatic	mg/kg	1	9700	9700	9700			1				1	1	1 77				1	1	1 7 -		2.3		2.4	1	1
>C12 to C16 Aliphatic >C16 to C21 Aliphatic	mg/kg mg/kg	2 8	59000	59000	59000			2 8				5.2 17	<u>2</u> 8	7.7 18	1	1		12 57	<u>2</u> 8	7.5 20	1	28 64		16 32	2 8	2 8
>C16 to C21 Aliphatic	mg/kg	8	-	-	-			8				97	22	100				130	17	100		170		230	8	10
>C16 to C35 Aliphatic	mg/kg		1600000	1600000	1600000			16					8						8						16	8
>C35 to C44 Aliphatic	mg/kg		1600000	1600000	1600000			8.4				32	8.4	70	ļ	ļ		39	8.4	30	ļ	84		280	8.4	83
Total Aliphatic C5-C35 >C5 to C7 Aromatic	mg/kg mg/kg	10 0	26000	26000	26000			10				120	0.001	130				200	0.001	130		270 0.001		280	10	10
>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	0.001	0.001
>C8 to C10 Aromatic	mg/kg		3500	3500	3500			0.001				0.001	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	11	1				1	1	11		7.4		2.2	11	1
>C12 to C16 Aromatic >C16 to C21 Aromatic	mg/kg mg/kg	10	36000 28000	36000 28000	36000 28000			10				8.4 86	2 10	4 29		<u> </u>		4.2 57	2 10	3.8 29		78 140		6.8 26	10	10
>C16 to C21 Aromatic	mg/kg	10	28000	28000	28000			10				340	18	130		1		160	20	170	+	180		360	10	41
>C35 to C44 Aromatic	mg/kg	8.4	28000	28000	28000			8.4				110	9.7	140				54	8.4	81		150		760	8.4	320
Total Aromatic C5-C35			-	-	-			0.003				544.403	27.703					275.203	20.003	283.803		555.403		1155.003	0.003	361.003
TPH Ali/Aro EPH (C10-C40)			-	-	-			10.003				664.403	49.703	433.003				475.203	37.003	413.803		825.403		1435.003	10.003	371.003
Hazard Index - Commercial			-	-	-			0.0013				0.0197	0.0016	0.0111				0.0102	0.0016	0.0104		0.0202		0.0419	0.0013	0.0136
Hazard Index - Commercial			-	-	-			0.0013				0.0197	0.0016	0.0111				0.0102	0.0016	0.0104		0.0202		0.0419	0.0013	0.0136
Hazard Index - Commercial			-	-	-			0.0013				0.0197	0.0016	0.0111				0.0102	0.0016	0.0104		0.0202		0.0419	0.0013	0.0136
Benzene*	ug/kg	1	27000	27000	27000			1				1	1	1				1	11	1		1			1	1
Ethylbenzene Toluene	ug/kg ug/kg	1	5700000 56000000	5700000 56000000	5700000 56000000			1				1	1 1	1		 		1	1 1	1	-	1		1 1	1	1
Xvlene	ug/kg	-	6600	6600	6600			'				'	'	'				'		'		1		- '	'	
MTBE	ug/kg	1	#VALUE!	#VALUE!	#VALUE!			1				1	1	1				1	1	1		1		1	1	1
naphthalene	mg/kg	0.05	190	190	190			0.05		0.05		0.9	0.05	0.05			0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05		0.05
acenaphthylene	mg/kg	0.05	83000 84000	83000 84000	83000 84000			0.05 0.05		0.05 0.05		0.3	0.05	0.05 0.05			0.05 0.05	0.05 0.05	0.05 0.05	0.05 0.05	0.05	0.27 4.1	0.05 0.05	0.05		0.05 0.05
acenaphthene fluorene	mg/kg mg/kg	0.05		63000	63000			0.05		0.05		0.29	0.05	0.05			0.05	0.05	0.05	0.05	0.24	2.7	0.05	0.05		0.05
phenanthrene	mg/kg		22000	22000	22000			0.05		0.61		5	0.05	1			0.05	0.85	0.3	1.9	1	11	0.05	1		0.05
anthracene	mg/kg		520000	520000	520000		-	0.05		0.05		0.77	0.05	0.35			0.05	0.26	0.05	0.43	0.2	3	0.05	0.2		0.05
fluoranthene		0.05	23000	23000	23000 54000			0.05 0.05		0.70		7.1	0.3	2.9			0.05	1.7	0.61	3.2	1.5	6.8	0.05	1.9		0.05
pyrene benzo(a)anthracene	mg/kg mg/kg		54000 170	54000 170	170			0.05		0.79 0.55		5.5 4.2	0.26	2.8	1	 	0.05 0.05	1.5	0.51 0.43	2.8 1.6	ი.ა 0.67	4.9 1.5	0.05 0.05	1.7		0.05 0.05
chrysene	mg/kg	0.05	350	350	350			0.05	<u> </u>	0.46		3.3	0.2	1.4			0.05	1.1	0.5	1.5	0.78	1.2	0.05	0.84		0.05
benzo(b)fluoranthene	mg/kg		44	44	44		-	0.05		0.56		4.5	0.35	1.8			0.05	1.2	0.75	1.8	1.2	1.3	0.05	1		0.05
benzo(k)fluoranthene	mg/kg		1200	1200	1200			0.05		0.21		1.6	0.13	0.97			0.05	0.61	0.29	0.91	0.35	0.54	0.05	0.79		0.05
benzo(a)pyrene* indeno(1,2,3-c,d)pyrene	mg/kg mg/kg	0.05		35 500	35 500			0.05 0.05		0.73 0.05		5.7	0.4	3.1 0.89	1	1	0.05 0.05	2.1 0.54	0.7	1.6 0.68	0.84	1.1 0.43	0.05 0.05	1.1 0.68		0.05 0.05
dibenzo(ah)anthracene	mg/kg		3.5	3.5	3.5			0.05		0.05		0.3	0.05	0.05			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00		0.05
benzo(g,h,i)perylene	mg/kg		3900	3900	3900			0.05		0.05		1.9	0.05	0.81			0.05	0.54	0.27	0.9	0.66	0.52	0.05	0.88		0.05
Total PAH	m /l	0.05	-	-	- 45			0.8		4.91		43.7	1.9	18.2			0.8	11.4	4.65	17.3	9.16	39.2	0.8	11.3		0.8
Coal Tar (Bap as surrogate) PCB (as Aroclors)	mg/kg	0.05	15 -	15	15 -			0.05		0.73		5.7	0.4	3.1	1	1	0.05	2.1	0.7	1.6	0.84	1.1	0.05	1.1		0.05
1,2 Dichloroethane			270	270	270																	1				
1,1,1 Trichloroethane (TCA)			660	660	660																	1				
1,1,1,2 Tetrachloroethane			110	110	110																	1				
1,1,2,2 Tetrachloroethane			270 19	270	270			<u> </u>		1				1								1				
Tetrachloroethene (PCE) Carbon Tetrachloride			2.9	19 2.9	19 2.9													+				ı				
