



Geo-Environmental

GROUND INVESTIGATION REPORT

for the site at

ONE HORTON HEATH – QUOBLEIGH BREACH AND FIR TREE FARM,

LAND WEST OF HORTON HEATH,

HORTON HEATH,

HAMPSHIRE, SO30 2HH

on behalf of

EASTLEIGH BOROUGH COUNCIL



Report:	GROUND INVESTIGATION REPORT
Site:	ONE HORTON HEATH – QUOBLEIGH BREACH AND FIR TREE FARM, LAND WEST OF HORTON HEATH, HORTON HEATH, HAMPSHIRE, SO30 2HH
Client:	EASTLEIGH BOROUGH COUNCIL
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EXECUTIVE SUMMARY		
Site Details	Site Address	One Horton Heath – Quobleigh Breach and Fir Tree Farm, Land West of Horton Heath, Horton Heath, Hampshire, SO30 2HH
	National Grid Reference	448493, 117509
	Site Area	9.85Ha (approx.)
	Form of Development	The proposed development is understood to form part of a larger development scheme known as One Horton Heath. This development parcel is understood to comprise the construction of approximately 275 new mixed tenure homes and conversion of Fir Tree farmhouse to a non-residential use and the introduction of supporting non-residential uses adjacent to Fir Tree farmhouse.
Encountered Conditions	Scope of works	An intrusive investigation was required to confirm the ground and groundwater conditions and to support the development of geotechnical and geo-environmental assessments pertaining to the site in relation to the proposed development.
	Ground Conditions	The ground conditions encountered comprised a mantle of Topsoil and Made Ground (the latter within site compound area only) overlying soils inferred to be clay and sand strata of the Wittering Formation. Within the north-west of the site, more sandy layers were encountered, and clay soils were noted to be predominantly sandy clay. Although sand and sandy clay were encountered across the remainder of the site, these were encountered to a lesser extent than within the north-western portion of the site. Made Ground was encountered within the site compound area only.
	Groundwater	Groundwater was encountered within the majority of exploratory holes during the intrusive investigation works between depths of 0.30m and 19.20m bgl (16.12m and 1.67m AOD). Groundwater monitoring wells were installed within WS01, WS02, WS07, WS08, and WS10 to provide coverage across the site. Groundwater monitoring has been completed between October 2021 through to March 2022, with groundwater encountered between depths of 0.02m and 4.88m bgl (15.486m and 20.719m AOD).

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Geotechnical Considerations	Foundations	Based on the ground and groundwater conditions encountered in the exploratory holes, it is considered that conventional shallow foundations may be suitable for the proposed low rise development across areas of the site, subject to considerations of groundwater levels and constructability. On the basis of the results of the Atterberg Limit tests in conjunction with the field observations it is considered that the cohesive soils of the Wittering Formation should be classified '<i>en-masse</i>' as high volume change potential, as defined by NHBC Standards, Chapter 4.2, for which a minimum founding depth of 1.0m bgl is required. However, it is also likely that localised deepening of foundations would be required where potential signs of desiccation have been identified and for foundations constructed within the zone of influence of trees (existing, recently felled or proposed). Based on the ground conditions encountered, a net allowable bearing capacity of 90kPa is recommended for the firm to stiff clay of the Wittering Formation, this being limited to reflect the variable presence of firm clay at or below the likely founding depth. Total settlements should remain within tolerable limits for this bearing capacity. Foundations terminating in, on or loading Made Ground, or soft clay will not be suitable. Running sands and shallow groundwater were encountered primarily in the north-western portion of the site and it is possible that an alternative foundation solution may be required due to constructability of excavations and hence shallow foundations in this area of the site. Given the variability in ground conditions, it is recommended that reinforcement is included in foundations. The presence of water within excavations could significantly hinder, or potentially prevent construction of conventional foundations.
	Floor Slabs	Given the presence of shrinkable soils suspended floor slabs are recommended. The minimum void height should be determined in accordance with NHBC Standards and account for the volume change potential of the underlying soils. Preliminary assessment indicates a minimum void of 300mm but this should be verified during detailed design.
	Excavations	Due to the presence of running sands and shallow groundwater encountered during the intrusive investigation works mainly within trial pits located in the north-west of the site, excavations are likely to be unstable and will therefore need to be adequately shored with appropriate retention systems and dewatering. The presence of water may also result in softening of the clays. Groundwater is anticipated to represent a constructability and construction stage risk, which will need to be considered and, where possible, the risk reduced or controlled through appropriate design. In addition, contingency allowance should be made for encountering water within excavations and this could require a combination of dewatering/pumping and excavation support. Under no circumstances should personnel be permitted to enter excavations during construction or maintenance.



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	Pavements	Based on the in-situ and laboratory results and the soils encountered on site a preliminary equilibrium CBR of 1% is recommended for the soils present at the anticipated formation depth. On this basis, some form of engineering intervention will be required to improve the sub-grade formation and this could comprise lime:cement stabilisation, inclusion of geogrid reinforcement, increased depth of excavation and resultant increase in capping thickness, or similar options. The shallow soils should be assumed to be frost susceptible thus requiring a minimum pavement thickness of 450mm. Any hard or soft spots in the formation level may induce reflective cracking in the pavement and allowance should be made for removing hard or soft spots that may be present.
	Buried Concrete	Testing thus far indicates that buried concrete located within the Wittering Formation, whether this is shallow or at depth, should be designed in accordance with class DS-2 as defined within the BRE Special Digest 1. The pH analysis indicates that the ACEC Class corresponds to AC-2.
	Soakaways	Soakage testing was undertaken within TP01, TP04, TP08, TP15, TP17, TP22, TP24 and TP26. The water level was observed to have risen within pits TP01, TP04, TP08, TP15, TP22, and TP26 over the course of the soakage testing. There was an insufficient fall in head to calculate an infiltration rate for the tests undertaken within location TP17 and TP24 over the testing period and, as such, the tests are deemed to have failed. The results of the soakage testing indicate that the use of soakaways within the cohesive Wittering Formation would not be suitable and therefore an alternative drainage solution will need to be considered. Groundwater levels encountered during the investigation works and return monitoring visits undertaken to date have shown that groundwater is present at shallow depth beneath the site (0.02m bgl recorded at its shallowest point during the works to date). As such, the use of soakaways at the site is likely to be of limited effectiveness on the site due to the limited unsaturated zone encountered at the site. As such on-site storage and attenuation, or alternative storm water disposal options should be considered. In addition, changes in groundwater levels, such as shallower groundwater during winter months, could reduce storage capacity and performance of soakaways. This might also adversely impact the ability of any ponds to drain via infiltration to the ground and thus peak storm flow storage in detention basins and swales with subsequent attenuated discharge to ditches and surface water may be more appropriate under extension of existing riparian rights.
Environmental Considerations	Human Health	In the first instance the results of the sample analysis were compared to the Tier 1 screening criteria where available. Only 1No. result from the Made Ground encountered beneath the site compound area was noted to be above the relevant assessment criteria for Dibenz(a,h)anthracene, for a proposed end use with residential uptake. Due to the fact that Made Ground is anticipated to be present within the site compound area, the identified exceedance of Dibenz(a,h)anthracene in WS11 in the Made Ground and that only a limited number of investigation locations could be accessed within the site compound area. It is recommended that further intrusive investigation works are undertaken within the existing site compound area, once this area is no longer in use, in order to investigate and sample the Made Ground and shallow soils. Once further investigation has been undertaken and proposed site layout plans reviewed any requirement for remedial intervention and an appropriate detailed remediation strategy can be developed for this area of the site.

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		In addition, samples were submitted for laboratory testing were also screened for asbestos. No asbestos was identified within any of the samples submitted for testing. With regards to the remainder of the site, the fields located in the north and south of the site, and Fir Tree Farm and Victoria House. All of the results were noted to be below the respective assessment criteria, therefore further assessment was not considered necessary. As such, it is considered that remedial action would not be warranted within these areas of the site to protect end users of the proposed residential development assuming that the ground conditions across these areas are consistent with those encountered within the exploratory holes. If different ground conditions are encountered, the discovery strategy must be enacted such that the implications of the 'discovery' can be assessed and appropriate action identified.
	Groundwater	No pollutant linkages for groundwater have been identified in relation to the existing site condition, it is therefore considered that no risk mitigation measures are required.
	Radon Gas	No radon protection measures are required.
	Ground Gases	Spot monitoring undertaken in October 2021 through to January 2022 has identified very low concentrations of ground gases on the site. In the absence of any specific potential source of ground gas it is considered that no gas or vapour protection measures are necessary for the proposed development.
	Built Environment	On the basis of the analytical results and subject to confirmation from the relevant water utility provider it is considered that specific protection measures are unlikely to be required for potable water supply on this site. A water pipe material risk assessment has been undertaken for the site.
	Waste Disposal	Based on the initial waste categorisation testing undertaken from representative shallow soils samples across the site it is considered that the shallow soils from across the site would be considered as non-hazardous waste for the purpose of disposal.
Further Action: - Following the vacation of the site compound area further investigation works are required to recover samples of, undertake geochemical testing on and clarify the contaminative status of the Made Ground and shallow soils within this area of the site to deem their suitability for use based on the proposed development plans; - Provision of a Remediation Strategy and Verification Plan for the site compound area of the site. The scope is dependent on the outcome of the supplementary investigation as stated above; - Provision of a Materials Management Plan and a Qualified Person Declaration under the Definition of Waste Code of Practice should it be proposed to re-use materials on the site or origin or to import other material to site from other development sites; - A discovery strategy must be maintained during development such that any abnormal conditions (geotechnical or potential contamination) are identified and their potential impact on the proposed development assessed prior to determining any potential mitigation measures. <i>This Executive Summary is intended to provide a brief summary of the main findings and conclusions of the investigation. For detailed information, the reader is referred to the main report ref. GE19906-GIRv2.0-MAR22.</i>		



1.0 INTRODUCTION

1.1 General

Geo-Environmental Services Limited, “Geo-Environmental”, was instructed by Eastleigh Borough Council, “the Client”, to undertake an investigation of the geotechnical and geo-environmental factors pertaining to the proposed development at One Horton Heath – Quobleigh Breach and Fir Tree Farm, Land West of Horton Heath, Horton Heath, Hampshire, SO30 2HH (herein referred to as ‘the site’). The site’s location is presented in Figure 1.

1.2 Form of Development

The proposed development is understood to form part of a larger development scheme known as One Horton Heath. This development parcel is understood to comprise the construction of approximately 275 new mixed tenure homes and conversion of Fir Tree farmhouse to a non-residential use and the introduction of supporting non-residential uses adjacent to Fir Tree farmhouse.

1.3 Objectives

The investigation was to comprise a review of a third party desk study assessment coupled with an intrusive investigation undertaken into the geotechnical and geo-environmental conditions pertaining to the site.

The data from the geotechnical investigation was to form the basis of a preliminary interpretation with respect to foundation design, concrete specification, pavement design and excavation stability.

The objective of the investigation and subsequent assessments was to evaluate the risks posed to the proposed redevelopment, adjacent land uses and the wider environment, in the context of likely planning requirements, immediate liabilities under the Environmental Protection Act 1990 and risks posed to Controlled Waters under the Water Resources Act from the current status of the site and in line with the current redevelopment.

1.4 Standards and References

Where practicable, the ground investigation and subsequent geotechnical and environmental assessments were undertaken in accordance with the following documents and guidance.

- National Planning Policy Framework –July 2021
- Land Contamination Risk Management (LCRM), April 2021
- Model Procedures for the Management of Contaminated Land, CLR11, DEFRA and Environment Agency 2004; (withdrawn)
- Environment Agency Guidance on Requirements for Land Contamination Reports, Version 1 dated July 2005;
- BS10175:2011+A2:2017 - Investigation of Potentially Contaminated Sites - Code of Practice, BSI 2017;
- BS5930:2015+A1:2020 - Code of Practice for Site Investigations, BSI 2020;
- EN ISO 14688 Geotechnical Investigation and Testing Part 1-2002 and Part 2-2004;
- BS1377: 1990 - Soils for Civil Engineering Purposes, BSI1990;
- NHBC Standards Chapter 4.1 Land Quality - Managing Ground Conditions;
- NHBC Standards Chapter 4.2 Building Near Trees;
- CIRIA C665 – Assessing risks posed by hazardous ground gases to buildings (2007);
- NHBC 10627-R01(04)- Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present (2007);
- BS8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings;
- BS8002:2015 Code of practice for earth retaining structures.



- BRE BR240 Low-rise buildings on shrinkable clay soils: Part 1, 1993;
- BS3882:2015 Specification for topsoil and requirements for use, BSI 2015;
- BS8601:2013 Specification for subsoil and requirements or re-use, BSI 2013.

1.5 Conditions

This report does not purport to be a “Geotechnical Design Report” as defined in Clause 2.8 of Eurocode 7 (Geotechnical Design BS EN 1997-1:2004) and some of the data used to support this preliminary geotechnical assessment may not be fully compliant with that design code. It is considered possible that further detailed ground investigations could be required to facilitate the detailed geotechnical design process and should be carried out on a structure specific basis if necessary.

The desk study data where obtained/reviewed for the site is assumed to be factually correct and up to date at the point of purchase. No liability is taken for any omissions or inaccuracies in the data purchased. It must also be noted that changes to the desk study data may occur following the production of this report, Geo-Environmental accepts no liability where this subsequently affects the assessment presented herein.

The data collected from the investigations have been used to provide an interpretation of the geotechnical and/or environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained. Geo-Environmental takes no responsibility for conditions that either have not been revealed in the available records, or that occur between or under points of physical investigation, or that result from updates to desk based data utilised subsequent to that presented herein and at the time of writing which may in turn alter the presented assessment. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

It must be noted that the findings and assessment presented herein are based on the ground and groundwater conditions as encountered at the time of investigation and any associated testing and monitoring. The ground by its very nature is variable and the engineering properties of soils can vary over time, such as due to changes in soil moisture content, disturbance and similar factors. Similarly, groundwater conditions can and do vary over time. As such, if conditions are encountered which differ from those described herein, the Client or their appointed representative, e.g. contractor, must seek advice from a Geotechnical Engineer at the earliest practicable opportunity. It is possible that this could result in changes to the assessment presented herein.

It must be noted that in particular the concentrations and levels of mobile liquid and gaseous materials are likely to vary with time. The results obtained may therefore only be representative of the conditions at the time of sampling. The absence of asbestos within soil samples analysed does not guarantee the absence of asbestos within buildings, within or bonded to concrete, as discrete burials, or within the soils mass elsewhere within a site. This report should not be taken as any guarantee that a site is free of hazardous or potentially contaminative materials.

Information contained in this report is intended for the use of the Client and Geo-Environmental can take no responsibility for the use of this information by any party for uses other than that described in this report. Geo-Environmental makes no warranty or representation whatsoever express or implied with respect to the use of this information by any third party. Geo-Environmental does not indemnify the Client or any third parties against any dispute or claim arising from any finding or other result of this investigation report or any consequential losses.

Assessment criteria or other parameters developed for the evaluation of contamination on this site are based on a number of assumptions regarding exposure and toxicology. Exposure to contaminants and levels of adverse effects may therefore vary. Whilst reasonable care and expertise has been employed in the development of such criteria, no liability is accepted in this respect. Other criteria or guidance on the development of assessment criteria may be published in the future and no liability is accepted in this respect.

This report remains the property of Geo-Environmental and the Client has no rights to, or reliance upon this document or supporting documents until such time as payment has been received in full for all invoices for works

undertaken in connection with this report.



2.0 DESK STUDY

The site forms part of a larger development scheme for which the whole site has been the subject to a Desk Study Report undertaken by a third party, Hydrock, ref. HHD-HYD-XX-XX-RP-GE-0001 dated February 2019.

A brief summary of the findings deemed relevant to this phase of investigation are presented below. It should be noted that this desk study was undertaken for the Land West of Horton Heath development site as a whole, not just for the area of the site comprising the Quobleigh Breach and Fir Tree Farm parcel which Geo-Environmental were instructed to investigate. It is assumed that the third party information is factually correct, and Eastleigh Borough Council has reliance on the data included within this report.

Geo-Environmental accepts no liability for errors or omissions within the third party report, nor for implications of any updates in the background datasets since the third party desk study was undertaken. For further information reference should be made to the completed Hydrock Desk Study Report, February 2019.

Comments made in the following sections regarding possible ground conditions on the site are based purely on the review of the desk study assessment undertaken by Hydrock, February 2019 and the site walkover undertaken by Geo-Environmental.

2.1 Site Description

A site walkover was undertaken on the 6th October 2021 at which time the Quobleigh Breach and Fir Tree Farm Parcel area comprised a mixture of open fields, a site compound area (Mildren compound), and two residential properties with a road (Fir Tree Lane) running roughly east-west through the site.

The three fields comprised large open fields laid to grass. Two of these fields were located to the south of Fir Tree Lane with one located to the north. The southern two fields were separated via a mixed shrub type hedgerow that contained a number of gaps where vehicles could pass through. These fields fell away to the south and south-west with the south-western portion comprising the lowest portion of the site. The south-western portion of the southern field was noted to be wetter than the rest of the fields during the investigation works, both wetter underfoot and with standing water in places. It should be noted that the investigation works were undertaken following a period of wet weather. Both fields were bounded by hedgerows with mature trees spread along the eastern, southern and western boundaries.

The northern field was accessed via the current Mildren site compound area. This field was approximately rectangular in shape with the highest level of this field located roughly in the centre. The field sloped from the centre towards the north and the adjacent stream located off-site to the north. The field also sloped more gradually towards the south-east. A number of deep tractor tracks were noted to be present in the south-eastern and eastern portions of the site and these were noted to be holding water at the time of the investigation works. The field was bounded by hedgerows to the east, south and west with mature trees within these hedgerow boundaries to the east and south, and with a wire fence to the north.

A site compound area was located immediately to the north of Fir Tree Lane. At the time of the investigation works this was under the control of Mildren Construction and was being used for storage of soils and sand for construction works, along with a large amount of fencing, pallets, pipework and other construction materials. A site welfare area was located within the south-east of this compound area and comprised portacabins with generators and a fuel storage area. This compound area was mainly hardstanding, a mixture of concrete, aggregate and tarmac. Overhead power lines ran through the centre of the compound east to west.

Two residential properties formed part of the site, Victoria House located to the south of Fir Tree Lane and Fir Tree Farmhouse located to the north of Fir Tree Lane. Victoria House was empty at the time of the site works and appeared to have been vacated some time ago. The property (Victoria House) comprised a hardstanding driveway with two gated entrances from Fir Tree Lane and a double garage attached to the dwelling. The house was of brick



single, to two storey construction and was barn-like in appearance. The garden area of the property extended to the south, east and west of the building and was mainly laid to lawn. A single storey shed/garage type construction was located in the south-western corner of the garden area.

Fir Tree Farmhouse was occupied at the time of the investigation works and comprised a two storey brick built house with gravel driveway. A former horse arena was located in the south-east of the plot with a former tennis court located in the north-east. The surfacing of the horse arena was noted to be sand and the tennis court surface was concrete, vegetation was growing through the surfaces of both. Both of these features had been left to become somewhat overgrown. A paddock area was located to the north of the property and the grass in this area was fairly overgrown. Overhead cables ran across the northern portion of the site in an east-west direction. As the property was occupied, access for investigation was somewhat restricted.

Adjacent land uses were noted to comprise mainly farmland with a solar farm to the south. Figure 1 presents the site's location. Photographs obtained as part of the site walkover of the site area presented in Appendix A.

2.2 Geology

British Geological Survey (BGS) mapping indicated the site to be located on Wittering Formation, with some isolated areas in the vicinity of waterways (streams, rivers etc.) being underlain by River Terrace Deposits and Alluvium associated with a tributary of the River Itchen over Wittering Formation. A small parcel in the south-east of the larger site (outside of the Quobleigh Breach and Fir Tree Farm parcel) was shown to be located on Earnley Sand Formation overlying Wittering Formation.

Alluvium is generally dominated by clays and silts, often organic-rich, with varying amounts of sand and gravel.

River Terrace Deposits are drifts typically dominated by sands and gravels with interbeds of clay. Locally may contain peat or organic-rich layers. The River Terrace Deposits often comprise finer grained soils such as sandy clay, silt or clay overlying a more granular deposit.

Wittering Formation is a greyish brown laminated clay; wavy- to lenticular-bedded sand interbedded with clay in equal proportions; and fine- to medium-grained sparsely glauconitic sand.

The only superficial deposits shown on the site from the geological mapping were three relatively narrow ribbons of Alluvium in the northern, central and south-western parts of the site and along most the western part of the site, together with River Terrace Deposits along the extreme western edge of the site. Elsewhere, no superficial deposits were shown on the mapping reviewed.

The Earnley Sand Formation and Wittering Formation are part of the Bracklesham Group, which overlie the London Clay, Lambeth Group and subsequently the Chalk at greater depth.

2.3 Hydrogeology

The soils underling the site are classified as a Secondary 'A' Aquifer.