Trichloroethene (TCE)			1.2	1.2	1.2																	1				
Trichloromethane (Chloroform)			99	99	99																	1				
Vinyl Chloride (Chloroethene)			0.059	0.059	0.059																	1				
Molybdenum Fluoride			-	-	-			-										 								
Asbestos			-	-	-																					
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					Strata	ALV	MG	ALV	MG	ALV	MG	ALV	MG	ALV	MG	MG	MG	MG	MG	MG	ALV	MG	ALV	MG	ALV	ALV	ALV
SOM 1%			As	sessment Crit		BH09	BH10	BH10	BH11	BH11	BH12	BH12	BH13	BH13	TP01	TP01	TP01	TP02	TP02	TP02	TP02	TP04	TP04	TP05	TP05	TP06	TP06
			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
Analyte Stones BG 2.6/3.0	Units %	LOD	-	-	-			***		-			***														• • •
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 Chromium Hexavalent*	mg/kg	4	8600 33	8600 33	8600 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 Selenium	mg/kg mg/kg	1	980 12000	980 12000	980 12000	30 1	8.1 1	20 1.1	13	24 1	26 1	1	1.8	25 1.1	-	26 1	24 1	1/	14	15 1	32	45 1	31 2.1	20 1.4	31 1	25	33
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 Cyanide (Total)	mg/kg	1	9000	9000	9000	1	1	1	34	68	72 1	84 1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1
Organic matter	IIIg/kg	- '	-	-	-	'	'	- '	'	-	<u>'</u>	'	'	- 1		<u>'</u>	<u>'</u>	<u>'</u>	<u>'</u>	'	<u>'</u>	'	'	'	'	'	-
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 >C6 to C8 Aliphatic	mg/kg mg/kg	0	3200 7800	3200 7800	3200 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		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		59000	59000	59000				8.9				310	2			2	9.7		10		2.2		2.7		5.9	
>C16 to C21 Aliphatic >C21 to C35 Aliphatic	mg/kg mg/kg	<u>8</u> 8	-	-	-				27 280				820 400	<u>8</u> 8	 		13	120	 	14		36 200		100		8 62	
>C16 to C35 Aliphatic	mg/kg	16	1600000	1600000	1600000				۷00				430	16	 		8	120	 	34		200		100		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 >C8 to C10 Aromatic	mg/kg mg/kg	0	56000 3500	56000 3500	56000 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		36000	36000	36000				3.1				32	2			2	22		20		32		8.2		15	
>C16 to C21 Aromatic >C21 to C35 Aromatic	mg/kg mg/kg	10 10	28000 28000	28000 28000	28000 28000				24 760				87 120	10 10			10 10	66 260		42 100		200 560		40 310		43 180	
>C35 to C44 Aromatic	mg/kg		28000	28000	28000				2700				280	8.4			8.4	350		54		180		290		160	
Total Aromatic C5-C35	mg/ng	0.4	-	-	-				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	1	216.703		770.503		479.803	
EPH (C10-C40)			-	-	-				0.4054				0.0000	0.0010			0.0010	0.0050		0.0005		0.0040		0.0004		0.01.17	
Hazard Index - Commercial Hazard Index - Commercial			-	-	-				0.1254 0.1254				0.0238 0.0238	0.0013 0.0013	+		0.0013 0.0013	0.0258 0.0258		0.0085 0.0085		0.0349		0.0234 0.0234		0.0147 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 6600	56000000 6600	56000000 6600				1	1	1	1	1	1			1	1		1		1		1		1	
Xylene 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		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		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 phenanthrene	mg/kg mg/kg		63000 22000	63000 22000	63000 22000				0.05 0.05	0.05 0.05	0.05	0.05 0.05	1.6 5.5	0.05 0.05	30	0.05 0.05	0.05	0.05 1.2		0.05	+	4.4		0.05			
anthracene	mg/kg		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 benzo(a)anthracene	mg/kg mg/kg		54000 170	54000 170	54000 170				0.37	0.22	1.2 0.48	0.23 0.05	5.7 3.2	0.05 0.05	18 5.7	0.05 0.05	0.39	3.1 1.8		1.9		7.7 4.4		1.8			
chrysene	mg/kg mg/kg		350	350	350				0.17	0.05	0.46	0.05	2.8	0.05	4.6	0.05	0.23	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		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		35 500	35 500	35 500				0.05	0.05	0.56	0.05	3.1	0.05 0.05	1.8	0.05	0.27 0.05	1.7 0.83		0.99		4.8 2.7		1.8			
indeno(1,2,3-c,d)pyrene dibenzo(ah)anthracene	mg/kg mg/kg		3.5	500 3.5	3.5				0.05 0.05	0.05 0.05	0.31	0.05 0.05	2.1 0.36	0.05	0.05	0.05 0.05	0.05	0.83		0.47	+	0.63		0.41			
benzo(g,h,i)perylene	mg/kg			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) PCB (as Aroclors)	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	1	4.8		1.8			
1,2 Dichloroethane			270	270	270		1		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) Carbon Tetrachloride		—	19 2.9	19 2.9	19 2.9				1	1	1	1	1	1	-				-			1					
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 Fluorido		-	-	-	-																						
Fluoride Asbestos			-	-											 		 			1	+						
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* Category 4 Screening Value @ 6% SOM