Secondary 'A' Aquifer are defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

Groundwater is anticipated to be present at shallow depth within the Alluvium and River Terrace Deposits either side of the various streams identified within the wider development site. Groundwater within the Wittering Formation is anticipated to be a similar elevation to the streams or at a higher elevation and forming a hydraulic gradient down to the groundwater levels within the superficial deposits.

2.4 Hydrology

A number of unnamed streams and ponds were identified on the wider development site. However no surface water features were noted on the Quobleigh Breach and Fir Tree Farm parcel being considered herein.

2.5 Radon

The environmental data report obtained as part of the desk study undertaken by Hydrock, February 2019, indicated that the site was not located in a Radon Affected Area and radon protection measures are not required for new buildings at the site.

2.6 Historical Mapping

Historical mapping from 1868, presented within the desk study report for the wider development site showed that the entire development site area had comprised agricultural land throughout the mapping period, with farm buildings and barns being located at Firtree Farm and Chalcroft Farm (farm hubs) as shown on the earliest map, 1868, with Firtree Farm being extended in around 2002. However, the Chalcroft farm hub area was located within the wider development area and not within the Quobleigh Breach and Fir Tree Farm parcel under consideration herein. Chalcroft Farm is located c.500m south-east of the of the Quobleigh Breach and Fir Tree Farm Parcel area.

Surrounding land uses were shown to comprise in the main agricultural fields with a solar farm to the south and residential development to the east of the site.

2.7 Generic Contamination

The historical use of the subject site for agricultural activities could have resulted in contaminated soils and/or groundwater beneath the site. Whilst Fir Tree Farm was located within this development parcel, the farm comprised a farm house used for a residential use, therefore the risks of ground contamination as a result of current and/or historical agricultural activities are considered to be low.

In addition, it is possible that the land uses with the wider surrounding area may have resulted in the deposition of airborne contaminants on the surface and shallow soils on site including heavy metals, organic pollutants such as polyaromatic hydrocarbons (PAH), petroleum hydrocarbons/oils), inorganic compounds within the shallow soils across the site.

2.8 Ground Gas Summary

Made Ground has been identified as possibly being present, most likely associated with the 'farm hub' areas and/or with developed or previously developed areas. Two residential properties were located within this development parcel therefore Made Ground may be present associated with these uses. If any identified Made Ground has an appreciable organic material content, then this may be a source of bulk ground gas. In addition, ground conditions in the west of the site have been identified as possibly comprising Alluvium, which can be an organic rich material and a natural source of ground gas.

Due to the limited potential for bulk ground gas on the Quobleigh Breach and Fir Tree Farm Parcel the risks from ground gas are considered to be low for this portion of the wider development scheme.



3.0 PRELIMINARY RISK ASSESSMENT

Based on the findings of the third party Hydrock February 2019 desk study, the following sections summarise the anticipated geotechnical and environmental factors likely to impact the site.

3.1 Preliminary Risk Assessment Summary

The Preliminary Risk Assessment (PRA) and Conceptual Site Model (CSM) developed from the information gathered as part of the third party Hydrock desk study (HHD-HYD-XX-XX-RP-GE-0001), February 2019, process identified plausible potential pollutant linkages that existed in relation to the proposed redevelopment of the wider site as a whole.

The potential pollutant linkages established within the third party Hydrock desk study were not considered to prevent development on the subject site, but could require investigation and assessment to support further characterisation, calibration of the CSM and where/if necessary to allow for a determination of a remedial strategy to reduce, remove or otherwise control any risk within the site to key receptors.

In order to progress the assessment in line with best practice guidance and to provide further characterisation of the site and refinement of the PRA and CSM, an intrusive investigation and associated testing was commissioned and included analysis of soil and groundwater (if encountered) samples for the range of potential contaminants identified within the desk study.

3.2 Geotechnical Constraints

The following factors that might impact the geotechnical condition of the site were identified as part of the third party desk study and site walkover:

- The presence of Made Ground and filled ground on site which may impact upon foundation design and construction.
- The presence of shallow groundwater and/or perched water beneath the site and potential adverse effects on constructability of foundations and for groundworks.
- The suitability of the shallow soils for the use of soakaways on the site as part of the proposed development.
- The presence of laterally and vertically variable strata and the impact these could have on further construction.
- Consideration of the volume change potential of cohesive soils underlying the site and the affect this could have on foundations.
- The suitability of shallow soils as bearing stratum for conventional foundations.
- The possible presence of aggressive ground conditions (sulphates) which may affect the foundation design and construction.
- The presence of trees and/or vegetation on site or adjacent land, which may have an impact on foundation design and construction if/where shrinkable soils are present.
- The presence of Tree Protection Orders (TPOs) which may affect the type of foundations permitted within certain areas of the site.
- The condition and suitability of the sub-grade formation for road construction.

3.3 Investigation Strategy

The investigation strategy comprised locations across the Quobleigh Breach and Fir Tree Farm Parcel area to assess ground and groundwater conditions and to support the geotechnical and geo-environmental assessment. The investigation positions were agreed with the client and included:

- Construction of 5No. cable percussion boreholes to depths of 25m bgl together with in-situ testing and sampling at regular intervals.



- The construction of 25No. machine dug trial pits to depths of between 2.5m and 3.5m bgl for general investigation purposes with 5No. of these pits being used for soakage testing.
- The construction of a further 3No. machine dug trial pits to a depth of 0.7m bgl for shallow soakage testing to inform the emerging drainage strategy.
- Undertake trial pit soakage tests in general accordance with BRE Digest 365 over a three day period.
- Construction of 10No. dynamic sampler boreholes to depths of up to 5m bgl.
- Super heavy dynamic probing at 3No. locations to inform the geotechnical assessment.
- Installation of 5No. groundwater monitoring wells to a depth of 5m to facilitate return monitoring on six occasions.
- Ground gas monitoring (spot monitoring) of well installations on 6No. occasions at 2 week intervals. Wherever possible, the monitoring would target periods of low or rapidly falling atmospheric pressure.
- Geotechnical laboratory testing to support the geotechnical assessment for foundations, ground floor construction and buried concrete design.
- Geochemical laboratory testing for a suite of commonly occurring brownfield contaminants in soil.
- Waste categorisation screening of soil samples using CATWASTE software to aid the assessment of likely waste classification of surplus soils.
- Waste Acceptance Criteria (WAC) testing on selected samples representative of soils to be removed from site for disposal as waste.

3.4 Investigation Strategy

The positioning of exploratory holes was determined on site to provide general coverage and to target specific areas whilst working within access restrictions associated with site field boundaries and current site uses. Table 3.1 sets out the investigation strategy adopted. It must be noted that the operational status of the Mildren compound caused significant constraints for access and intrusive investigation in that portion of the site.

Area of Concern	Investigation	Positions
General ground conditions	Exploratory holes located across the site, coupled with sampling and laboratory analysis.	All
Potential contamination of near surface soils	Exploratory holes located to provide coverage of the site, coupled with sampling and laboratory analysis.	All
CBR testing of shallow soils	CBR testing comprising laboratory testing (soaked CBRs).	TP15, TP17, TP21, TP24, TP25, TP26, TP34
Strength testing of underlying soils	SPTs at regular intervals within the cable percussion boreholes, and dynamic probing adjacent to a number of exploratory hole positions.	BH01-BH05, DP07, DP08, and DP10
General gassing regime and groundwater levels across site	Spot monitoring within wells located across the site.	WS01, WS02, WS07, WS08 and WS10
Permeability of underlying soils.	Soakage tests in general accordance with BRE Digest 365.	TP01, TP04, TP08, TP16, TP18, TP22, TP23 and TP26

Table 3.1 Summary of the Investigation Strategy

Soil samples were collected and placed into amber jars and cool boxes on site for transit to the office, where they were stored under chilled conditions (<4°C) prior to final transportation in cool boxes to the laboratory by their in-house courier. Both the geotechnical and contamination testing were undertaken by UKAS accredited laboratories. Contamination testing of soil samples was also undertaken in accordance with accredited MCERTS protocols. Samples were stored in temperature controlled conditions from sampling until receipt at the laboratory from which time sample preparation and storage was determined by testing requirements and in line with laboratory's protocols.



4.0 GROUND CONDITIONS

A factual record of the conditions encountered during the physical investigation of the site is presented in the following sections.

For further details of the ground conditions, reference should be made to the exploratory hole logs and in situ testing presented in Appendix B, the geotechnical testing results in Appendix C, geochemical testing results in Appendix D, soakage testing results in Appendix E and ground gas monitoring results in Appendix F.

The physical ground investigation works were undertaken from the 6th October to 12th October 2021.

Unless stated otherwise, all depths are reported as metres below ground level (m bgl).

4.1 Soils

With reference to British Geological Survey (BGS) mapping, the geology of the site was anticipated to comprise sands, silts and clays of the Wittering Formation.

The ground conditions encountered within the exploratory holes were broadly consistent with those anticipated, i.e. Topsoil and Made Ground (within site compound area only) overlying the Wittering Formation. A generalised summary of the encountered soil conditions is presented in Table 4.1.

Top (m bgl)	Base (m bgl)	Geology	Positions
0	0.25-0.45	TOPSOIL: Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets; Grass over dark brown slightly gravelly sandy CLAY with frequent roots and rootlets.	All except WS09 and WS11
0	0.80-0.90	MADE GROUND: Tarmac; Concrete with plastic membrane beneath; reddish brown slightly sandy slightly clayey medium to coarse sub angular GRAVEL with frequent brick and occasional concrete; off white reworked gravelly CHALK; light grey very gravelly CLAY with occasional brick fragments, gravel is fine to medium sub angular of chalk.	WS09 and WS11
0.25-0.90	0.60-19.20	WITTERING FORMATION (COHESIVE): Soft to stiff CLAY with varying proportions of sand, colouration is orange brown and orange and grey mottled; Stiff to very stiff dark grey CLAY with varying proportions of sand.	All
0.85-19.20	25.00+	WITTERING FORMATION (GRANULAR): Fine SAND with varying proportions of clay, colouration is orange and grey mottled and dark grey, occasional bands of orange and grey mottled CLAY were noted in some locations; Fine SAND colouration is orange, grey, reddish brown and red; Orange brown slightly gravelly clayey fine wet SAND; Orange brown slightly clayey fine to medium SAND and GRAVEL.	BH01-BH05, TP10, TP18-TP21, TP23, TP25-TP28, WS02, WS05, WS07-WS08 and WS10

Table 4.1 Summary of Ground Conditions

Hand penetrometer testing was undertaken in the cohesive soils of the Wittering formation within the windowless sample boreholes and trial pits. These results ranged from 0.5kgf/cm² to 3.6kgf/cm² (soft to very stiff).

With the exception of rootlets identified within the Topsoil on site, details of observed roots within the exploratory holes are presented in Table 4.2 below:



Location	Depth (m bgl)	Roots encountered	Geology
TP01	0.45	Occasional roots (2mm)	Wittering Formation
TP05	1.20	Occasional roots (1-2mm) and rootlets	
TP06	1.20	Occasional roots (1mm) and rootlets	
TP06	1.80	Occasional rootlets	
TP07	1.10	Occasional rootlets	
TP08	0.60	Occasional roots and rootlets	
TP10	0.80	Occasional roots (1-2mm) and rootlets	
TP11	1.10	Frequent roots (1-2mm) rootlets	
TP11	1.40	Occasional rootlets	
TP11	1.80	Rare rootlets	
TP12	0.80	Occasional rootlets	
TP12	1.30	Rare rootlets	
TP13	0.70	Frequent roots (1-2mm) and rootlets	
TP13	1.30	Rare rootlets	
TP14	0.90	Occasional roots (1-2mm) and rootlets	
TP16	1.30	Occasional roots (1-2mm) and rootlets	
TP17	0.70	Rare rootlets	
TP18	0.80	Occasional roots (1-2mm) and rootlets	
TP18	1.20	Rare rootlets	
TP19	0.60	Frequent roots (1-2mm) and rootlets	
TP20	0.60	Occasional roots (1-2mm) and rootlets	
TP21	1.20	Frequent roots (1-2mm) and rootlets	
TP23	0.60	Frequent rootlets	
TP25	1.20	Occasional rootlets	
TP26	0.50	Occasional roots (2mm) and rootlets	
TP26	1.10	Rare rootlets	
TP27	0.60	Rare rootlets	
TP27	1.25	Rare rootlets	
TP28	0.80	Occasional roots (1-2mm) and rootlets	
TP28	1.20	Rare rootlets	
WS01	0.60	Occasional roots (1-2mm)	
WS01	1.20	Frequent rootlets	
WS02	0.90	Occasional rootlets	
WS03	2.30	Occasional roots (1mm)	
WS04	1.80	Rare rootlets	
WS05	1.30	Rare roots (1-2mm)	
WS07	1.20	Occasional roots (1-2mm) and rootlets	
WS08	0.85	Occasional roots (1-2mm) and rootlets	
WS08	1.10	Rare rootlets	
WS10	0.60	Occasional roots (1-2mm) and rootlets	
WS10	1.20	Rare rootlets	

Table 4.2 Roots encountered within the exploratory holes

For more detailed descriptions of the ground conditions at specific locations, reference should be made to the exploratory hole logs presented in Appendix B.

4.2 Groundwater

Groundwater was encountered within a number of exploratory holes during the intrusive investigation works as summarised in Tables 4.3 and 4.4 below.



Location	Depth (m bgl)	Comment
TP02	Surface	Water seepage from surface
TP03	0.60, 0.90 and 1.30	Water Seepages
TP05	1.50	Seepage
TP07	0.60 and 1.60	Water ingress from land drain and seepage through side wall
TP08	1.50	Water seepage in base of pit
TP10	2.40	Water ingress and running sands from 2.40m bgl – pit unstable
TP12	1.80	Seepage
TP13	1.50	Seepage
TP14	1.60	Seepage through sidewall
TP15	1.40	Seepage. Pit terminated at 1.50m bgl due to water ingress
TP16	1.60	Seepage
TP19	0.80	Water ingress and running sands. Pit instability at 2.80m bgl
TP20	1.60	Seepage. Slow running sands and slumping below water seepage
TP21	1.80	Seepage and running sands. Pit unstable within sands
TP23	1.10	Seepage and running sands. Pit terminated at 2.00m bgl due to side wall collapse
TP25	1.80	Seepage and running sands. Slumping and pit wall collapse below water ingress
TP26	1.60	Seepage through granular layers. Pit terminated at 2.50m due to instability below water ingress
TP27	1.90	Seepage and slow running sands. Pit side wall collapsed
TP28	0.30	Water ingress from surface and seepage with slow running sands

Table 4.3 Summary of groundwater encountered within trial pits during investigation works

Location	Depth of Groundwater (m bgl)	Depth of Groundwater after 20mins (m bgl)	Comments
BH01	6.90	6.20	
BH01	11.70	2.20	Water flow - fast
BH02	6.90	6.00	
BH02	14.80	5.50	Water flow - fast
BH03	6.50	6.00	
BH04	2.90	2.60	
BH04	6.50	6.00	
BH04	19.20	6.10	Water flow - fast
BH05	2.40	1.20	
BH05	19.20	4.10	Water flow - fast
WS02	3.00	-	Running sands between 3.00m and 4.50m bgl
WS05	2.50	-	Borehole backfilled with running sands encountered at 3.00m bgl
WS11	3.00	-	Running sands at 3.00m bgl

Table 4.4 Summary of groundwater encountered within boreholes during investigation works

The groundwater encountered during the intrusive investigate works are assumed to be perched water trapped within the more granular layers of the Wittering Formation. It is possible that groundwater could be present at differing depths over time, e.g. during or following prolonged wet periods. The presence of groundwater in excavations could influence suitability and buildability of foundations, services and the like. This may mean that conventional foundations are not constructible under some conditions, such as during winter months and following heavy rainfall, or other similar scenarios where water is present. This will require careful consideration throughout the design and construction process.



Groundwater monitoring wells were installed within WS01, WS02, WS07, WS08, and WS10. Groundwater monitoring is currently ongoing and is proposed to be undertaken on eight occasions so as to cover the winter period (October to March). Water depths were recorded within the groundwater monitoring standpipes installed during monitoring visit undertaken on the 19th October, 2nd November, 16th November, 30th November, 14th December 2021, 4th January, 2nd February and 1st March 2022, with the encountered groundwater depths (m bgl) detailed in Table 4.5, and the encountered groundwater levels (m AOD) detailed in Table 4.6.

Location	Depth of Groundwater (m bgl)							
	19/10/21	02/11/21	16/11/21	30/11/21	14/12/21	04/01/22	02/02/22	01/03/22
WS01	4.88	1.06	0.97	1.51	1.13	1.03	0.64	0.60
WS02	0.84	0.48	0.33	0.50	0.23	0.28	0.41	0.49
WS07	0.91	0.45	0.29	0.80	0.17	0.10	0.47	0.48
WS08	0.90	0.11	0.77	0.92	0.41	0.25	0.81	0.32
WS10	0.45	0.02	0.14	0.02	0.05	0.04	0.25	0.05

Table 4.5 Summary of monitored groundwater depths (m bgl)

Location	Level (m AOD)	Groundwater Level (m AOD)							
		19/10/21	02/11/21	16/11/21	30/11/21	14/12/21	04/01/22	02/02/22	01/03/22
WS01	20.719	15.839	19.659	19.749	19.209	19.589	19.689	20.079	20.119
WS02	18.694	17.854	18.214	18.364	18.194	18.464	18.414	18.284	18.204
WS07	19.273	18.363	18.823	18.983	18.473	19.103	19.173	18.803	18.793
WS08	17.237	16.337	17.127	16.467	16.317	16.827	16.987	16.427	16.917
WS10	15.506	15.056	15.486	15.366	15.486	15.456	15.466	15.256	15.456

Table 4.6 Summary of monitored groundwater levels (m AOD)

It should also be noted that changes in groundwater levels do occur for a number of reasons including seasonal effects and variations in drainage. Such fluctuations may only be recorded by the measurement of the groundwater level within a series of standpipes or piezometers installed within appropriate response zones.

4.3 Obstructions

A clay land drain was encountered within TP07 at 0.60m bgl. Therefore, it is assumed that other clay land drains may be present across the site. While no other man made or natural obstructions were encountered elsewhere on the site the presence of obstructions elsewhere cannot be ruled out. The presence of land drains is indicative of potentially poor drainage conditions for the natural soils and it is likely that, where encountered in excavations for drainage, foundations and the like, they are likely to result in localised ingress of water into excavations and which might adversely affect constructability.

4.4 Geotechnical Testing

In-situ Standard Penetration Tests (SPTs) were undertaken within the cable percussive boreholes. Generally, these results ranged within the cable borehole between uncorrected SPT 'N' values of N=8 to N=>50 with a trend of increasing N value with depth. SPT results are presented on the exploratory hole logs in Appendix B with the SPT results vs depth plot presented in Figure 4.

A total of three Super Heavy Dynamic Probes (DPSH) were undertaken adjacent to the windowless sampler boreholes WS07, WS08 and WS10 to a depth of up to 5.00m bgl. Dynamic probing was planned and undertaken to aid in the description of the soil 'strength' where more granular soils were encountered.

The equivalent SPT 'N' blow counts were correlated from the dynamic probe tests. These results ranged between equivalent SPT N-value (N300) in the general range of N=0 and N=7, indicated very loose to loose granular material. A general increase in blow counts with depth was recorded.

The results of geotechnical testing undertaken as part of the ground investigation are summarised in Table 4.7, with



test results presented in Appendix C.

Parameter	Wittering Formation	
	Range	Mean
Moisture Content (%)	15-53	28
Liquid Limit (%)	33-72	50
Plastic Limit (%)	14-28	20
Plasticity Index (%)	10-50	30
Modified Plasticity Index (%)	8-49	28
Soil grading	Silty clayey SAND, slightly clayey silty SAND, clayey SAND, clayey silty very sandy GRAVEL	
Particle size distribution	Soil Fraction	%
	Gravel	0-58.3
	Sand	33.6-90.7
	Silt	4-9.9
	Clay	3.2-13.6
pH – 0-2m bgl	8.3-11.3	9.32
pH - >5m bgl	7.18-7.56	7.35
Water soluble sulphate (mg/l) – 0-2m bgl	<10-1400	156
Water soluble sulphate (mg/l) – >5m bgl	180-900	550
SPT (N)	8->50	
Soaked CBR (%)	<1-3.5	

NOTE: Modified plasticity index is defined in NHBC Standards Chapter 4.2

Table 4.7 Summary of Geotechnical Laboratory Test Results

The Modified Plasticity Indices showed the cohesive soils of the Wittering Formation to be of Low to High Volume Change Potential as defined in NHBC guidance and BRE guidance.

4.5 Chemical Analysis

In order to assess the general chemical quality of the strata encountered, samples of soils recovered from the exploratory holes were submitted for analysis for a range of potential contaminants selected on the basis of the findings of the third party Hydrock February 2019 desk study and supported by CLR publication CLR8 and Environment Agency R&D66 publication.

The testing rationale included sampling and analysis to provide a general coverage of the subject site. Testing was undertaken for a broad range of commonly occurring contaminants including metals, metalloids, inorganic compounds, speciated TPH, PAH and asbestos, and for targeted analysis including pesticides.

4.6 Ground Gases and Vapours

Return 'spot' ground gas monitoring has been undertaken on six occasions on 19th October, 2nd November, 16th November, 30th November, 14th December 2021, and 4th January 2022 as part of the investigation, within standpipes installed within window sampler boreholes WS01, WS02, WS07, WS08, and WS10. These locations were selected to provide general coverage of the site.

The spot monitoring undertaken to date has not detected the presence of methane. Carbon dioxide has been detected at concentrations in the range of 0.0% to 6.1% and oxygen in the range 10.3% to 21%. Borehole flow rates have not been recorded within any of the other monitoring wells, VOCs were recorded up to 1.0ppm during the monitoring and atmospheric pressure was recorded in the range of 994mb to 1024mb during the visits undertaken. The implications of the gas monitoring data are considered in Section 6.2 of this report.



5.0 ENGINEERING CONSIDERATIONS

Subsequent to intrusive investigation of the site and receipt of the laboratory test results, the following geotechnical assessments have been made.

5.1 Desiccation Assessment

Desiccation is a transient soil condition commonly related to seasonal fluctuation in soil moisture content in response to climatic conditions and moisture uptake from vegetation. Desiccation is often a cyclical condition which relates to soil moisture deficit which can be caused by prolonged dry weather as well as by moisture uptake by plant roots. Whilst desiccation events may be cyclical, their impact, e.g. in terms of structural deformation, can be both progressive and cumulative.

The investigation was undertaken so as to provide general site coverage, but so as to also target areas near to existing hedgerows and trees. Particular investigation locations noted to be present in close proximity to existing trees and hedgerows were TP03, TP08, TP11, TP12, TP13, TP14, TP15, TP23, WS01, WS02, and WS08, all other investigation locations were noted to be less proximal to trees. Geotechnical testing comprised moisture content testing and Atterberg testing on samples of clay soil samples recovered to depths of up to 5m bgl supplemented with strength indicator testing using a hand penetrometer testing on site on the recovered soils.

Visual evidence of desiccation was not observed in the soils recovered from the exploratory holes on site. The intrusive investigation was undertaken during late autumn (October 2021), following a period of wet weather. A number of mature trees were present along field boundaries in all directions surrounding the site along with hedgerows.

Soil moisture content test results versus depth are plotted on Figure 5. In general, the results show a trend of moisture content increasing with depth, with the lowest recorded moisture contents at a depth of 0.50m bgl. Although no clear indication of a zone of lower moisture content was identified, shallower soils were shown to have, in general a lower moisture content to soils at a depth of greater than 1m bgl. Moisture content values were generally clustered around the 20%-40% within all locations throughout the depth range tested.

Hand penetrometer test results versus depth are plotted on Figure 6 and whilst there were variations in the measured strength both with depth and between locations, the general trend was of strength increasing with depth. Granular soils and soils with a high sand component were encountered within a number of locations and these materials were therefore not suitable for hand penetrometer testing these mainly included locations within the south-west of the site.

A further assessment and summary of desiccation indicators is presented in Table 5.1. Geotechnical testing was undertaken within 28No. locations across the site. It should be noted that these are indicators of potential desiccation and whilst each method can have limitations, the assessment is based on using several lines of evidence to determine potential correlations and estimate the presence and depth of desiccation.



Exploratory Hole	Depth of Desiccation Indicator (m bgl)					
	Live Roots (including rootlets)	w	w = PL	w<PL+2	w <0.4LL	HP
BH04		-	9.00	9.00	-	-
TP01	0.45*	-	-	-	-	-
TP05	1.20*	-	-	-	-	-
TP06	1.80*	-	-	-	-	-
TP07	1.10*	-	-	-	-	-
TP08	0.60*	-	-	-	-	-
TP10	0.80*	-	-	-	-	-
TP11	1.10*, 1.40*, 1.80*	-	-	-	-	-
TP12	0.80*, 1.30*	-	-	-	-	-
TP13	0.70*, 1.30*	-	-	-	-	-
TP14	0.90*	-	-	-	-	-
TP16	1.30*	-	0.50	0.50	-	-
TP17	0.70*	-	-	-	-	-
TP18	0.80*, 1.20*	-	-	-	-	-
TP19	0.60*	-	-	0.50	-	-
TP20	0.60*	-	-	-	-	-
TP21	1.20*	-	-	-	-	-
TP23	0.60*	-	-	-	-	-
TP25	1.20*	-	-	-	-	-
TP26	0.50*	-	-	-	-	-
TP27	0.60*, 1.10*	-	-	-	-	-
TP28	0.80*, 1.20*	-	-	-	-	-
WS01	0.60*, 1.20*	-	-	-	-	-
WS02	0.90*	-	-	-	-	-
WS03	2.30*	-	-	-	-	-
WS04	1.80*	-	-	-	-	-
WS05	1.30*	-	-	-	-	-
WS07	1.20*	-	-	-	-	-
WS08	1.10*	-	-	-	-	-
WS10	0.60*, 1.20*	-	-	-	-	-

NOTE: w – as received soil moisture content; PL – plastic limit; LL – liquid limit; HP – hand penetrometer strength, * - depth of root observation not recorded thus stratum base depth is stated, PL+2 and 0.4LL factors based on research on high plasticity soils and less reliance is placed on these factors in this assessment due to reported modified plasticity index range.

Table 5.1 Soil Desiccation Depth Indicators

The roots observed in soils recovered from the exploratory holes varied in depth and diameter as summarised and described in the individual exploratory hole logs.

It is considered that the various comparison techniques applied and summarised in Table 4.6 have identified potential indication of desiccation, or the onset of such within the shallow soils in limited number of locations (between ground level and 0.50 bgl), albeit that the comparators used were based on research into desiccation of high plasticity clay soils and thus composition of the strata encountered also needs to be considered alongside potential indicators of desiccation on this site. It should be noted that the intrusive investigation was undertaken during late autumn following a period of rainfall therefore not at a time when desiccation would be prominent. Whilst a lower moisture content with regards to Plastic Limit and Plastic Limit +2% was identified at 9.00m bgl in BH04, it is considered that this is more likely to be due to stress history, subtle changes in the drainage condition or the like and desiccation solely at that depth in that borehole is not considered plausible.



It is possible that desiccation could be present at other locations and depths at different times of the year, e.g. around mid-summer to early autumn when moisture uptake by trees is likely to have been at a seasonal peak. Where cohesive soils are present foundations should extend through any root zones or potentially desiccated zones.

5.2 Conventional Foundations

Based on the ground and groundwater conditions encountered in the exploratory holes, it is considered that conventional shallow foundations may be suitable for the proposed low rise development (2 – 2.5 storey buildings) within areas of the site, subject to considerations of groundwater levels and constructability. Foundations should be taken below any, root zones, disturbed ground and desiccated soils and into or onto the medium to high strength (firm to very stiff) clay, sandy clay or sand of the Wittering Formation.

On the basis of the results of the Atterberg Limit tests in conjunction with the field observations it is considered that the cohesive soils of the Wittering Formation should be classified '*en-masse*' as high volume change potential, as defined by NHBC Standards, Chapter 4.2, for which a minimum founding depth of 1.0m bgl is required. However, it is also likely that localised deepening of foundations would be required if/where desiccation is present at the time of construction and for foundations constructed within the zone of influence of trees (up to c. 20-25m from high water demand trees) and that piled foundations could be required within 5-10m of high water demand trees, or in areas where shallow groundwater has been identified due to the potential for constructability issues.

Minimum recommended foundation depths (below existing ground level) where either desiccation or live tree roots were encountered below the already recommended 1.0m bgl minimum founding depth are presented in Table 5.2 and take into account observations, in-situ and laboratory testing results. These depths are indicative minimum depths and do not take account of tree influence depths which could require localised deepening, if/once the species of removed trees have been confirmed. If such confirmation is not possible then they should be assumed to comprise high water demand species.

Location	Minimum foundation depth (m bgl)
TP05	1.2*
TP06	1.2*
TP07	1.1*
TP11	1.1*
TP12	1.3*
TP13	1.3*
TP16	1.3*
TP18	1.2*
TP21	1.2*
TP25	1.2*
TP26	1.1*
TP27	1.25*
TP28	1.2*
WS01	1.2*
WS03	2.3*
WS04	1.8*
WS05	1.3*
WS07	1.2*
WS08	1.1*
WS10	1.2*

Note: * assumes roots are not present at the stated depth

Table 5.2 Summary of minimum foundation depths based on the presence of live roots and soil desiccation assessment



Foundations which are proposed in proximity to trees (remaining, removed or proposed) should be designed in accordance with NHBC Standards Chapter 4.2, and design approaches 4.2B and 4.2C, which incorporate the water demand of trees and the distance of the tree from the nearest portion of foundation.

Based on the ground conditions encountered, a net allowable bearing capacity of 90kPa is recommended for the firm to very stiff clay and soils of the Wittering Formation, this being limited to reflect the variability in the presence of firm clay at or below the anticipated founding depth. Total settlement should remain within tolerable limits for the recommended allowable bearing capacity. Foundations terminating in, on or loading soft clay will not be suitable.

Heave protection measures in accordance with NHBC Standards will be required where foundation depths exceed 1.50m. Preliminary assessment in line with NHBC Standards indicates a minimum thickness of 75mm for any compressible media to the sides of foundations. Foundations should be a minimum 450mm in width.

It is recommended that foundation excavations be concreted or blinded as soon after excavation as possible. Where concreting could take place the following day it is recommended that excavations are not taken to full depth overnight and that the final 0.5m of cover is only removed immediately prior to concreting.

SPTs, SHDP and hand pens indicated the cohesive soils of the Wittering Formation to generally range from soft to very stiff consistency. The firm to very stiff soils would be a suitable bearing stratum for conventional strip or trench foundations, albeit assuming that groundwater is absent at the proposed founding depth. The presence of water within excavations could significantly hinder, or potentially prevent construction of conventional foundations. Due to shallow groundwater being encountered on site during the groundwater monitoring undertaken, the foundation designer must take account of constructability of conventional foundations and additional measures which may be required to support excavations and/or control groundwater ingress into foundation excavations during construction.

Given the variability in ground conditions, it is recommended that reinforcement is included in all foundations.

5.3 Piled Foundations

On the basis of the ground conditions encountered, including instability within the shallow soils and shallow groundwater levels beneath the site, or for structures in excess of two storeys it is considered that a piled foundation solution may be required.

The construction of a piled foundation is a specialist job and the advice of a reputable contractor familiar with the type of ground and groundwater conditions encountered on this site should be sought prior to finalising the design. The actual working load for proposed piles will depend on the particular type of pile and method of installation adopted.

Preliminary load capacities calculated for various diameters, single vertically loaded CFA piles taken into the Wittering Formation are given in Table 5.3. An SPT 'N' Value vs Depth Plot for BH01, BH02, BH03, BH04 and BH05 is presented within Figure 4. The design should be used for preliminary purposes only as the actual working load is dependent on the type of pile and method of installation. Piles should be taken at least five times the pile diameter into the founding strata. Pile capacities based on individual boreholes may differ from the values set out herein.

Pile Diameter (m)	Pile Depth (m)	Working Load (kN)
0.30	8	20
	10	20
	15	40
	20	160



Pile Diameter (m)	Pile Depth (m)	Working Load (kN)
0.45	8	30
	10	40
	15	70
	20	290
0.60	8	40
	10	50
	15	100
	20	450

Table 5.3 Preliminary load capacities for CFA piles

These working loads have been calculated on the basis of the ground and groundwater conditions in the boreholes (BH01-BH05) and assume the following parameters:

- The contribution to the working load on the upper 3m has been ignored.
- A factor of safety of 3 was used on sum of the end bearing and skin friction working loads.
- No allowance has been made for additional forces acting on the pile shaft, such as negative skin friction, loading due to desiccation, heave forces or raising of ground levels.

Settlement of single piles is generally assumed to be less than 10mm where pile diameters do not exceed 600mm. For piles of larger diameter, settlement can become a critical factor.

The bearing values given are applicable to single vertically loaded piles. BRE Research indicates that where groups of piles are to be constructed at 2* pile diameter centre to centre spacing or less, the bearing value of each individual pile should be reduced by a factor of 0.8 and a calculation made to check for the factor of safety against block failure.

The piling contractor should be aware that the boreholes were cased to support the borehole during drilling and that water was added to aid the drilling process. The absence of obstructions at pile positions cannot be guaranteed. Any requirement for casing during pile construction will ultimately depend on the method of construction, i.e. casing might be required for a cast in-situ bored pile but not for a driven pile. Continuous Flight Auger (CFA) piles do not generally require casing as the auger supports the pile bore during formation and concreting. The piling contractor should ensure that the piles are constructed satisfactorily and that necking or other damage to the pile shaft does not arise during construction.

Piled foundations, any pile caps or ring beams should be designed to account for the presence of shrinkable soils and this may require the incorporation of additional reinforcement and heave protection measures such as compressible media to pile caps and ring beams or slip coats and reinforcement to the upper portion of pile shafts.

A temporary working platform would be required for the piling rig to operate on. Depending on the fill materials used to raise site levels it is possible that the general fill could also act as the temporary working platform but this would be subject to confirmation of fill type, post placement testing (e.g. Plate Load Tests), confirmation of piling rig loads (to BRE load case scenarios) and temporary working platform design.

5.4 Floor Slabs

Given the presence of shrinkable soils suspended floor slabs are recommended. The minimum void height should be determined in accordance with NHBC Standards and account for the volume change potential of the underlying soils. Preliminary assessment indicates a minimum void of 300mm but this should be verified during detailed design.



5.5 Excavations

Due to the presence of running sands and groundwater encountered during the intrusive investigation works within trial pits across the site albeit primarily within the south and south-west of the site, excavations are likely to be unstable in the short term especially where exposed to water and will therefore need to be adequately shored with appropriate retention systems and dewatering. Conventional sump pumping might not be sufficient to control water within excavations. As such, it is possible that conventional foundations might not be the best construction solution in terms of mitigating or controlling construction risk, especially if groundwater control has limited or variable effects. Dewatering should only be used with due caution as excessive pumping rates can cause internal erosion of the soil mass, which together with removal of water can result in settlement of the ground and potential adverse impact on adjacent/nearby structures and infrastructure.

In the event that excavations become unstable, the sides should either be shuttered or over-excavated to form vertical sides in order to avoid potential adverse heave on foundations at a later date. Long, deep excavations may require some support, particularly if they are to be left open for long periods.

In addition, contingency allowance should be made for encountering water within excavations and this could require a combination of dewatering/pumping and excavation support.

Ground works should be designed in such a manner to avoid personnel entry into unsupported excavations. Where this cannot be avoided, such entry should only be into supported excavations in accordance with a safe system of work and relevant legislation, e.g. Confined Spaces Regulations.

5.6 Pavements

Remoulded soaked laboratory CBR testing in conjunction with Atterberg Limit testing was undertaken within twenty five samples, from locations (TP01, TP02, TP03, TP05, TP06, TP07, TP08, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24, TP25, TP27, TP28) spread across the site so as to provide a general coverage. The results of the laboratory testing indicated a remoulded soaked CBR of between <1% and 3.5% for these samples.

Therefore, based on the in-situ and laboratory results and the soils encountered on site a preliminary equilibrium CBR of 1% is recommended for the soils present at the anticipated formation depth. On this basis, it is considered that some form of ground engineering will be required for roads to be constructed to adoptable standards and this might comprise lime:cement stabilisation, inclusion of geogrid reinforcement, increased capping thickness and the like.

The shallow soils should be assumed to be frost susceptible thus requiring a minimum pavement thickness of 450mm. Any hard or soft spots in the formation level may induce reflective cracking in the pavement and allowance should be made for removing hard or soft spots that may be present.

5.7 Sulphates

The results of the water soluble sulphate and pH analyses indicate that buried concrete at both shallow (0-2m bgl) and greater (<5m bgl) depths should be designed in accordance with Class DS-2 of BRE Special Digest 1, with an ACEC class of AC-2. The advice of this publication should be taken for the design and specification of all sub surface concrete.

5.8 Soakaways

Soakage testing was undertaken within 8No. trial pits, both shallow and at depth, the shallow tests were undertaken at depths between 0.70m and 0.80m bgl and the deeper tests in pits excavated to depths of between 1.50m and 3.30m bgl. The soakage testing was undertaken in general accordance with BRE Digest 365 'Soakaway Design'.



Soakage testing was undertaken within TP01, TP04, TP08, TP15, TP17, TP22, TP24 and TP26. The water level was observed to have risen within pits TP01, TP04, TP08, TP15, TP22, and TP26 over the course of the soakage testing. There was an insufficient fall in head to calculate an infiltration rate for the tests undertaken within location TP17 and TP24 over the testing period and, as such, the tests are deemed to have failed.

The results of the soakage testing indicate that the use of soakaways within the cohesive Wittering Formation would not be suitable and therefore an alternative drainage solution will need to be considered. The results from the soakage testing are presented within Appendix E.

In addition, groundwater levels encountered during the investigation works and return monitoring visits undertaken to date have shown that groundwater is present at shallow depth beneath the site (0.02m bgl recorded at its shallowest point during the works to date). As such, the use of soakaways at the site is likely to be of limited effectiveness on the site due to the limited unsaturated zone encountered at the site. As such on-site storage and attenuation, or alternative storm water disposal options should be considered. Storage such as crates, swales and basins must be assumed only to have a detention capability, i.e. infiltration is likely to be negligible and should not be relied upon.

Changes in groundwater levels, such as shallower groundwater during winter months, could reduce storage capacity and performance of soakaways. This might also adversely impact the ability of any ponds to drain via infiltration to the ground and thus attenuated discharge to ditches and surface water may be more appropriate under extension of existing riparian rights.



6.0 ENVIRONMENTAL CONSIDERATIONS

A Generic Quantitative Risk Assessment (GQRA) has been undertaken incorporating the results of the third party Hydrock February 2019 desk study and subsequent ground investigation undertaken, the findings of which are presented in the following sections.

Site workers involved in the preparation and construction of the development have not been considered further in this assessment as the Principal Contractor is duty bound under the current CDM Regulations to undertake their own risk assessments with respect to their employees.

6.1 Outline Risk Assessment

Given that a number of plausible pollutant linkages were identified as part of the desk study soil samples were selected to provide a general site coverage. Samples were submitted for analysis for a suite of commonly occurring contaminants including metals, metalloids, inorganic compounds, speciated TPH, PAH and asbestos, and for targeted analysis including pesticides.

The desk study identified the potential for Made Ground as possibly being present on site, most likely within the 'farm hub' areas, Fir Tree Farm. In addition, ground conditions in the west of the wider site have been identified as possibly comprising Alluvium, which can be an organic rich material and a natural source of ground gas, although this area of the site does not form part of this development parcel.

Therefore, ground gas monitoring wells were installed across the site to target these potential off-site sources as well as to provide general site coverage to monitor any migrating ground gases. Principal gases of concern are likely to include methane, carbon dioxide, oxygen and VOC together with parameters such as flow rate.

The investigation did not encounter conditions that warranted a revision of the preliminary Conceptual Site Model.

6.2 Ground Gases vs. End Users

The desk study identified the possible presence of Made Ground on site associated with the site's former agricultural use, along with the possible presence of an Alluvium soil type located to the west of this development parcel, as potential sources of hazardous ground gases. The intrusive investigation works did not identify Made Ground nor was Alluvium identified within any of the exploratory holes. As such, no sources of ground gas have been identified as being present on site.

Five ground gas monitoring standpipes (WS01, WS02, WS07, WS08, and WS10) were installed on site to depths of up to 5m bgl. These locations were selected to provide general coverage of the site. Ground gas monitoring has been undertaken across six visits, on the 19th October, 2nd November, 16th November, 30th November, 14th December 2021, and 4th January 2022.

The spot monitoring undertaken to date has not detected the presence of methane. Carbon dioxide has been detected at concentrations in the range of 0.0% to 6.1% and oxygen in the range 10.3% to 21%. Borehole flow rates have not been recorded within any of the monitoring wells, VOCs were recorded up to 1.0ppm during the monitoring and atmospheric pressure was recorded in the range of 994mb to 1024mb during the visits undertaken.

A Tier 1 Ground Gas Risk Assessment (GGRA) incorporating the results of the desk study and ground investigation was undertaken.

Recommendations on acceptable gas concentrations recorded in the ground beneath or adjacent to buildings are given in a variety of publications. For the purpose of this assessment, the results have been evaluated in terms of British Standard BS8485, '*Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*' (2019); CIRIA C665, '*Assessing risks posed by hazardous ground gases to buildings*'



(2007) and NHBC report 10627-R01(04) '*Guidance on evaluation of development proposals where methane and carbon dioxide are present*' (2007).