Appendix 5 Summary of Water Geoenvironmental Laboratory Results

																								[
		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
Analyte	Units	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 CaCO₃	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 Cadmium	μg/l μg/l	0.08	0.03	0.02	8500 0.02	0.02	0.02	23000 0.02	0.02	0.02	0.02	0.02	0.02	12000 0.02	0.02	0.02	19000 0.02	0.02	0.02	89000 0.02	0.02	860 0.02	0.02	1100 0.02	1200 0.05	0.02	690 0.02
Chromuim (Total)	μg/l	-	0.03	0.02	1.1	1.3	1.1	1.9	0.6	0.02	4	0.02	0.02	3.6	0.02	0.02	3.9	0.02	0.02	5.1	0.02	0.02	0.02	0.02	1.1	0.02	0.02
Chromium Trivalent	μg/l	4.7																									
Chromium Hexavalant	μg/l	3.4	0.0	0	0.0	0.0	1.0	0.5	0.0	0.5	1.0	1.5	0.5	0.5	1.5	0.0	0.5	0.0	1.0	4	0.7	0.4	0.7	0.4	0.1	F 4	- 0.0
Copper Iron	μg/l μg/l	<u> </u>	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		3.7	2.4	3.7	3.4	2.1	5.1	2.9
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 Nickel	μg/l μg/l	12.3 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	<u> </u>	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 Ammoniacal Nitrogen as NH ₃	mg/l mg/l	<u>-</u>	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
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 Nitrate as NO ₃	μg/l mg/l	1	2.3	2.14	10 2.67	0.32	0.56	10 0.29	0.04	0.63	0.33	0.05	0.33	10 0.17	0.02	0.3	10 0.22	0.26	0.79	10 0.11	4.36	10 5.39	0.07	10 0.14	10 0.23	5.55	10 6.28
Nitrate as NO ₂	mg/l	-	۷.۵	4.14	2.01	0.32	0.30	0.23	0.04	0.03	0.33	0.00	0.33	0.17	0.02	0.3	0.22	0.20	0.79	U.11	4.30	3.38	0.07	0.14	0.23	J.JU	0.20
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 PCBs	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
Sodium	μg/l 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 C10-13 Chloroalkanes	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
Dichloromethane	μg/l μg/l	<u> </u>																									
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
1,1,1 Trichloroethane 1,1,2 Trichloroethane	μg/l μg/l	<u> </u>	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	11	1	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tetrachloroethene Tetrachloromethane	μg/l μg/l	10 12	1	1	1	1	1	1	<u>1</u> 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	11	1	1	1	1	1	1	1	1	1	1	1	1
1,2,4 Trichlorobenzene (TCB) >C5 to C6 Aliphatic	μg/l	0.4	1	1	1	1	1	1	<u>1</u> 1	1	1	1	1	1	<u>1</u>	1	1	1	1	1	1	1	1	1	1	1	1
>C6 to C6 Aliphatic	μg/l 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 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 >C16 to C21 Aliphatic	μg/l μg/l	<u> </u>	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 >C5 to C7 Aromatic	μg/l μg/l	<u> </u>	10 1	10	10	10	10	10 1	10 1	10	10 1	10	10 1	10	10 1	10	10	10	10	10	10	10	10	10	10	10	10
>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 10	1	1	1	1	1	1	1	1	1	1	1	1
>C10 to C12 Aromatic >C12 to C16 Aromatic	μg/l μg/l	<u>-</u>	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 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 Total Aromatic C5-C35	μg/l 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 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 Toluene	μg/l 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	1	1
Xylene	μg/l	30		<u> </u>																		<u> </u>					
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	0.01	0.01	0.01	0.01	0.01	1 0.01	0.01	0.01	0.01	0.01	0.01	1 0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1 0.01	1 0.01	0.01	0.01
acenaphthylene acenaphthene	μg/l μg/l	<u> </u>	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	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	- 0.1	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
anthracene fluoranthene	μg/l μg/l	0.1 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	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 benzo(b)fluoranthene	μg/l 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	0.01 0.01	0.01 0.01	0.01 0.01	0.01 0.01	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 dibenzo(ah)anthracene	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	0.01 0.01	0.01 0.01	0.01 0.01	0.01 0.01	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 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



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																						\vdash
		Assessment Criteria	W DITCH	W DITCH	W DITCH																	
l		Fresh Water	11/05/2018	18/06/2018	8 12/07/2018	3																ı
Analyte Alkalinity as CaCO ₃	Units 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) Chromium Trivalent	μg/l μg/l	<u>-</u> 4.7	0.2	0.3	1.4																	
Chromium Hexavalant	μg/l	3.4																				
Copper	μg/l	1	0.9	4.1	0.6																	
Iron Lead	μg/l μg/l	<u> </u>	0.2	0.5	0.3																	
Mercury	μg/l	0.07	0.05	0.05	0.05																	
Manganese	μg/l	12.3																				
Nickel Selenium	μg/l μg/l	4	1.4 3.1	1.5 1.4	1.6	1	-						-	-		-						
Zinc	μg/l	10.9	7.5	3.2	4.8								1									
Ammoniacal Nitrogen as NH ₄	mg/l	-	1800	690	510																	
Ammoniacal Nitrogen as NH ₃	mg/l		74	40	00								+									
Chloride Chlorine	μg/l μg/l	2	74	48	68	+	<u> </u>						+ +			-						
Cyanide	μg/l	1		10	10											1						
Nitrate as NO ₃	mg/l	-	0.05	0.16	0.16	1							1				Ţ					
Nitrite as NO ₂ Phenol	mg/l μg/l	- 7.7	0.05	0.05	0.05		 				1	1	+ +		+							$\overline{}$
Pentachlorophenol	μg/l	0.4	0.05	0.05	0.05																	
PCBs Sodium	μg/l			65	70	1							1				Ţ					
Sodium Sulphate	μg/l mg/l	-	68 27400	65 35200	72 3440	+	 					1	+		+							$\overline{}$
рН	pH Units	-	7.2	7.8	7.5																	
C10-13 Chloroalkanes	μg/l	-																				
Dichloromethane 1,2 Dichloroethane	μg/l μg/l	 10	1	1	1				 	+			+ +									
Trichloroethene (PCE)	μg/l	10	1	1	1																	í
1,1,1 Trichloroethane	μg/l	-	1	1	1 1																	
1,1,2 Trichloroethane Trichloromethane (Chloroform)	μg/l μg/l	2.5	1	1	1 1				 	+			+ +									
1,2,4 Trichlorobenzene	μg/l	-	1	1	1																	í
Tetrachloroethene	μg/l	10	1	1	1																	
Tetrachloromethane 1,1,1,2 Tetrachloroethane	μg/l μg/l	12 140	1	1	1								+ +									$\overline{}$
Vinyl Chloride (Chloroethene)	μg/l	-	1	1	1								1									
1,2,4 Trichlorobenzene (TCB)	μg/l	0.4	1	1	1																	
>C5 to C6 Aliphatic >C6 to C8 Aliphatic	μg/l 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 >C16 to C21 Aliphatic	μg/l μg/l		10 10	10 10	10				 				+	-		+						
>C21 to C35 Aliphatic	μg/l	- -	10	10	10								1									
>C35 to C44 Aliphatic	μg/l	-	10	10	10																	
Total Aliphatic C5-35 >C5 to C7 Aromatic	μg/l μg/l	<u> </u>	10	10	10																	
>C7 to C8 Aromatic	μg/l	- -	1	1	1								1									
>C8 to C10 Aromatic	μg/l	-	1	1	1																	
>C10 to C12 Aromatic >C12 to C16 Aromatic	μg/l	<u> </u>	10 10	10 10	10 10	-							-	 								
>C16 to C21 Aromatic	μg/l μg/l	-	10	10	10								 									
>C21 TO C35 Aromatic	μg/l	-	10	10	10																_	
>C35 to C44 Aromatic Total Aromatic C5-C35	μg/l μg/l		10 10	10	10 10	-				-	 	1			+							
TPH Ali/Aro	μg/l	-	10	10	10	†	<u> </u>						†									
Benzene	μg/l	10	1	1	1																	
Ethylbenzene Toluene	μg/l μg/l	- 74	1	1 1	1 1	-				_			 	+	+							
Xylene	μg/l	30	<u>'</u>	 	'	1	İ											1				
MTBE	μg/l	-	10	10	10																	
naphthalene	μg/l	2	1	1	1		<u> </u>			_			\vdash									
acenaphthylene acenaphthene	μg/l μg/l	<u> </u>	0.01 0.01	0.01	0.01	+	<u> </u>						+ +			-						
fluorene	μg/l	-	0.01	0.01	0.01																	
phenanthrene	μg/l	-	0.01	0.01	0.01	1		-														
anthracene fluoranthene	μg/l μg/l	0.1 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 benzo(b)fluoranthene	μg/l	0.017	0.01 0.01	0.01 0.01	0.01		-					1	 	+	+			+				
benzo(k)fluoranthene benzo(k)fluoranthene	μg/l μg/l	0.017	0.01	0.01	0.01				 		1	<u> </u>	+	+	+		+					
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						ļ <u> </u>								ļ	ļ		
dibenzo(ah)anthracene indeno(1,2,3-c,d)pyrene	μg/l μg/l		0.01 0.01	0.01	0.01	+	 				1	1	+									
Total PAH	μg/l	-	0.16	0.16	0.16																	
										•								•				