Assessment of the construction of the wells and the underlying ground conditions has shown that all of the response zones of the installed wells were solely within the natural soils beneath the site. Description of these natural materials has not noted the presence of organic materials or other materials that may give rise to the generation of ground gas. Assessment of likely sources of ground gas has not identified any on-site sources for the significant generation of bulk gases.

It can be seen that marginal volumes of carbon dioxide were recorded in all standpipes, with monitoring location WS02, and WS10 marginally exceeding the 5% limiting concentration for Characteristic Situation 1, on a total of 3 separate occasions. No plausible significant on-site source of carbon dioxide as a bulk gas has been established, therefore it is considered that carbon dioxide is being produced mainly via biological respiration within the soils beneath the site and as such is from low risk sources.

Groundwater levels did fluctuate over the monitoring period. During the monitoring round undertaken on 16th November 2021, groundwater was shallow and noted to be at a depth of 0.33m bgl within WS02, during the monitoring round undertaken on 30th November 2021, groundwater was noted to be at a depth of 0.50m bgl in WS02 and 0.02m bgl in WS10. The response zone of each of the wells WS02 and WS10, was from 1.00m to 4.00m bgl, and as such during these monitoring visits the response zone of each of the boreholes was below the level of groundwater. The monitoring results from these visits therefore are not considered to be representative of the ground gas conditions beneath the site.

The sole source of gas in the headspace of a standpipe within a fully submerged response zone is gases dissolved in groundwater. Whilst gases partitioning in and out of groundwater within an open soil structure will form a diffusive continuum between the surface of the groundwater and the ground surface, gases that partition out of groundwater within a sealed standpipe, above the limit of the response zone, will form an equilibrium within the standpipe.

As the gas partitions out of the groundwater to within the confined headspace, the concentrations of dissolved gases will naturally decrease within the localised groundwater confined within the headspace. Over time this will equalise through diffusive migration along concentration gradients within the groundwater. The metre of groundwater contained within the standpipe above the response zone will remain immobile during this period, and as such the equalisation will take place over an extended period of time, resulting in a reduced concentration of gas within the headspace during this period.

It is not mandatory to automatically increase the classification of a site based on elevated gas concentrations. The above assessment of the on-site gas regime has only identified low risk sources of bulk gases on site. It is considered that the source of the monitored carbon dioxide is most likely to be attributable to biological respiration within the soils beneath the site.

It is considered that carbon dioxide is primarily trapped within the soil pore spaces beneath the site. The construction of the monitoring wells could have led to the creation of initially aerobic, rapidly becoming anaerobic conditions within the monitoring wells leading to an increase in carbon dioxide on a very small scale, within the monitoring well not the soil mass, producing the elevated concentrations recorded. The majority of identified gas is likely to remain trapped in the soil pores or sorbed to soil particles and is therefore considered a low risk to buildings or occupants on the site. Therefore, it is not considered necessary to increase the classification of the site's gassing regime based on the marginal exceedances of the 5% concentration for carbon dioxide.

Based on all the lines of evidence presented above, it is considered in relation to the proposed development, that the site should be considered a Characteristic Situation 1 classification, with no requirement for gas protection measures. In addition, soil sampling on site has not identified the presence of any specific potential gas or vapour sources on site.



6.3 Soil Contamination vs. End Users

The presence of a possible contaminant does not necessarily imply that a site or area is contaminated or that there is any unacceptable risk to human health. A Preliminary Quantitative Risk Assessment has been undertaken in order to evaluate any unacceptable risks posed to human health with respect to the proposed redevelopment. It should be noted that this assessment is protective of the chronic long-term effects of contaminants, which is also likely to be protective of any possible immediate acute effects.

A quantitative risk assessment has been undertaken by comparing the results of the laboratory chemical testing of shallow soils against the ATRISKSOIL Soil Screening Values (SSVs) derived by Atkins, or against the Suitable For Use Levels (S4ULs) published by LQM (Copyright Land Quality Management Limited reproduced with permission, Publication Number S4UL3453. All rights Reserved) and Category 4 Screening Levels (C4SLs) published by DEFRA for the proposed end use. Although the C4SLs were released for Part 2A use, the associated policy companion document for the C4SLs indicated that they may also be used for planning. Although the C4SLs represent a marginally higher risk level than the SSACs (low risk rather than minimal risk) it is considered that the risk levels remain very low. Therefore, the final C4SLs are considered to be suitable to assess soils under the planning regime.

The exploratory holes were located to provide general coverage of the site in line with the proposed development. Samples were selected to provide a good coverage of the site and to specifically target shallow soils that are likely to come into contact with identified receptors. Analysis was undertaken on soil samples collected from these exploratory holes.

In the first instance the results of the sample analysis were compared to the Tier 1 screening criteria where available. A review of chemical analysis of the soil samples from the site was undertaken, and the results compared individually against the relevant GAC, SSAC or C4SL for a proposed residential end use (with home grown produce). Individual exceedances above the respective assessment criteria are summarised in Table 6.1 below:

Determinand	Tier 1 Criteria mg/kg	Depth m bgl	Concentration mg/kg	Geology
Dibenz(a,h)anthracene	S4UL (1% SOM) – 0.24	WS11 at 0.4	0.27	Made Ground

Table 6.1 Summary of exceedances against Tier 1 assessment criteria (residential with homegrown produce)

In addition, samples were submitted for laboratory testing were also screened for asbestos. No asbestos was identified within any of the samples submitted for testing.

The exceedance of Dibenz(a,h)anthracene was identified within the Made Ground located in WS11. This location was within the current site compound area in the central portion of the site. This site compound area was in use at the time of the investigation works, and as such it was only possible to locate two boreholes in this area, due to the storage of materials obstructing areas and the movement of vehicles and equipment. The majority of the site compound was covered in hardstanding, and it is understood that prior to this area being used as a compound it was an industrial type warehouse with hardstanding present. It is considered likely that Made Ground will be present beneath the existing hardstanding across the site compound area.

Due to the fact that Made Ground is anticipated to be present within the site compound area, the identified exceedance of Dibenz(a,h)anthracene in WS11 in the Made Ground and that only a limited number of investigation locations could be achieved within the site compound area, it is recommended that further site investigation works are undertaken within the existing site compound area once this area is no longer in use, in order to investigate and sample the Made Ground and shallow soils. Once further investigation has been undertaken and proposed site layout plans reviewed a detailed remediation strategy can be developed for this area of the site (subject to the findings of the supplementary investigation).

With regards to the remainder of the site, the fields located in the north and south of the site, and Fir Tree Farm and Victoria House. All of the results were noted to be below the respective assessment criteria, therefore further



assessment was not considered necessary. As such, it is considered that remedial action would not be warranted within these areas of the site to protect end users of the proposed residential development.

Should further Topsoil need to be imported onto site, for use within private gardens and soft landscaped areas of the site, prior to importation, the chemical, physical and nutritional suitability should be verified. Importation of Topsoil or subsoil from unverified or unsuitable sources would require their removal from site and replacement with suitable materials. As a matter of good practice, it is recommended that the location, approximate extent and thickness of any imported Topsoil are recorded and presented in the Validation/Verification Report to be prepared by the Environmental Consultant.

6.4 Soil Contamination vs. Adjacent land Users

Surrounding land uses were identified to comprise limited residential properties, in line with the proposed development proposals. On the basis of the testing undertaken to date, it is considered that no significant risks to adjacent land users exist.

However, short term risks to adjacent land users may arise in relation to the generation of soil derived dust and particles as fugitive emissions from the site during the construction phase. Therefore, it is recommended that dust suppression techniques, e.g. damping down exposed soils, are employed during the ground works and construction phases on site in order to minimise and manage potential nuisance issues for adjacent land users.

6.5 Soil Contamination vs. Soft Landscaping

British Standard BS3882:2015 *Specification for topsoil and requirements for use* provides assessment criteria for a number of potentially phytotoxic contaminants in terms of new planting.

The results of the chemical analysis for determinands known to pose a potential phytotoxic risk to plant growth are summarised in Table 6.2, together with the respective adopted Generic Assessment Criteria (GAC) for plant growth. The compliance criteria set out in BS3882:2015 are pH dependent and thus the GAC used relate to the pH range measured on samples recovered from the site.

Determinand	Phytotoxicity GAC (mg/kg)			GAC Exceedances
	pH <6.0	pH 6.0-7.0	pH >7.0	
Zinc	200	200	300	No
Copper	100	135	200	No
Nickel	60	75	110	No

Table 6.2 Summary of Plant Phytotoxicity Assessment

The phytotoxicity assessment did not identify any exceedance against the relevant phytotoxicity criteria. As such it is considered that no specific measures are required in this respect.

6.6 Soil Contamination vs. Built Environment

Recommendations with respect to pH and sulphate in relation to buried concrete are made in Section 5.7

The current guidance on the selection of materials for water supply pipes to be laid in contaminated land is contained in UK Water Industry Research's (UKWIR) report reference 10/WM/03/21 (re-issued 2010). However, the guidance is not mandatory and there has been concerns raised by various industry technical associations regarding the document and the methodologies proposed.

As such, a water pipe material risk assessment has been completed for the site based on the site investigation works undertaken to date and is presented within Appendix H. The assessment concludes that the use of PE would be suitable across the site, this assessment should be submitted to the utility company for their approval.



As a matter of good practice and to maximise the protection to maintenance workers, it is recommended that clean, granular backfill is used in service runs and that marker tapes are used for all buried services.

6.7 Soil Contamination vs. Groundwater

The investigation did not identify any mobile contamination and thus in the absence of a pollutant linkage, no further action is warranted.

6.8 Groundwater vs Human Health

The desk study did not identify any potential sources of highly mobile contamination on the site and the intrusive investigation works have not identified any mobile contamination within the soils analysed on the site.

Due diligence should be undertaken as a part of the site clearance and development works and if any currently unidentified potential sources of mobile contamination are identified these should then be further assessed in line with the discovery strategy for the site.

End users are unlikely to come in to contact with groundwater and thus in the absence of a plausible pollutant linkage between groundwater and end-users, no specific protection measures are considered likely to be required in this respect.

6.9 Groundwater vs Soft Landscaping

Groundwater was identified at depths as shallow as 0.02m bgl during the return groundwater monitoring to date, which is considered within the root zone of influence for the soft landscaping on the site. However, soil analysis has not identified elevated contaminants, such that could have resulted in contaminants being mobilised to the groundwater and the vegetation on and around the site showed no evidence of stress. As such, it is considered that no specific action is warranted with respect to soft landscaping.

6.10 Groundwater vs Built Environment

Protection measures for the Built Environment as discussed in Section 6.6 are considered appropriate.

6.11 Groundwater vs Controlled Waters

In the absence of any evidence of mobile contamination and elevated contaminants within soils on site it is considered that no action is required in terms of risks to Control Waters.

However, should dewatering be required as part of the proposed development then water pumped out will need to be disposed of under the appropriate duty of care and should not be discharge to any watercourses or ditches without an appropriate permission.

6.12 Waste Disposal

The following information is provided for preliminary guidance purposes, as different facilities or operators may have differing acceptance criteria and further Waste Acceptance Criteria (WAC) analysis may be required to confirm the exact classification.

The geo-chemical laboratory test results of the Made Ground and Wittering Formation have been run through the Atkins CATWASTE software and the results have not identified soils that would be considered as having non-hazardous properties in terms of potential fate as waste. A copy of these results are presented within Appendix G.



Waste Acceptance Criteria (WAC) testing was also undertaken on samples of the shallow soils on the site considered to be representative of shallow soils/soils likely for disposal on the site from TP04 at 0.4m bgl, TP15 at 0.5m bgl, TP24 at 0.2m bgl, WS01 at 0.35m bgl, and WS07 at 0.30m bgl, details are provided below:

- TP04 at 0.40m bgl (Wittering Formation) soils likely classified as 'Inert Waste';
- TP15 at 0.50m bgl (Wittering Formation) soils likely classified as 'Inert Waste';
- TP24 at 0.20m bgl (Topsoil) soils likely classified as 'Inert Waste';
- WS01 at 0.35m bgl (Wittering Formation) soils likely classified as 'Inert Waste';
- WS07 at 0.30m bgl (Topsoil) soils likely classified as 'Inert Waste'.

It must be noted that any waste classification assessment is indicative only and actual classification would depend on permit status of the final disposal facility. Once soils for disposal have been identified it is recommended that testing of these specific soils be undertaken in order to confirm their waste classification.

In accordance with the CL:AIRE Code of Practice (2011) materials are only considered waste if 'they are discarded, intended to be discarded or required to be discarded by the holder'.

The Code of Practice therefore allows soils to be reused on site where the following criteria are met:

- The re-use of the soils will not present an unacceptable or increased risk to controlled waters, the environment and human health;
- The soils are suitable both in terms of chemical and geotechnical properties for the intended use without prior treatment;
- Only the required volume is used and no more;
- There is a required use and a certainty of use not just a possibility.

In order to comply with the Code of Practice, a material management plan that confirms the above criteria are met has to be prepared. The material management plan must be reviewed by a 'Qualified Person' who then issues a declaration to the Environment Agency. Geo-Environmental can provide this service should it be required.

It should be noted there where contaminants have been identified on a site a risk assessment and remediation strategy and verification plan will need to be agreed with the regulators as part of the development of the MMP.

Where materials do not meet the required criteria, it may be possible to treat them under an environmental permit so that they may be re-used on site. In addition, where material is discarded as waste, it may still be possible to reuse the waste on site under a standard rules environmental permit or a U1 waste exemption. However, strict limits on the volumes that can be reused apply in these cases.

Under current legislation, where wastes are to be disposed of to landfill, they may, depending on their classification, require pre-treatment. Pre-treatment shall comprise a chemical, physical (including sorting), thermal or biological process. The pre-treatment is required to change the characteristics of the waste, reduce its volume, reduce its hazardous nature, and facilitate its handling and enhance its recovery.

Other materials disposed of from site as part of the development of the site may require disposal separately. All materials containing dangerous substances e.g. tar or bitumen, asbestos, mercury, hydrocarbons, PCBs and asbestos are likely to be classified as Hazardous Waste and therefore susceptible to the relevant legislative controls.



7.0 DISCOVERY STRATEGY

Whilst an intrusive investigation has been undertaken on the site, it remains possible that unexpected ground and/or groundwater conditions may be encountered during the process of construction.

Should previously undiscovered contamination or unforeseen ground conditions be encountered during construction by the ground workers, this must be reported to the Site Manager immediately in order that the Consultant is notified.

Where deemed necessary, the Consultant shall attend the site to inspect the discovery and provide recommendations on the further actions required, if any. Where necessary the regulatory authority shall be informed. Post any additional investigation or laboratory testing the results and any proposed remedial measures shall be reported to the regulatory authority or other appropriate organisation for consent, before proceeding or implementing the remedial measures.

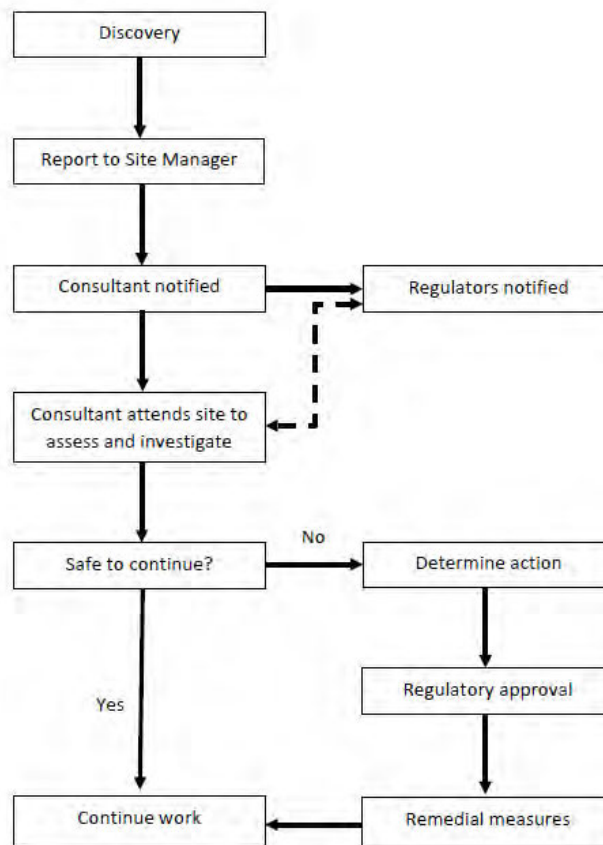
A copy of the discovery strategy must be lodged on site, and provisions made to ensure that all workers are made aware of their responsibility to observe, report, and act on any potentially suspicious, abnormal, unforeseen or contaminated ground and/or groundwater conditions they may encounter.

Depending on the type, nature and extent of any such 'discovery', it may be necessary to halt works in that location until such time as the assessment has been completed. This shall be reviewed on a 'discovery' specific basis and in conjunction with consultation with the client, other technical personnel and/or regulatory/approval organisations.

As a general guide, where such unexpected conditions are encountered the following approach is required as a minimum:

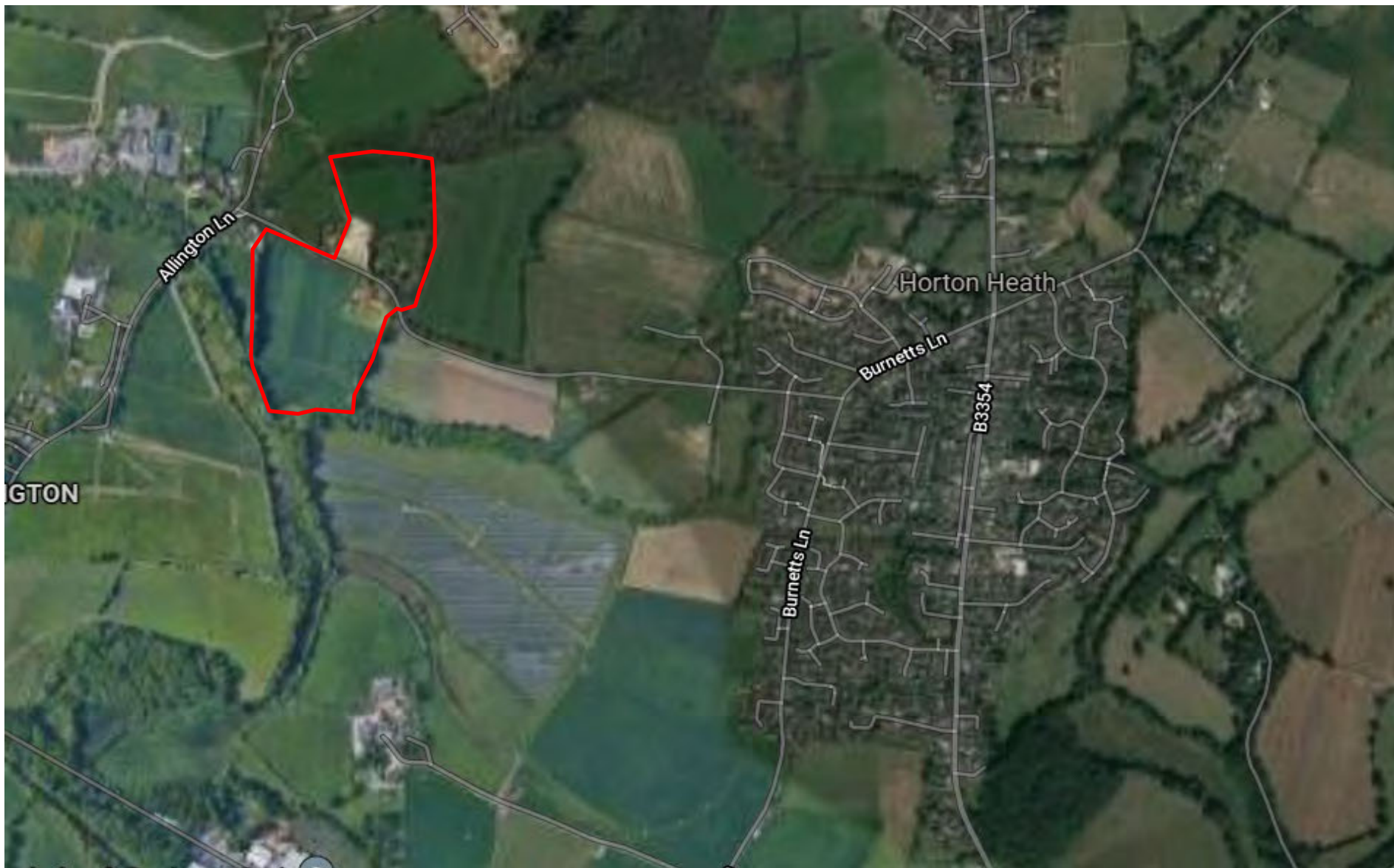
- All discoveries are to be reported to the Site Manager immediately and works at that location are to halt until further notice;
- The Site Manager is to report any such discoveries to the Client and the Consultant;
- Following notification from the Site Manager, the Consultant shall discuss the discovery with the Local Authority and/or other relevant parties and if considered necessary, arrange to meet on site to view the discovery;
- The Consultant shall attend the site to record the location, extent and nature of the discovery and implement an appropriate sampling and analysis regime, taking due account of the type and nature of the discovery, known and probable land uses in that area of the site;
- Where remedial action is required, regulatory consultation and approval will be sought;
- A record will be produced by the Consultant and held on site (with copies held by the Consultant, Client and Local Authority/other relevant organisation), detailing the discovery, assessment works undertaken, findings thereof, confirmation either of no action required or detailing the remedial action taken and validation thereof.