			1	1														1						1	$\overline{}$	$\overline{}$
		Assessment Criteria	BH02	BH02	DLIOO	DLIOO	BH03	DLIOO	DLIGE	BH05	BH05	DLIOO	DLIOO	BH08	BH12	DUITO	DUITO	DUITO	DUITO	BH13	DC	DC	C DITCH	C DITCH	e DITCH	US
Analyta	Units	Saltwater	11/05/2018	07/06/2018	BH02 12/07/2018	BH03 11/05/2018	07/06/2018	BH03 12/07/2018	BH05 11/05/2018	07/06/2018	12/07/2018	BH08 11/05/2018	BH08 07/06/2018	12/07/2018	11/05/2018	BH12 07/06/2018	BH12 12/07/2018	BH13 11/05/2018	BH13 07/06/2018	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 1	11/05/2018
Analyte 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) Chromium Trivalent	μg/l μg/l	<u> </u>	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 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 Lead	μg/l	<u> </u>	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 μg/l	0.07	0.2	0.2	0.05	0.05	0.7	0.2	0.2	0.4	0.2	0.05	0.4	0.05	0.05	0.4	0.2	0.4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Manganese	μg/l	-																								
Nickel Selenium	μg/l	8.6	2.8 2.9	1.7 2.4	2.2 1.6	4.1 28	4.4 17	3.4 24	1.1 40	0.5 29	30	0.5 34	0.5 25	2.1 26	0.5 35	0.5 21	2 22	3.3 34	4.1 27	24 33	1.3 29	1.3 22	3.3 5.7	2.6 3.2	3.8 6	1.9 21
Zinc	μg/l μg/l	 68	7.2	4.3	7.3	5.1	3.6	3.5	0.8	0.7	2.3	3	0.5	20	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 NH₃	mg/l	21		100		0000	0000	0000	5500	000	5000	1000	F.100	4400	4000	0000	0000	0700	4500	4700	2000	4400	400	100		0.100
Chloride Chlorine	μg/l μg/l	- 10	80	120	75	3200	3200	2200	5500	820	5000	4900	5400	4100	4800	3900	2800	3700	4500	1700	3600	4400	400	490	730	2400
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 Phenol	mg/l 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 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	0.05	0.05	0.05	0.05	0.05	0.05	0.05
PCBs	μg/l	<u> </u>				J=0-	,===	1100	0===	0.100	0=00	6.10-			6 15-	6:0-	1000	0.00			0000	.===				1500
Sodium Sulphate	μg/l mg/l	<u>-</u>	76 125000	85 213000	56 200000	1700 209000	1700 294000	1400 599000	2500 760000	3100 882000	2500 980000	2400 695000	2700 763000	2300 821000	2400 460000	2100 495000	1600 480000	2400 181000	2200 64400	1900 43800	2000 628000	2500 872000	220 30900	430 99600	380 111000	1500 354000
pH	pH Units	-	7.2	7.3	7.5	6.9	7	6.9	7.1	7.1	7.4	7	703000	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 1,2 Dichloroethane	μg/l 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 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) 1,2,4 Trichlorobenzene	μg/l μg/l	<u>2.5</u> -	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
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
1,1,1,2 Tetrachloroethane Vinvl Chloride (Chloroethene)	μg/l μg/l		1	1 1	1 1	1	1	1	1	<u>1</u>	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 >C8 to C10 Aliphatic	μg/l μg/l	-	1	1	1	1	1	1	1 1	<u>1</u>	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	10	10
>C21 to C35 Aliphatic >C35 to C44 Aliphatic	μg/l 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	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
>C7 to C8 Aromatic >C8 to C10 Aromatic	μg/l μg/l	<u>-</u>	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 >C21 TO C35 Aromatic	μg/l 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 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 Benzene	μg/l 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/I μg/I	-	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	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	1	1	1	1
Xylene MTBE	μg/l	30	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 μg/l	<u> </u>	10 1	10	10	10 1	10	10	10	10 1	10	10 1	10 1	10	10	10	10	10	10	10	10	10	10	10	10	10
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 phenanthrene	μg/l 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	0.01	0.01	0.01	0.01	0.01
anthracene	μg/l 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 benzo(a)anthracene	μg/l 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	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 chrysene	μg/l 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 benzo(g,h,i)perylene	μg/l μg/l	0.00017 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 0.01	0.01 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