The process is summarised overleaf:

**Discovery Strategy Process**

Figures





Project:	One Horton Heath - Quobleigh Breach and Fir Tree Farm			Title	Site Location Plan	
Client:	Eastleigh Borough Council			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net  Geo-Environmental		
Ref No:	GE19906	Revision:	0			
Drawn:	FG	Date:	13/08/2021			
Figure:	1	Scale:	Not to Scale			



Project:	One Horton Heath - Quobleigh Breach			Title	Proposed Development Area Plan	
Client:	Eastleigh Borough Council			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net  Geo-Environmental		
Ref No:	GE19906	Revision:	0			
Drawn:	FG	Date:	13/09/2021			
Figure:	1	Scale:	Not to Scale			

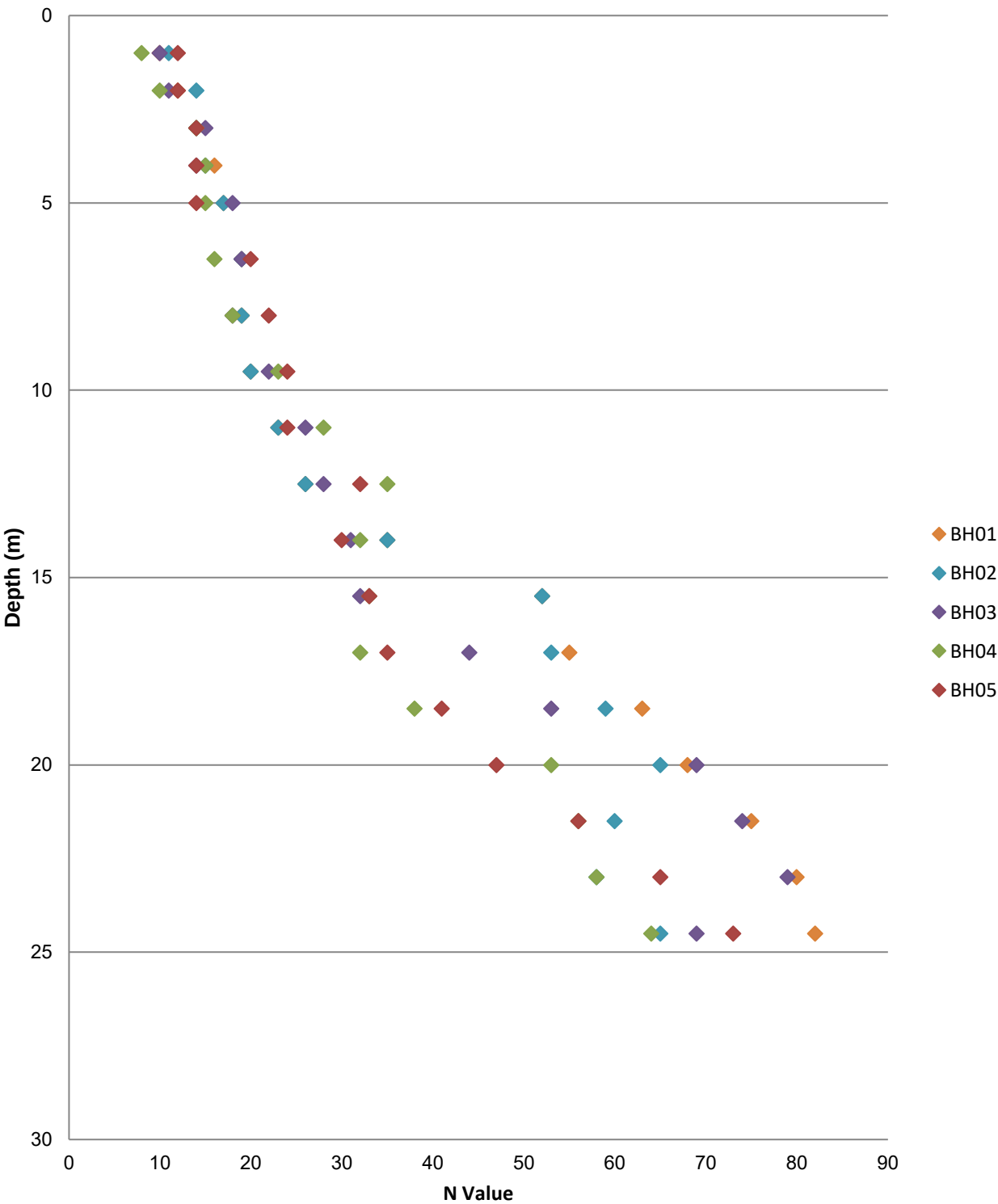
Legend Key

-  Locations By Type - CP
-  Locations By Type - TP
-  Locations By Type - WLS

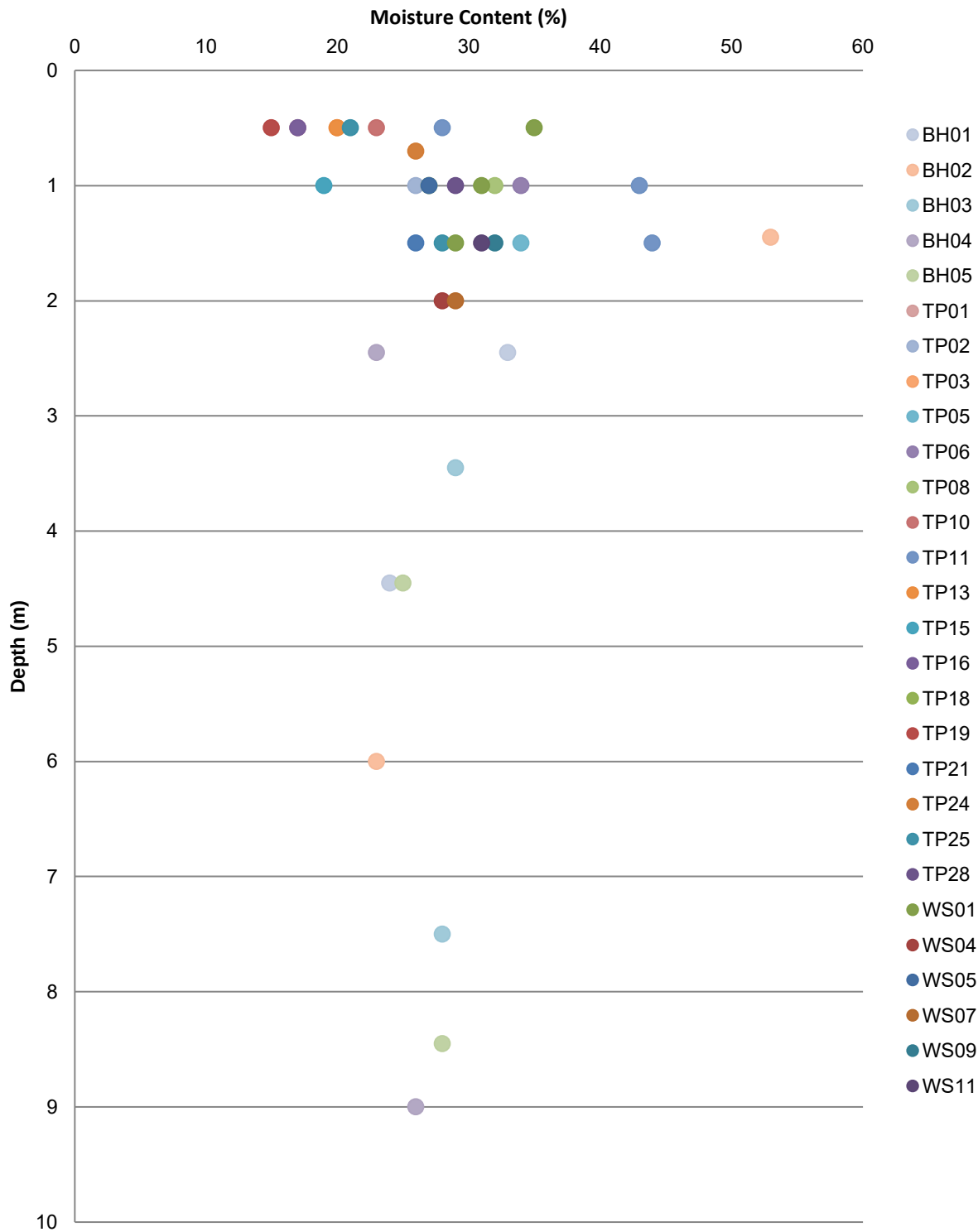


Project:	One Horton Heath - Quobleigh Breach and Fir Tree Farm			Title	Exploratory Hole Location Plan	
Client:	Eastleigh Borough Council			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net  Geo-Environmental		
Ref No:	GE19906	Revision:	1			
Drawn:	FG	Date:	21/12/2021			
Figure:	3	Scale:	Not to Scale			

 Geo-Environmental Services Limited www.gesl.net +44 (0)1273 832 972	SPT N Value Vs Depth	
Project ID: GE19906	Project Title: Quobleigh Breach and Fir Tree Farm	
Client: Eastleigh Borough Council	Location: Horton Heath	

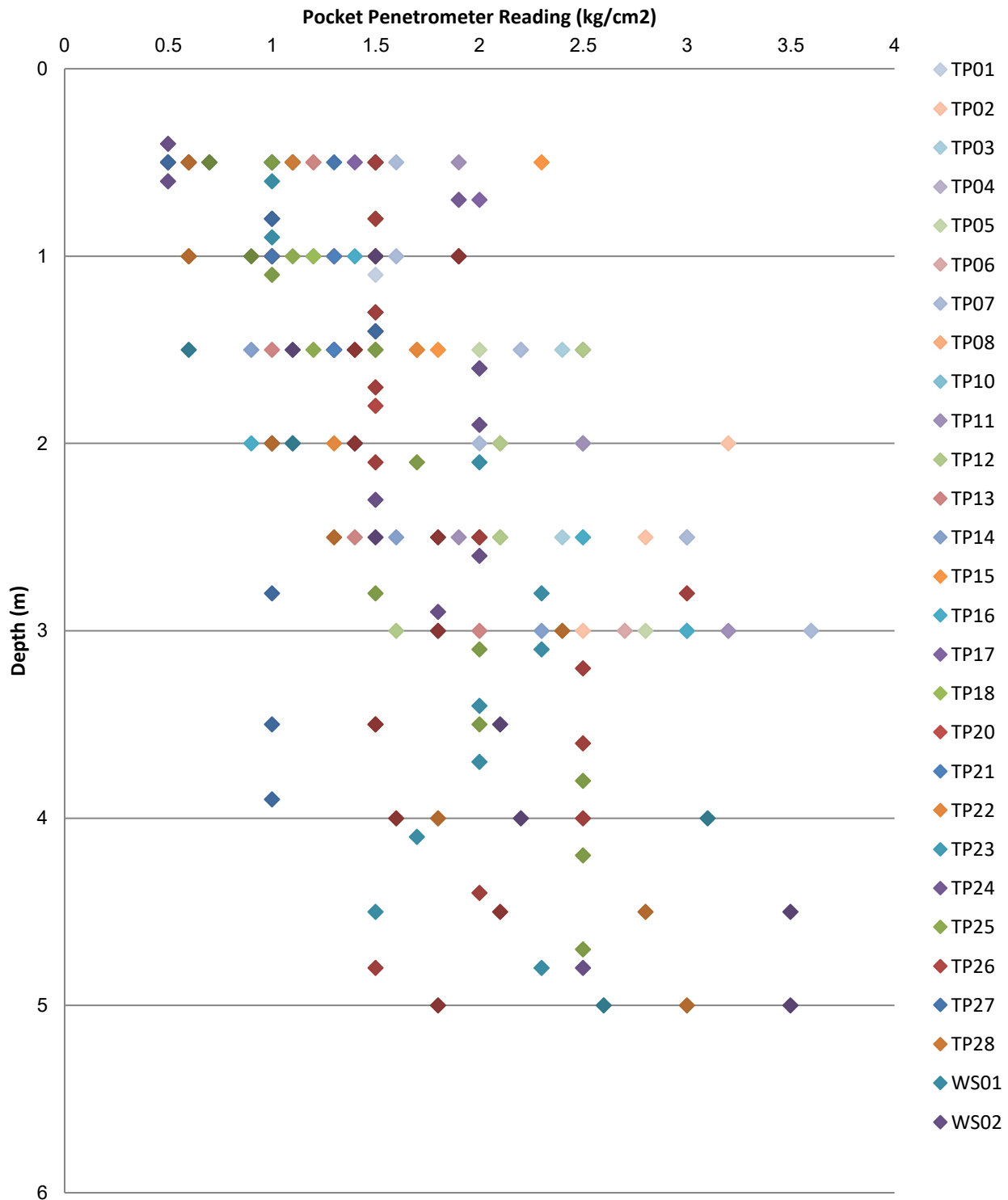


 Geo-Environmental Services Ltd www.gesl.net +44 (0)1273 832 972		Moisture Content	
Project ID: GE19906		Project Title: Quobleigh Breach and Fir Tree Farm	
Client: Eastleigh Borough Council		Location: Horton Heath	



HPEN Vs DEPTH

Project ID: GE19906	Project Title: Quobleigh Breach and Fir Tree Farm	Final Depth: 0
Client: Eastleigh Borough Council	Location: Horton Heath	Date Drilled:



APPENDIX A

Site Photographs





Plate 1 – View South west towards southern corner of site



Plate 2 – View south towards southern boundary



Plate 3 – View east along hedgerow located in south of the southern field



Plate 4 – View west across the southern field



Plate 5 – View north from southern field towards Victoria House



Plate 6 – View south along south eastern boundary



Plate 7 – View north west in north field



Plate 8 – View south from northern field towards site compound area



Plate 9 – View north towards northern site boundary



Plate 10 – View south of access from site compound to northern field



Plate 11 – View north along north western boundary



Plate 12 – View east across the northern field



Plate 13 - Photograph showing material storage in the site compound area



Plate 14 - Photograph showing the site compound area



Plate 15 - Photograph showing material storage in the site compound area



Plate 16 - Photograph showing the site compound area



Plate 17 – View south within the Fir Tree Farm garden area



Plate 18 – View south towards fir tree farm house



Plate 19 – View of the current site boundary between fir tree farm and the northern field



Plate 20 – View north showing Victoria House



Plate 21 – View north east showing Victoria House



Plate 22 – View south showing access to the southern field from Victoria House



Plate 23 - Photograph showing out building in the garden area of Victoria House

APPENDIX B

Exploratory Hole Logs & In-situ Test Results





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Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Borehole Log

Borehole No.

BH01

Sheet 1 of 3

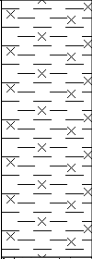
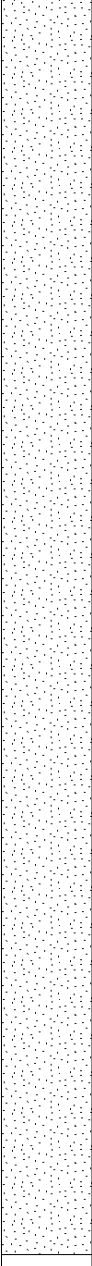
Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448565E - 117671N	Hole Type	CP
Location:	Horton Heath	Level:	19.22	Scale	1:50	Logged By	
Client:	Eastleigh Borough Council	Dates:	08/10/2021	Driller			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30 - 1.00	B		0.30	18.92		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets	
					0.50	18.72		TOPSOIL	
		1.00	S	N=10 (3,/2,2,3,3)				Firm brown silty CLAY	
								WITTERING FORMATION	
		1.45	D					Firm orangey brown silty CLAY	
		1.50 - 2.00	B		1.50	17.72		WITTERING FORMATION	1
		2.00	S	N=12 (3,/2,3,3,4)				Firm orange and grey mottled silty CLAY	
								WITTERING FORMATION	2
		2.45	D						
		2.50 - 3.00	B						
		3.00	S	N=14 (4,/3,4,3,4)					
		3.45	D		3.40	15.82		Firm to stiff grey silty CLAY	
								WITTERING FORMATION	
		4.00	S	N=16 (4,/3,4,4,5)					
		4.45	D						
		5.00	S	N=17 (5,/4,4,5,4)					
		5.45	D						
		6.00	D						
		6.50	S	N=19 (5,/4,5,4,6)					
		6.95	D						
		7.50	D		7.50	11.72		Stiff grey silty CLAY	
								WITTERING FORMATION	
		8.00	S	N=19 (4,/4,5,5,5)					
		8.45	D						
		9.00	D						
		9.50	S	N=20 (6,/4,5,5,6)					
		9.95	D						
								Continued on Next Sheet	10

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		11.70	2.20				
		6.90	6.20				

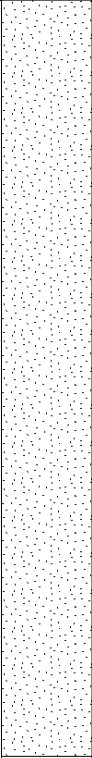


 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. BH01 Sheet 2 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448565E - 117671N		Hole Type CP	
Location: Horton Heath				Level: 19.22		Scale 1:50	
Client: Eastleigh Borough Council				Dates: 08/10/2021		Logged By Driller	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	D	N=23 (5,/4,6,7,6)	11.70	7.52	 Stiff grey silty CLAY WITTERING FORMATION	11	
		11.00	S						
		11.45	D				N=26 (7,/5,6,7,8)	 Coarse grey SAND WITTERING FORMATION	12
		12.00	D						
		12.50	S	N=35 (9,/7,8,9,11)				13	
		12.95	D						
		13.50	D				N=52 (11,/9,12,14,17)	14	
		14.00	S						
		14.45	D	N=55 (12,/10,12,15,18)				15	
		15.00	D						
		15.50	S				N=63 (14,/12,15,17,19)	16	
		15.95	D						
		16.50	D	N=68 (10,/13,16,19,20)				17	
		17.00	S						
		17.45	D					18	
		18.00	D						
		18.50	S					19	
		18.95	D						
		19.50	D					20	
		20.00	S						
Continued on Next Sheet									

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		11.70 6.90	2.20 6.20				

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. BH01 Sheet 3 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448565E - 117671N		Hole Type CP	
Location: Horton Heath				Level: 19.22		Scale 1:50	
Client: Eastleigh Borough Council				Dates: 08/10/2021		Logged By Driller	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		20.45	D					Coarse grey SAND WITTERING FORMATION		
		21.00	D							21
		21.50	S	N=75 (12,/14,18,21,22)						
		21.95	D							22
		22.50	D							
		23.00	S	N=80 (13,/15,19,22,24)						23
		23.45	D							
		24.00	D							24
		24.50	S	N=82 (15,/17,19,21,25)						
		24.95	D							25
				25.00	-5.78		End of Borehole at 25.00m			
								26		
								27		
								28		
								29		
								30		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
		11.70 6.90	2.20 6.20			





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Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Borehole Log

Borehole No.

BH02

Sheet 1 of 3

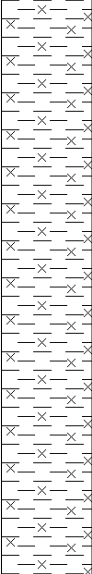
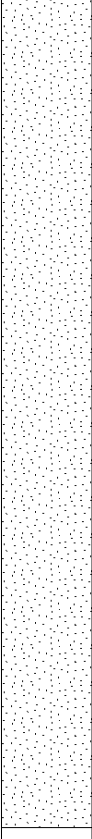
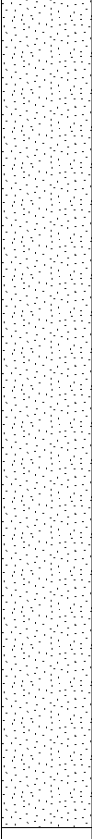
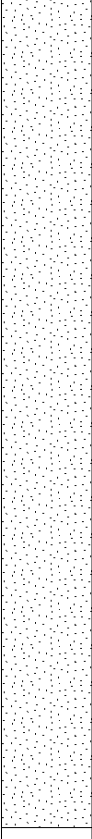
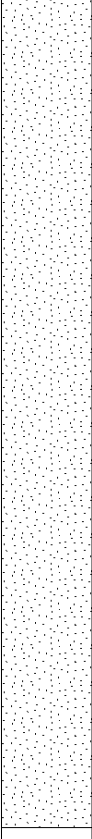
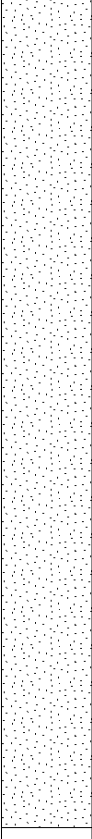
Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448541E - 117602N	Hole Type	CP
Location:	Horton Heath	Level:	19.07	Scale	1:50	Logged By	Driller
Client:	Eastleigh Borough Council	Dates:	07/10/2021				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50 - 1.00	B		0.40	18.67		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
		1.00	S	N=11 (3,/2,3,3,3)				Soft to firm brown silty CLAY WITTERING FORMATION	1
		1.45	D						
		1.50 - 2.00	B						
		2.00	S	N=14 (3,/3,4,3,4)					2
		2.45	D		2.40	16.67		Firm to stiff orange and grey silty CLAY WITTERING FORMATION	
		2.50 - 3.00	B						
		3.00	S	N=14 (4,/3,3,4,4)					3
		3.45	D						
		4.00	S	N=15 (5,/4,3,4,4)					4
		4.45	D						
		5.00	S	N=17 (4,/3,5,4,5)	4.80	14.27		Stiff grey silty CLAY WITTERING FORMATION	5
		5.45	D						
		6.00	D						6
		6.50	S	N=19 (3,/4,5,4,6)					
		6.95	D						7
		7.50	D						
		8.00	S	N=19 (4,/4,5,5,5)					8
		8.45	D						
		9.00	D						9
		9.50	S	N=20 (6,/4,5,5,6)					
		9.95	D						10
								Continued on Next Sheet	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		14.80	5.50				
		6.90	6.00				

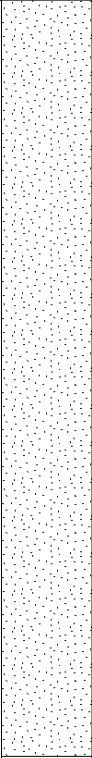


 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log			Borehole No. BH02 Sheet 2 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448541E - 117602N		Hole Type CP
Location: Horton Heath				Level: 19.07		Scale 1:50
Client: Eastleigh Borough Council				Dates: 07/10/2021		Logged By Driller

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	D	N=23 (5,/4,6,7,6)	10.60	8.47	 Stiff grey silty CLAY WITTERING FORMATION	11	
		11.00	S						
		11.45	D						
		12.00	D	N=26 (7,/5,6,7,8)	14.50	4.57	 Stiff to hard grey silty CLAY WITTERING FORMATION	12	
		12.50	S						
		12.95	D						
		13.50	D	N=35 (9,/7,8,9,11)	14.50	4.57	 Coarse grey SAND WITTERING FORMATION	13	
		14.00	S						
		14.45	D						
		15.00	D	N=52 (11,/9,12,14,17)	14.50	4.57	 Coarse grey SAND WITTERING FORMATION	14	
		15.50	S						
		15.95	D						
		16.50	D	N=53 (12,/10,12,14,17)	14.50	4.57	 Coarse grey SAND WITTERING FORMATION	15	
		17.00	S						
		17.45	D						
		18.00	D	N=59 (13,/11,14,16,18)	14.50	4.57	 Coarse grey SAND WITTERING FORMATION	16	
		18.50	S						
		18.95	D						
		19.50	D	N=65 (14,/12,15,18,20)	14.50	4.57	 Coarse grey SAND WITTERING FORMATION	17	
		20.00	S						
Continued on Next Sheet									20

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		14.80 6.90	5.50 6.00				

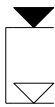
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. BH02 Sheet 3 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448541E - 117602N		Hole Type CP	
Location: Horton Heath				Level: 19.07		Scale 1:50	
Client: Eastleigh Borough Council				Dates: 07/10/2021		Logged By Driller	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.45	D					Coarse grey SAND WITTERING FORMATION	
		21.00	D						21
		21.50	S	N=60 (13,/12,14,16,18)					
		21.95	D						22
		22.50	D						
		23.00	S	N=58 (12,/11,13,15,19)					23
		23.45	D						
		24.00	D						24
		24.50	S	N=65 (14,/12,15,17,21)					
		24.95	D		25.00	-5.93			
							End of Borehole at 25.00m		
								26	
								27	
								28	
								29	
								30	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
		14.80 6.90	5.50 6.00			



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log			Borehole No. BH03 Sheet 1 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448386E - 117515N		Hole Type CP
Location: Horton Heath				Level: 17.28		Scale 1:50
Client: Eastleigh Borough Council				Dates: 06/10/2021		Logged By Driller

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30 - 1.00	B		0.30	16.98	 Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL		
					0.50	16.78			 Firm brown silty CLAY WITTERING FORMATION
			1.00	S	N=10 (3,/2,2,3,3)			 Firm brown gravelly CLAY. Gravel is fine to medium sub-angular to sub-rounded of flint WITTERING FORMATION	1
			1.45	D				 Soft to firm brown silty CLAY WITTERING FORMATION	
			1.50 - 2.00	B					
			2.00	S	N=11 (4,/3,2,3,3)			 Firm to stiff brown and grey mottled CLAY WITTERING FORMATION	2
			2.45	D					
			2.50 - 3.00	B				 Firm to stiff grey silty CLAY WITTERING FORMATION	
			3.00	S	N=15 (2,/3,4,4,4)				
			3.45	D					
			4.00	S	N=14 (3,/4,3,4,3)				
			4.45	D					
			5.00	S	N=18 (3,/4,4,5,5)	4.60	12.68		
			5.45	D					
			6.00	D					
			6.50	S	N=19 (4,/3,5,6,5)				
			6.95	D					
			7.50	D					
			8.00	S	N=18 (5,/4,4,5,5)				
			8.45	D					
		9.00	D						
		9.50	S	N=22 (6,/5,5,6,6)					
		9.95	D						
Continued on Next Sheet								10	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
		6.50	6.00			



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. BH03 Sheet 2 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448386E - 117515N		Hole Type CP	
Location: Horton Heath				Level: 17.28		Scale 1:50	
Client: Eastleigh Borough Council				Dates: 06/10/2021		Logged By Driller	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	D	N=26 (7,/6,6,7,7)	11.50	5.78		Stiff grey silty CLAY WITTERING FORMATION	11
		11.00	S						
		11.45	D						
		12.00	D						
		12.50	S						
		12.95	D						
		13.50	D						
		14.00	S						
		14.45	D						
		15.00	D						
		15.50	S						
		15.95	D						
		16.50	D						
		17.00	S						
		17.45	D						
		18.00	D						
		18.50	S						
		18.95	D						
		19.50	D						
		20.00	S	N=69 (15,/12,16,19,22)	15.70	1.58		Dense grey SAND WITTERING FORMATION	20
Continued on Next Sheet									

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		6.50	6.00				



www.gesl.net

Borehole No.

BH03

Sheet 3 of 3

Project Name:

Quobleigh Breach and Fir Tree Farm

Project No.	GE19906
-------------	---------

Co-ords:

448386E - 117515N

Hole Type
CP

Location:

Horton Heath

Level:

17.28

Scale
1:50

Client:

Eastleigh Borough Council

Dates:

06/10/2021

Logged By
Driller





Geo-Environmental

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL
www.gesl.net

Borehole Log

Borehole No.

BH04

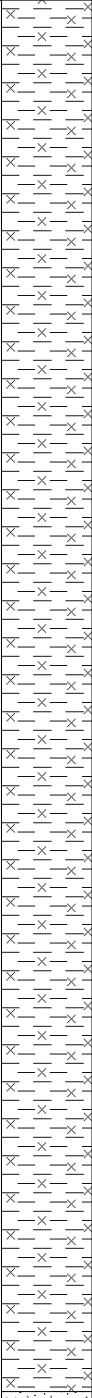
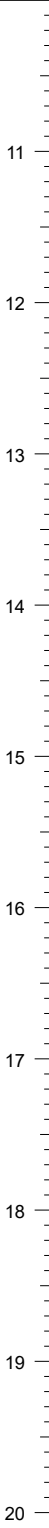
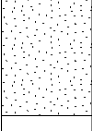
Sheet 1 of 3

Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448507E - 117428N	Hole Type	CP
Location:	Horton Heath	Level:	20.87	Scale	1:50	Logged By	
Client:	Eastleigh Borough Council	Dates:	11/10/2021	Driller			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50 - 1.00	B	N=8 (3,/2,2,2,2)	0.25	20.62		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	1
		1.00	S					Firm brown silty CLAY WITTERING FORMATION	
		1.45	D						
		1.50 - 2.00	B	N=10 (3,/2,3,2,3)	1.50	19.37		Firm to stiff orangey brown gravelly CLAY. Gravel is fine to medium sub-angular to sub-rounded of flint	2
		2.00	S			18.97		Brown clayey wet SAND WITTERING FORMATION	
		2.45	D						
		2.50 - 3.00	B	N=14 (3,/3,3,4,4)	3.10	17.77		Firm to stiff grey silty CLAY WITTERING FORMATION	3
		3.00	S						
		3.45	D						
		3.50 - 4.00	B	N=15 (4,/3,3,4,5)	4.30	16.57		Stiff grey silty CLAY WITTERING FORMATION	4
		4.00	S						
		4.45	D						
		5.00	S	N=15 (4,/3,4,3,5)	6.80	14.07		Stiff to hard grey silty CLAY WITTERING FORMATION	5
		5.45	D						
		6.00	D						
		6.50	S	N=16 (5,/4,3,4,5)					6
		6.95	D						
		7.50	D						
		8.00	S	N=18 (5,/4,4,5,5)					7
		8.45	D						
		9.00	D						
		9.50	S	N=23 (6,/5,6,5,7)					8
		9.95	D						
Continued on Next Sheet									10

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.90	2.60				
		19.20	6.10				
		6.50	6.00				

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. BH04 Sheet 2 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448507E - 117428N		Hole Type CP	
Location: Horton Heath				Level: 20.87		Scale 1:50	
Client: Eastleigh Borough Council				Dates: 11/10/2021		Logged By Driller	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description								
		Depth (m)	Type	Results												
		10.50	D	N=28 (8,/6,7,7,8)	19.20	1.67		Stiff to hard grey silty CLAY WITTERING FORMATION								
		11.00	S													
		11.45	D													
		12.00	D													
		12.50	S													
		12.95	D													
		13.50	D													
		14.00	S													
		14.45	D													
		15.00	D													
		15.50	S													
		15.95	D													
		16.50	D													
		17.00	S													
		17.45	D													
		18.00	D													
		18.50	S													
		18.95	D													
				19.50						D	N=38 (8,/7,9,10,12)				Coarse grey SAND WITTERING FORMATION	
				20.00						S		N=53 (9,/10,12,14,17)				
Continued on Next Sheet									20							

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.90	2.60				
		19.20	6.10				
		6.50	6.00				



Geo-Environmental

Unit 7, Danworth Farm
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Borehole Log

Borehole No.

BH04

Sheet 3 of 3

Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448507E - 117428N	Hole Type	CP
Location:	Horton Heath	Level:	20.87	Scale	1:50	Logged By	Driller
Client:	Eastleigh Borough Council	Dates:	11/10/2021				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.45	D					Coarse grey SAND WITTERING FORMATION	
		21.00	D						21
		21.50	S	N=56 (10,/9,13,15,19)					
		21.95	D						22
		22.50	D						
		23.00	S	N=58 (12,/10,12,16,20)					23
		23.45	D						
		24.00	D						24
		24.50	S	N=64 (13,/11,13,18,22)					
					25.00	-4.13		End of Borehole at 25.00m	25
									26
									27
									28
									29
									30

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.90	2.60				
		19.20	6.10				
		6.50	6.00				





Geo-Environmental

Unit 7, Danworth Farm
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Borehole Log

Borehole No.

BH05

Sheet 1 of 3

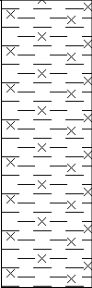
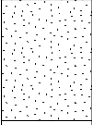
Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448489E - 117263N	Hole Type	CP
Location:	Horton Heath	Level:	18.16	Scale	1:50	Logged By	Driller
Client:	Eastleigh Borough Council	Dates:	06/10/2021				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.25			0.25	17.91		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets	
		0.50			0.50	17.66		TOPSOIL	
		1.00	B	N=12 (3,/2,3,3,4)				Firm brown silty CLAY	
		1.45	S					WITTERING FORMATION	
		1.50 - 2.00	D		1.50	16.66		Firm brown gravelly CLAY. Gravel is fine to medium sub-angular to sub-rounded of flint	1
		2.00	S	N=12 (3,/3,3,3,3)				WITTERING FORMATION	
		2.45	D					Soft to firm brown and grey mottled silty CLAY	
		2.50 - 3.00	B		2.50	15.66		WITTERING FORMATION	2
		3.00	S	N=14 (4,/3,4,3,4)				Firm grey silty sandy CLAY with bands of SAND	
		3.45	D					WITTERING FORMATION	
		4.00	S	N=14 (3,/3,4,3,4)	3.80	14.36		Firm to stiff grey silty CLAY with bands of SAND	3
		4.45	D					WITTERING FORMATION	
		5.00	S	N=14 (4,/3,3,4,4)					4
		5.45	D						
		6.00	D		5.80	12.36		Stiff grey silty CLAY	5
		6.50	S	N=20 (4,/3,4,6,7)				WITTERING FORMATION	
		6.95	D						6
		7.50	D						
		8.00	S	N=22 (5,/4,6,5,7)					7
		8.45	D						
		9.00	D						8
		9.50	S	N=24 (6,/5,6,6,7)					
		9.95	D						9
									10
								Continued on Next Sheet	

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.40	1.20				
		19.20	4.10				

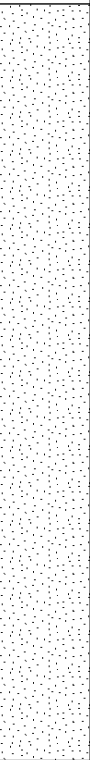


 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. BH05 Sheet 2 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448489E - 117263N		Hole Type CP	
Location: Horton Heath				Level: 18.16		Scale 1:50	
Client: Eastleigh Borough Council				Dates: 06/10/2021		Logged By Driller	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	D	N=24 (7,6,5,7,6)	11.90	6.26		Stiff grey silty CLAY WITTERING FORMATION	11
		11.00	S						
		11.45	D						
		12.00	D						
		12.50	S						
		12.95	D						
		13.50	D						
		14.00	S						
		14.45	D						
		15.00	D						
		15.50	S						
		15.95	D						
		16.50	D						
		17.00	S						
		17.45	D						
		18.00	D						
		18.50	S						
		18.95	D						
		19.50	D	N=41 (10,8,9,10,14)	19.20	-1.04		Dense grey SAND WITTERING FORMATION	19
		20.00	S						N=47 (11,9,10,12,16)
Continued on Next Sheet									

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.40	1.20				
		19.20	4.10				

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. BH05 Sheet 3 of 3	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448489E - 117263N		Hole Type CP	
Location: Horton Heath				Level: 18.16		Scale 1:50	
Client: Eastleigh Borough Council				Dates: 06/10/2021		Logged By Driller	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		20.45	D	N=56 (12,/10,12,15,19)	25.00	-6.84		Dense grey SAND WITTERING FORMATION		
		21.00	D							21
		21.50	S							
		21.95	D							22
		22.50	D							
		23.00	S	N=65 (11,/12,15,18,20)						23
		23.45	D							
		24.00	D							24
		24.50	S	N=73 (13,/15,17,19,22)						
		24.95	D							25
							End of Borehole at 25.00m			
								26		
								27		
								28		
								29		
								30		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
		2.40 19.20	1.20 4.10				



Unit 7, Danworth Farm
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Trial Pit Log

Trial Pit No

TP01

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448501.29 - 117635.22
Level: 18.51

Date
06/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.20

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.25	18.26		Grass dark brown slightly sandy slightly silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50	B		0.45	18.06		Firm orange brown slightly sandy CLAY with occasional roots(2mm). Sand is fine WITTERING FORMATION	
	0.50	D					Firm orange brown sandy gravelly CLAY. Sand is fine and gravel is fine to medium sub angular to sub rounded of flint WITTERING FORMATION	
	1.00	D						1
	1.10	PP	PP=1.5kg/cm2	1.10	17.40		Firm to stiff orange and grey mottled CLAY WITTERING FORMATION	
	1.50	D						
	1.50	PP	PP=2.2kg/cm2	1.60	16.90		Stiff brown and grey CLAY WITTERING FORMATION	
	2.00	D						2
	2.00	PP	PP=2.5kg/cm2					
	2.50	D						
	2.50	PP	PP=2.5kg/cm2					
	3.00	D						3
	3.00	PP	PP=3kg/cm2	3.20	15.30		End of Pit at 3.20m	
								4
								5

Water Strikes		Remarks	Soakage
Depth Strike	Rises to (m/kg)		
		Stability	Sides stable





Unit 7, Danworth Farm
Hurstpierpoint
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Trial Pit Log

Trial Pit No

TP02

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448623.47 - 117673.34
Level: 19.67

Date
06/10/2021

Location: Horton Heath

Dimensions (m):

2.00

Depth
3.00

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.25	19.42		Grass over dark slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50 0.50 0.50	B D PP	PP=1kg/cm2	0.70	18.97		Firm orange and grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	1.00 1.00	D PP	PP=1.5kg/cm2	1.60	18.07		Firm to stiff orange and grey mottled CLAY WITTERING FORMATION	1
	1.50 1.50	D PP	PP=1.4kg/cm2	1.60	18.07		Stiff orange and grey mottled CLAY WITTERING FORMATION	2
	2.00 2.00	D PP	PP=3.2kg/cm2	3.00	16.67		End of Pit at 3.00m	3
	2.50 2.50	D PP	PP=2.8kg/cm2					4
	3.00 3.00	D PP	PP=2.5kg/cm2					5

Remarks Water seepage from surface

Stability Sides stable





Unit 7, Danworth Farm
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Trial Pit Log

Trial Pit No

TP03

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448498.66 - 117652.35
Level: 17.90

Date
06/10/2021

Location: Horton Heath

Dimensions (m): 1.70

Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.30	ES		0.30	17.60		Grass over dark brown silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50	D					Soft to firm wet orange brown slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	0.50	PP	PP=0.5kg/cm2	0.60	17.30		Firm orange brown slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	1.00	B						1
	1.00	D						
	1.00	PP	PP=1.5kg/cm2	1.10	16.80		Stiff orange and grey mottled CLAY WITTERING FORMATION	
	1.50	D						
	1.50	PP	PP=2.4kg/cm2					
	2.00	D						2
	2.00	PP	PP=2.5kg/cm2					
	2.50	D						
	2.50	PP	PP=2.4kg/cm2					
	2.80			2.80	15.10			
	3.00	D					Firm to stiff orange and grey mottled sandy CLAY. Sand is fine WITTERING FORMATION	3
	3.00	PP	PP=1.8kg/cm2	3.10	14.80			
							End of Pit at 3.10m	
								4
								5

Remarks Water seepages at 0.6m, 0.9m and 1.30m bgl

Stability Sides stable





Unit 7, Danworth Farm
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Trial Pit Log

Trial Pit No
TP04
Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448596.21 - 117660.38
Level: 20.26

Date
06/10/2021

Location: Horton Heath

Dimensions (m): 1.80
Depth 0.80

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.30	19.96		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL
	0.40	ES	PP=1.5kg/cm2				Firm to stiff orange and grey mottled CLAY WITTERING FORMATION
	0.50	D					
	0.50	PP					
	0.70	B					
	0.70	D		0.80	19.46		End of Pit at 0.80m

Remarks Soakage
Stability Sides stable





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Geo-Environmental www.gesl.net

Trial Pit Log

Trial Pit No
TP05
Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448568.10 - 117632.48
Level: 20.16

Date
07/10/2021

Location: Horton Heath

Dimensions (m): 2.20

Scale
1:25

Client: Eastleigh Borough Council

Depth
3.10

0.60

Logged
FG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.40	19.76		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50 0.50 0.50 0.70	B D PP ES	PP=1.5kg/cm2				Firm orange and grey mottled slightly sandy CLAY with occasional roots (1-2mm) and rootlets WITTERING FORMATION	1
	1.00 1.00 1.10	D PP ES	PP=1.9kg/cm2	1.20	18.96		Firm to stiff orange and grey mottled CLAY WITTERING FORMATION	
	1.50 1.50	D PP	PP=2kg/cm2	1.40	18.76		Stiff orange and grey slightly sandy crumbly CLAY. Sand is fine WITTERING FORMATION	
	2.00 2.00	D PP	PP=2.5kg/cm2				Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	2
	2.50 2.50	D PP	PP=2.1kg/cm2				Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	3.00 3.00	D PP	PP=2.8kg/cm2	2.90 3.10	17.26 17.06		Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	3
							End of Pit at 3.10m	

Remarks Water seepage at 1.5m bgl

Stability Sides stable





Unit 7, Danworth Farm
Hurstpierpoint
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Trial Pit Log

Trial Pit No

TP06

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448587.05 - 117576.46
Level: 19.61

Date
07/10/2021

Location: Horton Heath

Dimensions (m):