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	Г	Assessment Critoria	110	W DITOU	W DITOU	W DITOU								+
		Assessment Criteria	US	W DITCH	W DITCH	W DITCH								
		Saltwater	18/06/2018	11/05/2018	18/06/2018	12/07/2018								
Analyte	Units													
Alkalinity as CaCO ₃ Arsenic	mg/l μg/l	<u>-</u> 25	160 1.86	640 5.7	9.1	780 8.36	-							+
Boron	μg/l	-	690	5.7	3200	6000	1							+
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	2.0	0.0	4.4	0.0								
Copper Iron	μg/l	3.76 1	2.9	0.9	4.1	0.6								+
Lead	μg/l 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								1
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								4
Zinc Ammoniacal Nitrogen as NH4	μg/l mg/l	68	3 67	7.5 1800	3.2 690	4.8 510								+
Ammoniacal Nitrogen as NH ₃	mg/l mg/l	21	67	1600	690	310	1							+
Chloride	μg/l		3700	74	48	68	† †							+ -
Chlorine	μg/l	10												
Cyanide	μg/l	1	10		10	10								
Nitrate as NO ₃	mg/l	<u>-</u>	6.28	0.05	0.16	0.16	1						 	1
Nitrite as NO ₂ Phenol	mg/l		0.05	0.05	0.05	0.05	+							+
Pentachlorophenol	μg/l μg/l	0.4	0.05	0.05	0.05	0.05	+ +						+ +	+
PCBs	μg/l	-	0.00	0.00	0.00	0.00	1						† †	†
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 Dichloromethane	μg/l						+							+
1,2 Dichloroethane	μg/l μg/l	10	1	1	1	1								+
Trichloroethene (PCE)	μg/l	10	i	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								4
1,2,4 Trichlorobenzene Tetrachloroethene	μg/l	- 10	1	1	1	1	-							+
Tetrachloromethane	μg/l μg/l	12	1	1	1	1								+
1,1,1,2 Tetrachloroethane	μg/l	-	1	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								4
>C6 to C8 Aliphatic >C8 to C10 Aliphatic	μg/l	-	1	1	1	1								+
>C10 to C12 Aliphatic	μg/l μg/l	-	10	10	10	10	1							+
>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 Total Aliphatic C5-35	μg/l	<u> </u>	10 10	10 10	10 10	10 10								
>C5 to C7 Aromatic	μg/l μg/l	-	10	1	1	10	1							+
>C7 to C8 Aromatic	μg/l	-	i	i	i	i	1							1
>C8 to C10 Aromatic	μg/l		1	1	1	1								
>C10 to C12 Aromatic	μg/l	-	10	10	10	10	\bot							$oldsymbol{oldsymbol{\perp}}$
>C12 to C16 Aromatic	μg/l	-	10	10	10	10	1						 	+
>C16 to C21 Aromatic >C21 TO C35 Aromatic	μg/l μg/l	-	10 10	10 10	10	10 10	+						 	+
>C35 to C44 Aromatic	μg/l 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 Toluene	μg/l μg/l	- 74	1	1	1	1	 						 	+
Xylene	μg/I μg/I	30	<u> </u>	1			+ +						+ +	+
MTBE	μg/l	-	10	10	10	10	†							+
naphthalene	μg/l	2	1	1	1	1	<u> </u>							
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 anthracene	μg/l μg/l	- 0.1	0.01 0.01	0.01 0.01	0.01 0.01	0.01 0.01	+						+ +	+
fluoranthene	μg/l μg/l	0.0063	0.01	0.01	0.01	0.01	1	 					+	+ -
pyrene	μg/l	-	0.01	0.01	0.01	0.01	1							1
benzo(a)anthracene	μg/l	-	0.01	0.01	0.01	0.01								
chrysene	μg/l	<u> </u>	0.01	0.01	0.01	0.01	↓							
benzo(b)fluoranthene	μg/l	0.017	0.01	0.01	0.01	0.01	1							
benzo(k)fluoranthene benzo(a)pyrene	μg/l μg/l	0.017 0.00017	0.01 0.01	0.01	0.01	0.01	 	<u> </u>						+
benzo(a)pyrene benzo(g,h,i)perylene	μg/l μg/l	0.00017	0.01	0.01	0.01	0.01							+ +	+
dibenzo(ah)anthracene	μg/l	-	0.01	0.01	0.01	0.01	1		†				† †	†
indeno(1,2,3-c,d)pyrene	μg/l	-	0.01	0.01	0.01	0.01	1							
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

		INI	PUT 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 THAMI	ES .	1.90	4.71	5.65	0.21	0.40	0.34
10	DS	RIVER THAMI	ES	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 THAMI	ES .	0.80	6.84	8.21	0.15	0.12	0.10
20	DS	RIVER THAMI	ES	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