2.05

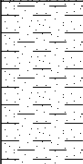
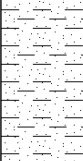
Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.25	ES	PP=1.5kg/cm2	0.40	19.21		Grass over dark brown silty CLAY with frequent roots and rootlets TOPSOIL
	0.50 0.50 0.60	D PP ES					Firm orange and slightly grey slightly sandy CLAY with occasional roots (1mm) and rootlets WITTERING FORMATION
	1.00 1.00 1.00	B D PP					Stiff orange and grey mottled CLAY with occasional rootlets WITTERING FORMATION
	1.50 1.50	D PP	PP=1.5kg/cm2	1.20	18.41		Firm orange and grey mottled sandy crumbly CLAY. Sand is fine WITTERING FORMATION
	2.00 2.00	D PP	PP=2.1kg/cm2				Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION
	2.50 2.50	D PP	PP=3kg/cm2	2.00	17.61		
	3.00 3.00	D PP	PP=2.7kg/cm2				
				3.10	16.51		End of Pit at 3.10m

Water Strikes		Remarks
Depth Strike	Rose to (m)	
		Stability Sides stable





Unit 7, Danworth Farm
Hurstpierpoint
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Trial Pit Log

Trial Pit No

TP07

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448609.78 - 117619.08
Level: 20.28

Date
07/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.30	ES		0.35	19.93		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50 0.50	D PP	PP=1.6kg/cm2				Firm becoming stiff orange brown slightly sandy CLAY with occasional rootlets WITTERING FORMATION	1
	1.00 1.00 1.00 1.20	B D PP ES	PP=1.6kg/cm2	1.10	19.18		Stiff orange and grey mottled CLAY WITTERING FORMATION	
	1.50 1.50	D PP	PP=2.2kg/cm2	1.40 1.60	18.88 18.68		Stiff orange and grey crumbly CLAY WITTERING FORMATION	
	2.00 2.00	D PP	PP=2kg/cm2				Stiff orange and grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	2
	2.50 2.50	D PP	PP=3kg/cm2	2.40	17.88		Stiff to very stiff dark grey CLAY WITTERING FORMATION	
	3.00 3.00	D PP	PP=3.6kg/cm2	3.10	17.18		End of Pit at 3.10m	3
								4
								5

Remarks Water ingress from land drain at 0.6m bgl and through pit wall at 1.6m bgl

Stability Sides stable





Unit 7, Danworth Farm
Hurstpierpoint
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Trial Pit Log

Trial Pit No

TP08

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448630.27 - 117602.09
Level: 20.57

Date
06/10/2021

Location: Horton Heath

Dimensions (m): 1.80

Depth
1.50

0.60



Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.30	20.27		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50 0.50 0.50	B D PP	PP=1.2kg/cm2	0.60	19.97		Firm orange brown silty CLAY with occasional roots and rootlets WITTERING FORMATION	
	1.00 1.00	D PP	PP=1.3kg/cm2				Firm orange brown and occasionally grey CLAY WITTERING FORMATION	1
	1.50 1.50	D PP	PP=1.7kg/cm2	1.50	19.07		End of Pit at 1.50m	2
								3
								4
								5

Remarks Water seepage in base of pit. Pit stopped due to water ingress in base of pit. Soakage

Stability Sides stable





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP10

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448546.33 - 117409.33
Level: 21.16

Date
08/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.25	20.91		Grass over dark brown silty sandy CLAY with frequent roots and rootlets and occasional flint gravel TOPSOIL	
	0.50 0.50 0.60	D PP ES	PP=1.1kg/cm2				Firm orange brown slightly sandy CLAY with occasional roots (1-2mm) and rootlets WITTERING FORMATION	
	1.00 1.00 1.00	B D PP	PP=1.2kg/cm2	0.80	20.36		Firm orange and grey mottled sandy CLAY. Sand is fine WITTERING FORMATION	1
	1.50	D		1.20	19.96		Orange and grey mottled slightly clayey fine SAND WITTERING FORMATION	
	2.00	D		2.20	18.96		Orange fine SAND WITTERING FORMATION	2
	2.50	D		2.80	18.36		Dark grey slightly clayey fine SAND WITTERING FORMATION	
	3.00	D		3.10	18.06		End of Pit at 3.10m	3
								4
								5

Remarks Water ingress and running sands from 2.4m bgl. Pit unstable in sands below Water ingress

Stability Sides unstable





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP11

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448376.94 - 117549.95
Level: 16.90

Date
07/10/2021

Location: Horton Heath

Dimensions (m): 2.00

Depth
3.30

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.25	ES		0.35	16.55		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets and occasional flint gravel TOPSOIL	
	0.50	B					Firm to stiff orange and slightly grey CLAY with frequent roots (1-2mm) and rootlets WITTERING FORMATION	
	0.50	D						
	0.50	PP	PP=1.9kg/cm2					
	1.00	D		1.10	15.80		Firm orange and grey mottled CLAY with occasional rootlets and flint gravel WITTERING FORMATION	1
	1.00	PP	PP=1.3kg/cm2					
	1.30	ES		1.40	15.50		Stiff orange and grey mottled slightly sandy CLAY with rare rootlets. Sand is fine WITTERING FORMATION	
	1.50	D						
	1.50	PP	PP=2.5kg/cm2					
				1.80	15.10		Stiff orange and grey mottled CLAY with rare flint gravel WITTERING FORMATION	2
	2.00	D						
	2.00	PP	PP=2.5kg/cm2					
				2.30	14.60		Stiff orange and grey sandy CLAY. Sand is fine WITTERING FORMATION	
	2.50	D						
	2.50	PP	PP=1.9kg/cm2					
				2.80	14.10		Stiff to very stiff dark grey slightly sandy CLAY with occasional medium sub angular chalk gravel. Sand is fine WITTERING FORMATION	3
	3.00	D						
	3.00	PP	PP=3.2kg/cm2					
				3.30	13.60		End of Pit at 3.30m	
								4
								5

Water Strikes	
Depth Strike	Rose to (mm)

Remarks

Stability Sides stable





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Trial Pit Log

Trial Pit No

TP12

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448417.15 - 117527.59
Level: 17.68

Date
07/10/2021

Location: Horton Heath

Dimensions (m):

2.05

Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.40	17.28		Grass over dark brown slightly gravelly silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50	D PP	PP=1kg/cm2				Firm orange and slightly grey slightly sandy CLAY with occasional rootlets and flint gravel WITTERING FORMATION	
	0.70	ES		0.80	16.88		Firm to stiff orange and grey mottled CLAY with rare rootlets WITTERING FORMATION	1
	1.00	B					Stiff orange and grey mottled CLAY WITTERING FORMATION	
	1.00	D PP	PP=1.5kg/cm2				Stiff orange and grey mottled CLAY WITTERING FORMATION	
	1.00			1.30	16.38		Stiff orange and grey mottled CLAY WITTERING FORMATION	
	1.50	D PP	PP=2.5kg/cm2				Stiff orange and grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	2
	1.50						Stiff orange and grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	2.00	D PP	PP=2.1kg/cm2	2.10	15.58		Stiff orange and grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	2.00						Stiff dark grey sandy CLAY. Sand is fine WITTERING FORMATION	
	2.50	D PP	PP=2.1kg/cm2	2.70	14.98		Stiff dark grey sandy CLAY. Sand is fine WITTERING FORMATION	
	2.50						Stiff dark grey sandy CLAY. Sand is fine WITTERING FORMATION	
	3.00	D PP	PP=1.6kg/cm2	3.10	14.58		Stiff dark grey sandy CLAY. Sand is fine WITTERING FORMATION	3
	3.00						End of Pit at 3.10m	

Remarks Water seepage at 1.8m bgl

Stability Sides stable





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Trial Pit Log

Trial Pit No

TP13

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448468.02 - 117498.65
Level: 18.75

Date
07/10/2021

Location: Horton Heath

Dimensions (m): 2.00

Depth
3.20

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40	ES		0.40	18.35		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50	D					Firm orange brown sandy CLAY with frequent roots (1-2mm) and rootlets. Sand is fine WITTERING FORMATION	
	0.50	PP	PP=1.2kg/cm2	0.70	18.05		Firm orange and grey mottled slightly sandy CLAY with rare rootlets. Sand is fine WITTERING FORMATION	1
	0.90	ES						
	1.00	B						
	1.00	D						
	1.00	PP	PP=1.3kg/cm2	1.30	17.45		Firm orange and grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	1.50	D						
	1.50	PP	PP=1kg/cm2					
	2.00	D						2
	2.00	PP	PP=1kg/cm2					
	2.50	D						
	2.50	PP	PP=1.4kg/cm2	2.70	16.05		Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	3.00	D						3
	3.00	PP	PP=2kg/cm2	3.20	15.55			
							End of Pit at 3.20m	

Remarks Water seepage at 1.5m bgl

Stability Localised spalling





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Trial Pit Log

Trial Pit No

TP14

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448510.66 - 117479.08
Level: 19.85

Date
07/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.20

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.15	ES					Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50 0.50 0.50 0.70	B D PP ES	PP=1kg/cm2	0.40	19.45		Firm orange brown slightly sandy CLAY with occasional roots (1-2mm) and rootlets WITTERING FORMATION	
	1.00 1.00	D PP	PP=1kg/cm2	0.90	18.95		Firm orange and grey mottled sandy CLAY. Sand is fine WITTERING FORMATION	1
	1.50 1.50	D PP	PP=0.9kg/cm2	1.20	18.65		Firm to stiff orange and grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	2.00 2.00	D PP	PP=1.1kg/cm2					2
	2.50 2.50	D PP	PP=1.6kg/cm2	2.60	17.25		Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	3.00 3.00	D PP	PP=2.3kg/cm2	3.20	16.65			3
							End of Pit at 3.20m	
								4
								5

Remarks Water ingress at 1.6m bgl

Stability Sides stable





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Trial Pit Log

Trial Pit No
TP15
Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448368.27 - 117480.13
Level: 17.18

Date
06/10/2021

Location: Horton Heath

Dimensions (m): 1.80

Depth
1.50

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.30			0.30	16.88		
	0.50	D					
	0.50	ES					
	0.50	PP	PP=2.3kg/cm2				
	1.00	B					
	1.00	D					
	1.00	PP	PP=1kg/cm2	1.10	16.08		
	1.50	D					
	1.50	PP	PP=1.8kg/cm2	1.50	15.68		End of Pit at 1.50m

Remarks Water seepage at 1.4m bgl. Pit stopped at 1.5m bgl due water ingress.

Stability Sides stable





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Trial Pit Log

Trial Pit No

TP16

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448440.33 - 117470.82
Level: 18.48

Date
07/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.20

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.35	18.13		Grass over dark brown slightly gravelly sandy CLAY with frequent roots and rootlets TOPSOIL	
	0.50 0.50 0.50	B D PP	PP=1kg/cm2				Firm orange brown sandy CLAY with occasional roots (1-2mm) and rootlets WITTERING FORMATION	1
	0.80	ES						
	1.00 1.00	D PP	PP=1.4kg/cm2					
				1.30	17.18		Firm orange and grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	1.50 1.50	D PP	PP=1.3kg/cm2					
	2.00 2.00	D PP	PP=0.9kg/cm2					2
	2.50 2.50	D PP	PP=2.5kg/cm2					
				2.60	15.88		Firm orange and grey mottled sandy CLAY. Sand is fine WITTERING FORMATION	
				2.80	15.68		Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	3
	3.00 3.00	D PP	PP=3kg/cm2					
				3.20	15.28		End of Pit at 3.20m	
								4
								5

Remarks Water seepage at 1.6m bgl

Stability Sides stable



Trial Pit Log

TrialPit No

TP17

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448409.99 - 117451.39
Level: 17.90

Date
06/10/2021

Location: Horton Heath

Dimensions
(m):

Scale
1:25

Client: Eastleigh Borough Council

Depth
0.70

0.60

Logged FG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.15	ES		0.35	17.55		Grass over dark brown slightly sandy slightly silty CLAY with frequent roots and rootlets TOPSOIL	1 2 3 4 5
	0.50	D				PP=1.4kg/cm2	0.70	
	0.50	PP		End of Pit at 0.70m				
	0.70	B						
	0.70	D						
	0.70	PP	PP=2kg/cm2					

Water Strikes		Remarks	Soakage
Depth Strike	Rose to (mbog)		
		Stability	Sides stable



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Trial Pit Log

Trial Pit No

TP18

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448474.26 - 117423.35
Level: 19.90

Date
07/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40	ES	PP=1.5kg/cm2	0.45	19.45		Grass over dark brown sandy CLAY with frequent roots and rootlets TOPSOIL	
	0.50	D					Firm orange brown slightly sandy CLAY with occasional roots (1-2mm) and rootlets flint gravel. Sand is fine WITTERING FORMATION	
	0.50	PP						
	0.70	ES		0.80	19.10		Firm orange brown slightly sandy slightly gravelly CLAY with rare rootlets. Sand is fine and gravel is fine to medium sub angular to sub rounded of flint WITTERING FORMATION	1
	1.00	B	PP=1.2kg/cm2				Orange and grey mottled slightly clayey fine SAND WITTERING FORMATION	
	1.00	D		1.20	18.70			
	1.00	PP						
	1.50	D		1.60	18.30		Orange, grey and reddish brown fine SAND WITTERING FORMATION	2
	2.00	D		2.40	17.50		Orange and grey mottled very clayey fine SAND WITTERING FORMATION	
				2.70	17.20		Dark grey slightly clayey fine SAND WITTERING FORMATION	3
				3.10	16.80		End of Pit at 3.10m	

Remarks Pit side wall collapse

Stability Sides unstable





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Trial Pit Log

Trial Pit No

TP19

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448377.55 - 117380.31
Level: 17.60

Date
08/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
2.80

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.15	ES		0.30	17.30		Grass over dark brown slightly sandy slightly silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50	D		0.60	17.00		Firm orange brown slightly sandy gravelly CLAY with frequent roots (1-2mm) and rootlets WITTERING FORMATION	
	0.60	ES		0.80	16.80		Orange brown slightly clayey fine to medium sub angular to sub rounded flint GRAVEL WITTERING FORMATION	
	1.00	B					Orange and grey mottled clayey fine SAND WITTERING FORMATION	1
	1.00	D						
	1.50	D						
	2.00	D						2
	2.50	D						
				2.80	14.80		End of Pit at 2.80m	3
								4
								5

Depth Strike	Water Strikes	Remarks
		Water ingress at 0.8m bgl. Running sands causing instability pit ceased at 2.8m bgl. No hand pens due to sand and gravel content of soils encountered.
		Stability Sides unstable





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Trial Pit Log

Trial Pit No

TP20

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448459.43 - 117383.95
Level: 19.73

Date
07/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.20

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES					Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.40			0.40	19.33		Firm orange brown slightly sandy CLAY with occasional roots (1-2mm) and rootlets WITTERING FORMATION	
	0.50	B						
	0.50	D						
	0.50	PP	PP=1.1kg/cm2	0.60	19.13		Firm to stiff orange and grey mottled CLAY WITTERING FORMATION	
	1.00	D						
	1.00	PP	PP=1.9kg/cm2	1.10	18.63		Firm orange and grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	1
	1.50	D						
	1.50	PP	PP=1.3kg/cm2	1.60	18.13		Orange and grey fine SAND with occasional bands of Orange and grey mottled CLAY WITTERING FORMATION	
	2.00	D						2
	2.40			2.40	17.33		Orange grey and red wet fine SAND WITTERING FORMATION	
	2.50	D						
	2.60			2.60	17.13		Dark grey slightly clayey fine SAND WITTERING FORMATION	
	3.00	D						3
	3.20			3.20	16.53		End of Pit at 3.20m	
								4
								5

Remarks Water seepage below clay at 1.6m bgl. Slumping within pit below water seepage, slow running sand

Stability Sides unstable





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Trial Pit Log

Trial Pit No

TP21

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448486.55 - 117371.76
Level: 20.38

Date
08/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.35	20.03		Grass over dark brown silty sandy CLAY with frequent roots and rootlets TOPSOIL	
	0.40 0.50 0.50	ES D PP	PP=0.6kg/cm2				Firm orange brown very sandy CLAY with frequent roots (1-2mm) and rootlets. Sand is fine WITTERING FORMATION	1
	1.00 1.00 1.00	B D PP	PP=1.3kg/cm2	1.20	19.18		Firm orange and grey mottled sandy CLAY. Sand is fine WITTERING FORMATION	
	1.50 1.50	D PP	PP=1.3kg/cm2					
				1.80	18.58		Orange and grey mottled slightly clayey fine wet SAND WITTERING FORMATION	2
	2.00 2.00	D PP	PP=1kg/cm2					
	2.50	D						
	3.00	D		3.10	17.28		End of Pit at 3.10m	3
								4
								5

Remarks: Water ingress at 1.8m bgl in the sands. Pit unstable within the Sand soils. Running sands due to water ingress leading to instability

Stability: Sides unstable





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Trial Pit Log

Trial Pit No
TP22
Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448517.34 - 117352.06
Level: 20.88

Date
06/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.30

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30	20.58		Grass over dark brown slightly sandy slightly silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50 0.50 0.50 0.50	B D ES PP	PP=0.6kg/cm2	0.70	20.18		Soft orange brown very sandy CLAY. Sand is fine WITTERING FORMATION	
	1.00 1.00	D PP	PP=1.5kg/cm2				Soft to firm to stiff orange and slightly grey crumbly sandy CLAY. Sand is fine WITTERING FORMATION	1
	1.50 1.50	D PP	PP=1.7kg/cm2					
	2.00 2.00	D PP	PP=1.3kg/cm2					2
				2.30	18.58			
	2.50	D					Firm orange and slightly grey very sandy CLAY. Sand is fine WITTERING FORMATION	
	3.00	D						3
				3.30	17.58		End of Pit at 3.30m	
								4
								5

Remarks Soakage

Stability Sides stable





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Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP23

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448360.00 - 117341.87
Level: 16.73

Date
08/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
2.00

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30	16.42		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50	D	PP=1.1kg/cm2	0.60	16.12		Firm orange brown slightly sandy CLAY with frequent rootlets WITTERING FORMATION	
	0.50	PP						
	0.70	ES					Orange brown slightly gravelly clayey fine wet SAND. Gravel is fine to medium sub angular to sub rounded of flint WITTERING FORMATION	1
	1.00	B		1.20	15.52			
	1.00	D					Orange and grey mottled slightly clayey fine SAND WITTERING FORMATION	
	1.50	D						
	2.00	D		2.00	14.72		End of Pit at 2.00m	2
								3
								4
								5

Remarks Water ingress and running sands at 1.1m bgl. Pit abandoned at 2m bgl due to side wall collapse

Stability Sides unstable





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Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP24

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448430.21 - 117329.70
Level: 18.63

Date
06/10/2021

Location: Horton Heath

Dimensions (m): 0.80
Depth 0.70

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES		0.30	18.33		Grass over dark brown slightly sandy slightly silty CLAY with frequent roots and rootlets TOPSOIL
	0.50	D					Firm to stiff orange and grey mottled slightly sandy CLAY.
	0.50	PP	PP=1.5kg/cm2				Sand is fine WITTERING FORMATION
	0.70	B		0.70	17.93		
	0.70	D					
	0.70	PP	PP=1.9kg/cm2				End of Pit at 0.70m

Remarks Soakage
Stability Sides stable





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Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No
TP25
Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448490.00 - 117322.09
Level: 19.57

Date
08/10/2021

Location: Horton Heath

Dimensions (m): 2.10

Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.25	ES		0.30	19.27		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.50	B					Firm orange brown sandy CLAY with occasional rootlets. Sand is fine WITTERING FORMATION	
	0.50	D						
	0.50	PP	PP=1.1kg/cm2					
	0.60	ES						
	1.00	D						
	1.00	PP	PP=1.1kg/cm2	1.20	18.37		Firm orange and grey mottled wet sandy CLAY. Sand is fine WITTERING FORMATION	1
	1.50	D						
	1.50	PP	PP=1.2kg/cm2	1.70	17.87		Orange and grey mottled slightly clayey wet fine SAND WITTERING FORMATION	2
	2.00	D						
	2.50	D						
				2.80	16.77		Dark grey fine SAND WITTERING FORMATION	3
	3.00	D		3.10	16.47		End of Pit at 3.10m	

Remarks Water ingress at 1.8m bgl running sands. Slumping due to slow running sands Side wall collapse

Stability Sides unstable





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Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP26

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448374.26 - 117311.27
Level: 16.79