		IN	PUT DATA									RE	SULTS (Copper)			RES	SULTS (Zinc)			F	RESULTS (Mn)			RESULTS (N	ŋ
ID	Location	Waterbody	Date	Measured Cu Concentration (dissolved) (μg Γ¹)	Measured Zn Concentration (dissolved) (μg Γ ¹)	Measured Mn Concentration (dissolved) (µg l ⁻¹)	Measured Ni Concentration (dissolved) (µg Γ¹)	pН	DOC	Ca	Site-specific PNEC Dissolved Copper (µg l ⁻¹)	d BioF	Bioavailable Copper Concentration (μg Γ	Risk Characterisation	Site-specific PNEC Dissolved Zinc (µg [⁻¹)	BioF	Bioavailable Zinc Concentration (μg I	Risk Characterisation Ratio	Site-specific PNEC Dissolved Manganese (µg l'	BioF	Bioavailable Manganese Concentration (μg I ⁻¹)	Risk Characterisation Ratio	Site-specific PNEC Dissolved Nickel (µg l ⁻¹)	Bioavailab Concentral BioF	
1 BH02		GW	10/05/2018	2.3			2.8	7.2			45.2	2 0.02	0.05	0.0		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	43.0	B 0.02	0.08	0.0	8 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	34.9	5 0.00	0.02	0.0	2 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			0.5	7	10.7	230	44.8	5 0.02	0.03	0.0	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			0.5		_					0.0		0.34	1.02			0.05			31.99	0.13	0.06 0.02
6 BH13		GW	10/05/2018	2.6			3.3	6.9						0.0		0.23	1.60			0.07			43.67	0.09	0.30 0.08 0.15 0.04
7 W DITCH		SW (Dyke)	11/05/2018	0.9			1.4	7.2	16.4		60.7			0.0		0.21	1.56			0.12			36.13	0.11	
8 S DITCH		SW (Dyke)	11/05/2018	3.7			3.3	7.7	21.5		42.6			0.0		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			1.9	7.8	4.71 3.53					0.29		0.39	3.66			0.38			12.42	0.32	0.61 0.15
10 DS 11 BH02		RIVER THAMES GW	11/05/2018 07/06/2018	3.7	3.8		1.3	7.0	3.53 6.16		12.4 28.6			0.3		0.45	1.70			0.38			10.83 19.69	0.37	0.48 0.12 0.35 0.09
11 BH02 12 BH03		GW GW	07/06/2018	1.3			1.7	7.0	6.16		28.6			0.1		0.38	1.62 0.77	0.15		0.14			19.69 43.12	0.20	0.35 0.09 0.41 0.10
13 BH05		GW	07/06/2018	0.5			0.5		6.42		28.9			0.0		0.21	0.77			0.08			22.14	0.09	0.41 0.10
14 BH08		GW	07/06/2018	0.5			0.5		7.33		31.8			0.0		0.39	0.27			0.10			24.50	0.18	0.09 0.02
15 BH12		GW	07/06/2018	0.6			0.5		10.4		40.5			0.0			0.19			0.08			29.89	0.18	0.07 0.02
16 BH13		GW	07/06/2018	1.3			4.1				43.0			0.0		0.34	1.21			0.07			43.67	0.13	0.07 0.02
17 W DITCH		SW (Dyke)	07/06/2018	4.1			1.5	7.8	17.7		32.9		0.00	0.1		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			2.6	7.7	13.9		45.0			0.0		0.19	1.55	0.14		0.31			26.12	0.15	0.40 0.10
19 US		RIVER THAMES	07/06/2018	2.9			1.6		6.84					0.1		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			1.3	8	6.06		19.6			0.1:		0.33	0.86	0.08		0.56			11.97	0.33	0.43 0.11
							-																		
													·					·							



Appendix 7 JIWG Decision Support Tool Output



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	Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs	12
Hazard ranking		Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.

It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.



Assested in Joh and Constitution & Demonstral Material

xposure Factors		Score
nticipated airborne fibre concentration - Control Limit or SALI?	<0.1 fibres/ml (4 Hr TWA) or <0.6 fibres/ml (10 minute STEL)	2
nticipated 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
ctivity type and effect on deterioration of ACMs during work	Not low intensity, significant deterioration expected	4
est description of primary host material matrix (soil/made ground)	Coarse to Fine Gravel	3
espirable fibre index for ACM - RIVM report 711701034 (2003)	Low	2
iub-total		15
xposure ranking		Medium
ombined hazard and exposure ranking	27	Medium

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Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Stage 3

Risk Assessment Outputs

Probable Licensing Status
RPE*

Non-Licensed Work
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 Liser defails: Nick Hills PRALLP	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, $\overline{\chi}$	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						
Statistical approach	Auto: One-sample t	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev	Auto: Chebychev
	1						0.50/			
Test scenario:		an lower than critical	, ,			level required:	95%		tion to test for outlie	
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 Ilser refeats: Nick Hills PBALLP	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, $\overline{\chi}$	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					
Test scenario:	Planning: is true me	an lower than critical	concentration (µ < C	c)?	Evidence	e level required:	95%	Use Normal distribu	tion to test for outlie	rs 🔻
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): PArks in alluvial soil samples Test scenario: Planning Date: 11.07.18	naphthalene (mg/kg)	acenaphthylen e (mg/kg)	acenaphthene (mg/kg)	fluorene (mg/kg)	phenanthrene (mg/kg)	anthracene (mg/kg)	fluoranthene (mg/kg)	pyrene (mg/kg)	benzo(a)anthr acene (mg/kg)	chrysene (mg/kg)	benzo(b)fluora nthene (mg/kg)	benzo(k)fluora nthene (mg/kg)	benzo(a)pyren e* (mg/kg)	indeno(1,2,3- c,d)pyrene (mg/kg)		benzo(g,h,i)pe rylene (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, \overline{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										
Distribution	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										
Test scenario:	Planning: is true me	an lower than critical	concentration (µ < 0	(c)? ▼	Evidence	e level required:	95%	Use Normal distribu	ution to test for outlie	ers 🔻							
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										
Result	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 COMMERCIALINUSTRIAL END USE CRITICAL CONCENTRATION

Client/client ret: Cory Riverside Environmental Holdings Ltd Project ret: 42166 Site ret: Riverside Energy Park Data description: Contaminant(s): PAHs in made ground samples Test scenario: Panning Date: 11.0718	naphthalene (mg/kg)	acenaphthylen e (mg/kg)	acenaphthene (mg/kg)	fluorene (mg/kg)	phenanthrene (mg/kg)	anthracene (mg/kg)	fluoranthene (mg/kg)	pyrene (mg/kg)	benzo(a)anthr acene (mg/kg)	chrysene (mg/kg)	benzo(b)fluora nthene (mg/kg)	benzo(k)fluora nthene (mg/kg)	benzo(a)pyren e* (mg/kg)	indeno(1,2,3- c,d)pyrene (mg/kg)		benzo(g,h,i)pe rylene (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, $\overline{\chi}$	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 me	ean lower than critica	l concentration (μ < 0	[c)? ▼	Evidence	e level required:	95%	Use Normal distrib	ution to test for outli	ers 🔻	Ī						
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 COMMERCIALINUSTRIAL 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: 11.07.1	>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, $\overline{\chi}$	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 m	ean lower than critica	al concentration (μ <	Cc)? ▼	Evidence	level required:	95%	Use Normal distrib	ution to test for outli	ers 🔻]				
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

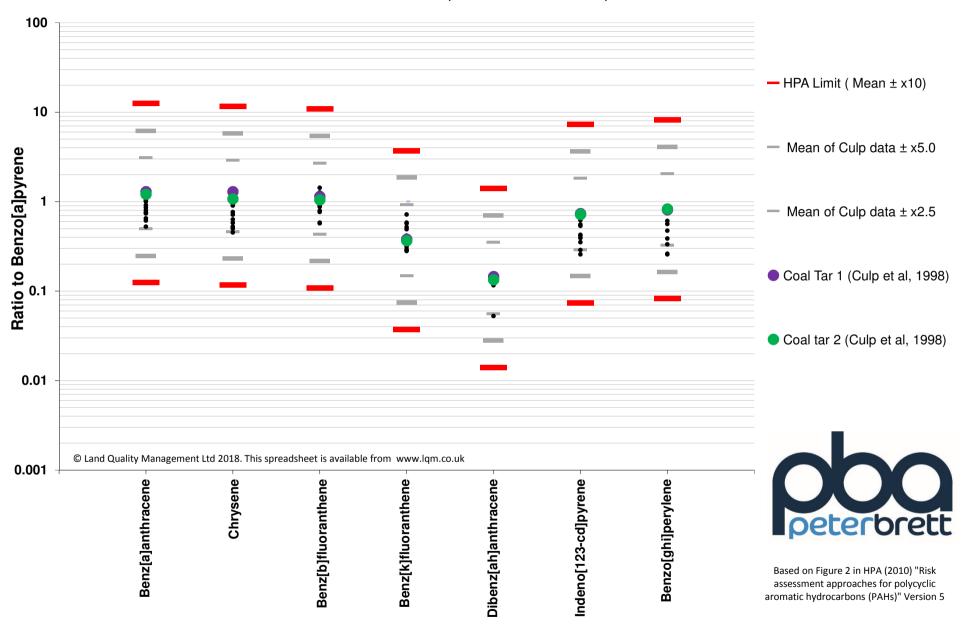
RIVERSIDE ENERGY PARK STATISTICAL ASSESSMENT SOIL SAMPLES FROM MADE GROUND TPHS COMPARED TO COMMERCIAL/INUSTRIAL END USE CRITICAL CONCENTRATION

Client/client ref: Cory Riverside Environmental Holdings Ltd	>C5 to C6	>C6 to C8	>C8 to C10	>C10 to C12	>C12 to C16	>C35 to C44	>C5 to C7	>C7 to C8	>C8 to C10	>C10 to C12	>C12 to C16	>C16 to C21	>C21 to C35	>C35 to C44
Project ref: 42166	Aliphatic	Aliphatic	Aliphatic	Aliphatic	Aliphatic	Aliphatic	Aromatic	Aromatic	Aromatic	Aromatic	Aromatic	Aromatic	Aromatic	Aromatic
Site ref: Riverside Energy Park	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Data description:														
Contaminant(s): TPHs in made ground samples Test scenario: Planning														
Date: 11.07.18														
Liser details: Nick Hills PRA LLP														
Critical concentration, C _c	3200	7800	2000	9700	59000	1600000	26000	56000	3500	16000	36000	28000	28000	28000
	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /	Commercial /
	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UL	Industrial S4UI
Notes														
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, $\overline{\chi}$	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	391.24285
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	691.21242
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-norma
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: Chebyche
	i													
Test scenario:	Planning: is true me	an lower than critica	Il concentration (μ <	Cc)? ▼	Evidence	level required:	95%	Use Normal distrib	ution to test for outli	ers 🔻				
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	-149.451177
Upper confidence limit	0.001	0.001	0.001	1.98983419	104 414710	415.891512	0.001	0.001	0.001	6.71220846	40.3601633	123.035102	347.828684	1196.4809
(on true mean concentration, μ)	0.001	0.001	0.001	1.90903419	124.414/12	415.691512	0.001	0.001	0.001	6.71220646	40.3601633	123.035102	347.020004	1196.4609
Evidence level	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
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	u < Cc	μ< Cc	u < Cc	u < Cc	u < Cc	u < Cc	u < Cc	u < Cc	u < Cc	u < Cc	u < Cc	u < Cc	u < Cc

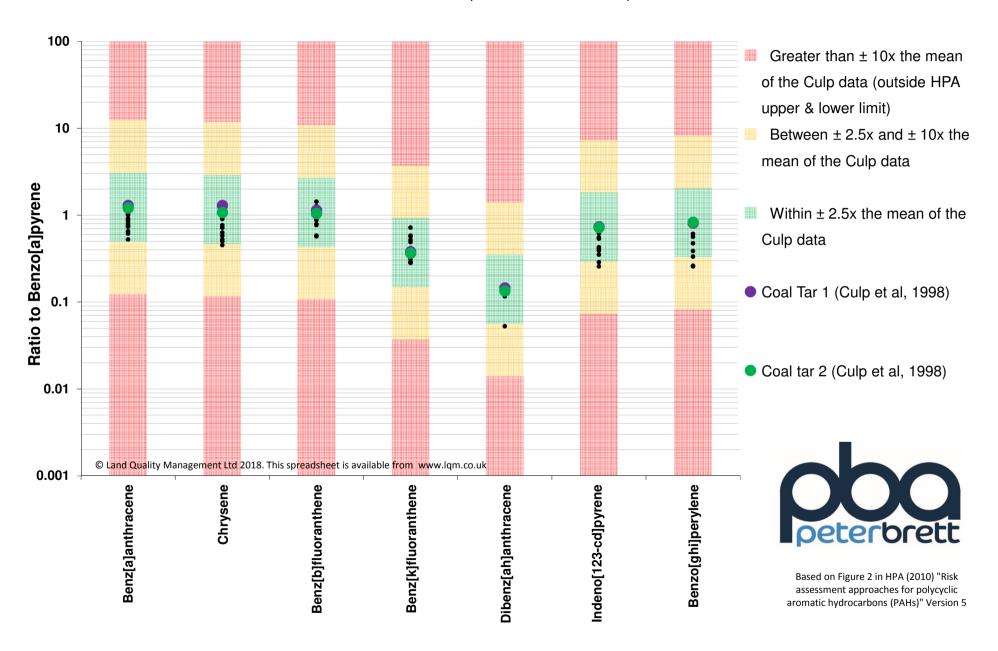


Appendix 9 PAH Profiling Plots

RIVERSIDE ENERGY PARK PAH PROFILING (<LOD RESULTS REMOVED)



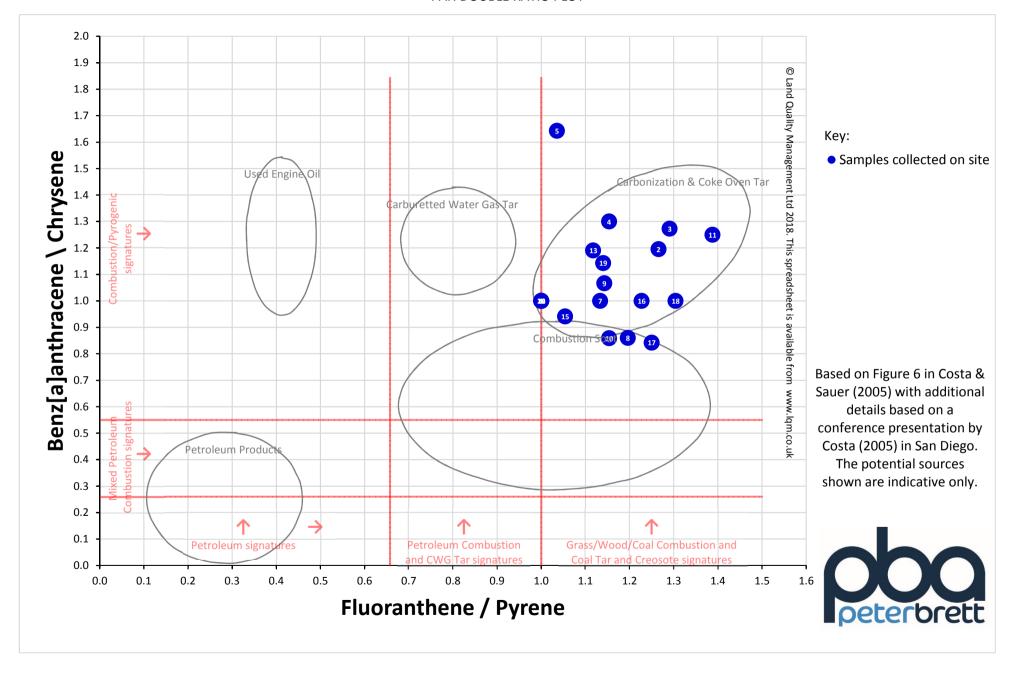
RIVERSIDE ENERGY PARK PAH PROFILING (<LOD RESULTS REMOVED)



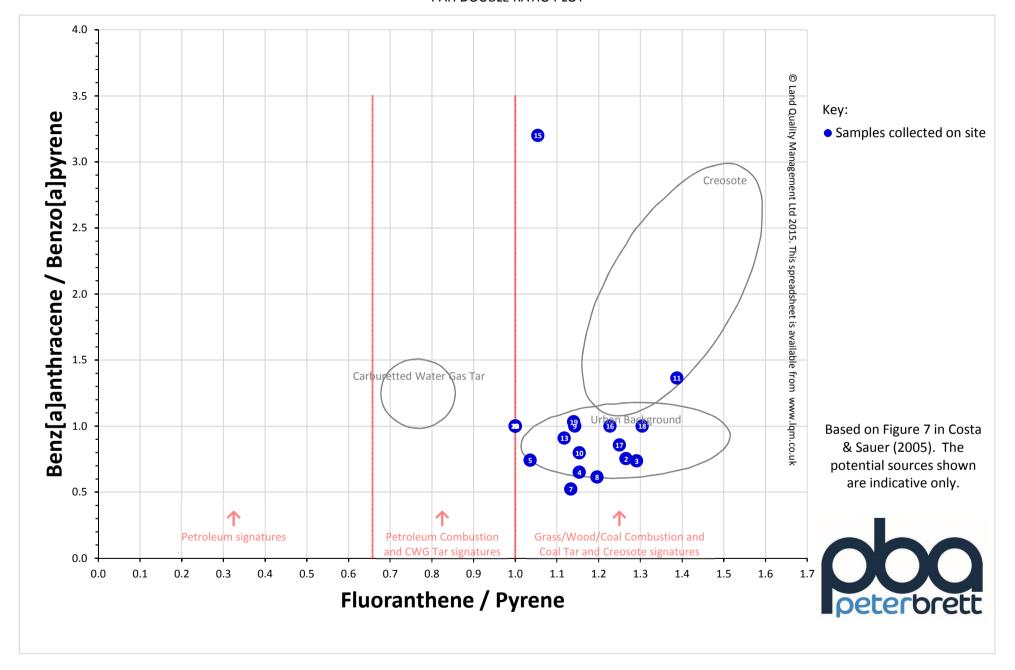


Appendix 10 PAH Double Ratio Plots

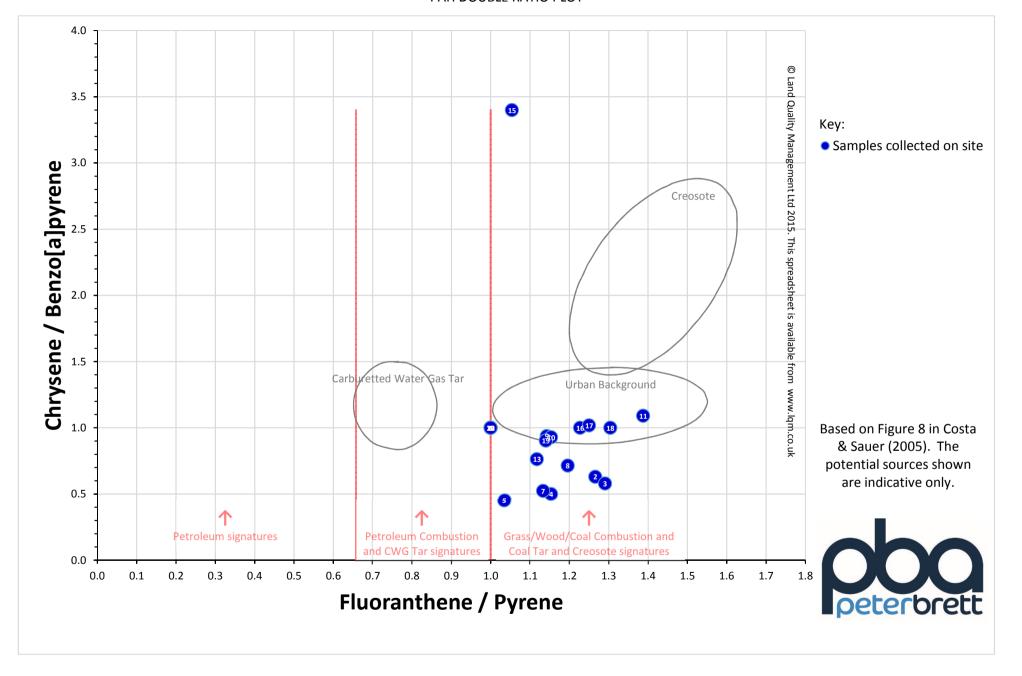
RIVERSIDE ENERGY PARK PAH DOUBLE RATIO PLOT



RIVERSIDE ENERGY PARK PAH DOUBLE RATIO PLOT



RIVERSIDE ENERGY PARK PAH DOUBLE RATIO PLOT





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.