Date
06/10/2021

Location: Horton Heath

Dimensions (m): 1.70

Depth
2.50

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.15	ES		0.25	16.54		Grass over dark brown slightly silty CLAY with frequent roots and rootlets and occasional flint gravel TOPSOIL	
	0.50	D	PP=0.5kg/cm2	0.50	16.29		Soft to firm orange brown slightly sandy CLAY with occasional roots (2mm) and rootlets WITTERING FORMATION	
	0.50	PP					Soft to firm orange brown and occasionally grey slightly sandy CLAY with pockets of flint gravel and rare rootlets WITTERING FORMATION	
	1.00	B	PP=1kg/cm2	1.10	15.69		Orange brown slightly clayey fine to medium SAND and GRAVEL WITTERING FORMATION	1
	1.00	D						
	1.00	PP						
	1.50	D		1.60	15.19		Firm to stiff orange and grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	
	1.80	PP	PP=1.5kg/cm2	1.80	14.99		Firm and stiff orange and grey mottled very sandy CLAY. Sand is fine WITTERING FORMATION	2
	2.00	D						
				2.20	14.59		Orange and grey mottled slightly clayey fine SAND WITTERING FORMATION	
	2.50	D		2.50	14.29		End of Pit at 2.50m	3
								4
								5

Depth Strike	Water Strikes	Remarks
		Pit terminated at 2.5m bgl due to water ingress and pit instability. Water seepage at 1.6m bgl through granular layers
		Stability Sides unstable below water table





Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

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Trial Pit Log

Trial Pit No

TP27

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448450.32 - 117283.00
Level: 18.02

Date
08/10/2021

Location: Horton Heath

Dimensions (m):

2.05

Depth
3.10

0.60

Scale
1:25

Logged
FG

Client: Eastleigh Borough Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.25	17.77		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
	0.40	ES					Firm orange brown slightly sandy slightly gravelly wet CLAY with rare rootlets WITTERING FORMATION	
	0.50	B						
	0.50	D						
	0.50	PP	PP=1.3kg/cm2	0.60	17.42		Firm orange and slightly grey mottled sandy CLAY with rare rootlets. Sand is fine WITTERING FORMATION	
	0.80	ES						
	1.00	D						
	1.00	PP	PP=1kg/cm2					1
				1.25	16.77		Orange and grey mottled slightly clayey fine SAND WITTERING FORMATION	
	1.50	D						
				1.70	16.32		Orange and grey mottled fine SAND WITTERING FORMATION	
	2.00	D						2
				2.30	15.72		Dark grey slightly wet fine SAND WITTERING FORMATION	
	2.50	D						
	3.00	D						3
				3.10	14.92		End of Pit at 3.10m	
								4
								5

Water Strikes		Remarks	
Depth Strike	Rises to (m bgl)		
		Water seepage at 1.9m bgl creating slow running sand. Slow running sands below Water ingress Pit side wall collapsed	
		Stability	Sides unstable



Trial Pit Log

TrialPit No

TP28

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448417.03 - 117253.20
Level: 16.42

Date
08/10/2021

Location: Horton Heath

Dimensions (m):

Scale
1:25

Client: Eastleigh Borough Council

Depth
3.10

0.60

2.30

Logged FG

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
	0.25	ES	PP=1.1kg/cm2	0.30	16.12		Grass over dark brown slightly silty sandy CLAY with frequent roots and rootlets and occasional flint gravel TOPSOIL	1		
	0.50 0.50 0.50	B D PP		0.80	15.62		Firm orange and grey mottled wet slightly sandy slightly gravelly CLAY with occasional roots (1-2mm) and rootlets WITTERING FORMATION			
	1.00 1.00 1.10	D PP ES					PP=0.6kg/cm2		1.20	15.22
	1.50	D	1.70	14.72		Orange brown and slightly grey slightly clayey wet fine SAND WITTERING FORMATION	2			
	2.00	D				2.40		14.02		Orange brown fine SAND WITTERING FORMATION
	2.50	D								3.00
	3.00	D	End of Pit at 3.10m	4						
									5	

Water Strikes		Remarks
Depth Strike	Rise to (inbg)	
		Water ingress from surface and from 0.3m bgl. Slow running sands
		Stability Localised spalling



Geo-Environmental

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL
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Borehole Log

Borehole No.

WS01

Sheet 1 of 1

Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448636E - 117653N	Hole Type	WLS
Location:	Horton Heath	Level:	20.72	Scale	1:25	Logged By	TU
Client:	Eastleigh Borough Council	Dates:	11/10/2021				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	20.42		Grass over light brown slightly sandy SILT with frequent rootlets. TOPSOIL	1
		0.35	ES						
		0.50	D		0.60	20.12		Soft to firm brown mottled orange slightly sandy CLAY. Sands are fine to coarse. Occasional rootlets 1mm-2mm. WITTERING FORMATION	2
		0.50	PP	0.7kg/cm2					
		0.60	PP	1.0kg/cm2					3
		0.70	ES						
		0.90	PP	1.0kg/cm2					4
		1.00	D						
		1.30	PP	1.5kg/cm2	1.20	19.52		Stiff grey and orange mottled slightly sandy CLAY. Sands are fine. Mottling increases with depth. WITTERING FORMATION	5
		1.50	D						
		1.60	PP	2.0kg/cm2					6
		2.00	D						
		2.10	PP	2.0kg/cm2					7
		2.50	D						
		2.50	PP	2.0kg/cm2					8
		2.80	PP	2.3kg/cm2	2.70	18.02		Stiff light brown mottled grey with black flecking slightly sandy CLAY. Sands are fine. WITTERING FORMATION	
		3.00	D						9
		3.10	PP	2.3kg/cm2					
		3.40	PP	2.0kg/cm2	3.30	17.42		Stiff dark grey slightly sandy CLAY. Sands are fine. WITTERING FORMATION	10
		3.50	D						
		3.70	PP	2.0kg/cm2					11
		4.00	D						
		4.10	PP	1.7kg/cm2					12
		4.50	D						
		4.50	PP	1.5kg/cm2					13
		4.80	PP	2.3kg/cm2					
		5.00	D		5.00	15.72		End of Borehole at 5.00m	14

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		



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Borehole Log

Borehole No.

WS03

Sheet 1 of 1

Project Name:

Quobleigh Breach and Fir Tree Farm

Project No.	GE19906
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Co-ords:

448598E - 117549N

Hole Type	WLS
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Location:

Horton Heath

Level:

20.59

Scale
1:25

Client:

Eastleigh Borough Council

Dates:

11/10/2021

Logged By
TU

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.40	20.19		Grass over brown slightly gravelly slightly sandy CLAY. Sands are fine to coarse. Gravels are fine to medium angular to sub rounded. Abundant rootlets 1mm to 2mm. TOPSOIL	
		0.50 0.50	D PP	1.0kg/cm2				Firm to stiff orange and grey mottled slightly sandy CLAY. Sands are fine. Occasional rootlets 1mm. Rare flint medium to coarse angular gravel inclusions. Dark brown flexing at 1.7m. WITTERING FORMATION	
		0.80	PP	1.5kg/cm2					
		1.00	D						
		1.10	PP	1.0kg/cm2					
		1.50 1.50	D PP	1.5kg/cm2					
		2.00 2.10	D PP	1.7kg/cm2	2.30	18.29			
		2.50 2.50	D PP	2.0kg/cm2				Stiff orange mottled redish brown sandy CLAY. Sands are fine to coarse. WITTERING FORMATION	
		2.80	PP	1.5kg/cm2	2.70	17.89			
		3.00 3.10	D PP	2.0kg/cm2				Stiff grey slightly sandy CLAY. Sands are fine. WITTERING FORMATION	
		3.50 3.50	D PP	2.0kg/cm2					
		3.80	PP	2.5kg/cm2					
		4.00	D						
		4.20	PP	2.5kg/cm2					
		4.50	D						
		4.70	PP	2.5kg/cm2					
				5.00	D		5.00	15.59	
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks			
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to				



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Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Borehole Log

Borehole No.

WS04

Sheet 1 of 1

Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448612E - 117530N	Hole Type	WLS
Location:	Horton Heath	Level:	21.24	Scale	1:25	Logged By	TU
Client:	Eastleigh Borough Council	Dates:	11/10/2021				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.30	20.94		Grass over brown slightly sandy CLAY. Sands are fine to medium. Frequent rootlets 1mm. Brick fragment at ~0.3m. TOPSOIL	
		0.50	D					Firm orange and grey mottled slightly sandy CLAY. Sands are fine. Rare rootlets 1mm. WITTERING FORMATION	
		0.50	PP	1.5kg/cm2					
		0.60	ES						
		0.80	PP	1.5kg/cm2					
		1.00	D						1
		1.30	PP	1.5kg/cm2					
		1.50	D						
		1.70	PP	1.5kg/cm2					
		2.00	D		1.80	19.44		Firm becoming stiff reddish brown mottled grey sandy CLAY. Sands are fine. WITTERING FORMATION	
		2.10	PP	1.5kg/cm2					2
		2.50	D						
		2.50	PP	2.0kg/cm2					
		2.80	PP	3.0kg/cm2					
		3.00	D		2.90	18.34		Stiff dark grey slightly sandy CLAY. Sands are fine. WITTERING FORMATION	
		3.20	PP	2.5kg/cm2					3
		3.50	D						
		3.60	PP	2.5kg/cm2					
		4.00	D						4
		4.00	PP	2.5kg/cm2					
		4.40	PP	2.0kg/cm2					
		4.50	D						
		4.80	PP	1.5kg/cm2					
		5.00	D		5.00	16.24		End of Borehole at 5.00m	5

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		





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Borehole Log

WS05

Sheet 1 of 1

Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

448607E - 117472N

Hole Type
WLS

Horton Heath

21.71

Scale
1:25

Eastleigh Borough Council

11/10/2021

Logged By
TU

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.25	ES	0.5kg/cm2	0.40	21.31		Grass over brown slightly gravelly sandy CLAY. Sands are fine. Gravels are flint, medium to coarse sub rounded to sub angular. Frequent rootlets 1mm. TOPSOIL	1
		0.50	D						
		0.50	PP						
		0.80	PP						
		1.00	D	1.5kg/cm2	1.30	20.41		Soft light brown mottled orange sandy CLAY. Sands are fine to medium sub angular to sub rounded. Rare rootlets 1mm to 2mm. Singular flint medium sized sub angular gravel. WITTERING FORMATION	
		1.40	PP						
		1.50	D						
		2.00	D						
		2.50	D	1.0kg/cm2	1.60	20.11		Soft to firm grey mottled orange sandy CLAY. Sands are fine. WITTERING FORMATION	
		2.80	PP						
		3.00	D						
		3.50	D						
		3.50	PP	1.0kg/cm2	2.30	19.41		Orangey yellow with occasional purple staining slightly clayey SANDS. Sands are fine to medium sub angular to sub rounded. WITTERING FORMATION	
		3.90	PP						
		4.00	D						
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		Soft grey mottled brown slightly sandy CLAY. Sands are fine. WITTERING FORMATION			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
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4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
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5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
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4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00	17.71		End of Borehole at 4.00m			
3.90	PP								
4.00	D								
4.50	D								
5.00	D	1.0kg/cm2	4.00						



Geo-Environmental

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL
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Borehole Log

Borehole No.

WS07

Sheet 1 of 2

Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448468E - 117450N	Hole Type	WLS
Location:	Horton Heath	Level:	19.27	Scale	1:25	Logged By	FG
Client:	Eastleigh Borough Council	Dates:	12/10/2021				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.40	18.87		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
		0.50 0.50	D PP	0.6kg/cm2				Soft orange brown slightly sandy CLAY with occasional roots (1-2mm) and rootlets WITTERING FORMATION	
		1.00 1.00	D PP	0.6kg/cm2	1.20	18.07		Orange brown slightly clayey fine SAND WITTERING FORMATION	1
		1.50	D		1.60	17.67		Firm orange and grey mottled sandy CLAY. Sand is fine WITTERING FORMATION	
		2.00 2.00	D PP	1.0kg/cm2				Firm to stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	2
		2.50 2.50	D PP	1.3kg/cm2				Firm to stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	
		3.00 3.00	D PP	2.4kg/cm2	3.10	16.17		Firm to stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	3
		3.50 3.50	D PP	1.5kg/cm2				Firm to stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	
		4.00 4.00	D PP	1.8kg/cm2				Firm to stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	4
		4.50 4.50	D PP	2.8kg/cm2				Firm to stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	
		5.00	D		5.00	14.27		Continued on Next Sheet	5

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		



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Borehole Log

Borehole No.

WS07

Sheet 2 of 2

Project Name:

Quobleigh Breach and Fir Tree Farm

Project No.	GE19906
-------------	---------

Co-ords:

448468E - 117450N

Hole Type	WLS
1	0.0000
2	0.0000
3	0.0000
4	0.0000
5	0.0000
6	0.0000
7	0.0000
8	0.0000
9	0.0000
10	0.0000
11	0.0000
12	0.0000
13	0.0000
14	0.0000
15	0.0000
16	0.0000
17	0.0000
18	0.0000
19	0.0000
20	0.0000
21	0.0000
22	0.0000
23	0.0000
24	0.0000
25	0.0000
26	0.0000
27	0.0000
28	0.0000
29	0.0000
30	0.0000
31	0.0000
32	0.0000
33	0.0000
34	0.0000
35	0.0000
36	0.0000
37	0.0000
38	0.0000
39	0.0000
40	0.0000
41	0.0000
42	0.0000
43	0.0000
44	0.0000
45	0.0000
46	0.0000
47	0.0000
48	0.0000
49	0.0000
50	0.0000
51	0.0000
52	0.0000
53	0.0000
54	0.0000
55	0.0000
56	0.0000
57	0.0000
58	0.0000
59	0.0000
60	0.0000
61	0.0000
62	0.0000
63	0.0000
64	0.0000
65	0.0000
66	0.0000
67	0.0000
68	0.0000
69	0.0000
70	0.0000
71	0.0000
72	0.0000
73	0.0000
74	0.0000
75	0.0000
76	0.0000
77	0.0000
78	0.0000
79	0.0000
80	0.0000
81	0.0000
82	0.0000
83	0.0000
84	0.0000
85	0.0000
86	0.0000
87	0.0000
88	0.0000
89	0.0000
90	0.0000
91	0.0000
92	0.0000
93	0.0000
94	0.0000
95	0.0000
96	0.0000
97	0.0000
98	0.0000
99	0.0000
100	0.0000

Location:

Horton Heath

Level:

19.27

Scale
1:25

Client:

Eastleigh Borough Council

Dates:

12/10/2021

Logged By
FG

[illegible]



Borehole No. _____

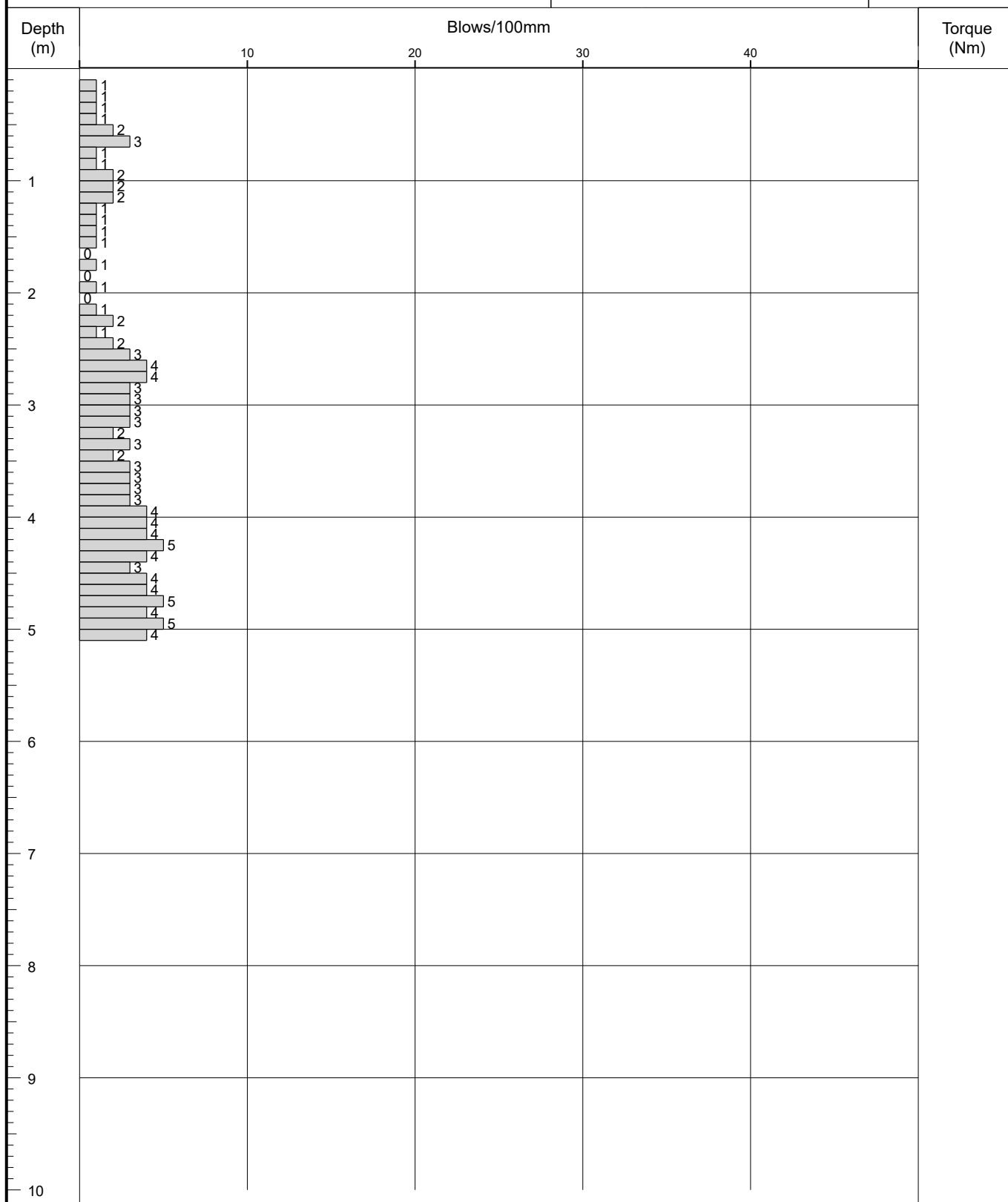
DP07

Sheet 1 of 1

Hole Type
DP

Scale
1:50

Logged By



Log Scale	1:50
-----------	------





Geo-Environmental

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL
www.gesl.net

Borehole Log

Borehole No.

WS08

Sheet 1 of 2

Project Name:

Quobleigh Breach and Fir Tree
Farm

Project No.
GE19906

Co-ords:

448363E - 117422N

Hole Type
WLS

Location:

Horton Heath

Level:

17.24

Scale
1:25

Client:

Eastleigh Borough Council

Dates:

12/10/2021

Logged By
FG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30			0.30	16.94		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	
		0.45	ES					Firm orange brown gravelly CLAY with occasional roots (1-2mm) and rootlets. Gravel is fine to coarse sub angular to sub rounded of flint WITTERING FORMATION	
		0.50	D					Orange brown slightly clayey fine SAND with rare rootlets WITTERING FORMATION	
		1.00	D					Soft to firm orange and grey mottled sandy sticky CLAY. Sand is fine WITTERING FORMATION	1
		1.50	D					Orange and grey mottled very clayey fine SAND WITTERING FORMATION	
		1.50	PP	0.6kg/cm2				Dark grey very clayey fine SAND WITTERING FORMATION	
		2.00	D					Stiff dark grey sandy CLAY. Sand is fine WITTERING FORMATION	
		2.00	PP	1.1kg/cm2				Continued on Next Sheet	2
		2.50	D					Continued on Next Sheet	
		2.80	D					Continued on Next Sheet	3
		3.00	D					Continued on Next Sheet	
		3.50	D					Continued on Next Sheet	
		3.75	D					Continued on Next Sheet	
		4.00	D					Continued on Next Sheet	4
		4.00	PP	3.1kg/cm2				Continued on Next Sheet	
		4.50	D					Continued on Next Sheet	
		5.00	D					Continued on Next Sheet	5
		5.00	D		5.00	12.24		Continued on Next Sheet	

Casing

Water Strikes (mbgl)

Chiselling (mbgl)

Remarks

Diameter

Depth (m)

Depth Strike

Rose to

Depth from

Depth to

Poor sample recovery between 4m and 5m bgl





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Borehole Log

Borehole No.

WS08

Sheet 2 of 2

Project Name:

Quobleigh Breach and Fir Tree Farm

Project No.	GE19906
-------------	---------

Co-ords:

448363E - 117422N

Hole Type	WLS
-----------	-----

Location:

Horton Heath

Level:

17.24

Scale
1:25

Client:

Eastleigh Borough Council

Dates:

12/10/2021

Logged By
FG

[illegible]



Geo-Environmental

Probe Log

Borehole No.

DP08

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448362.75 - 117422.20

Hole Type
DP

Location: Horton Heath

Level: 17.24

Scale
1:50

Client: Eastleigh Borough Council

Dates: -

Logged By

Depth (m)	Blows/100mm				Torque (Nm)
	10	20	30	40	
1	1 1 1 1 1 2 3 3 4 3				
2	1 1 1 1 2 2 2 2 3 3 4 4 4 4				
3	3 2 3 5 4 4 5 4 5 5 5 4 4 5 5 5 6 4 5				
4					
5					
6					
7					
8					
9					
10					

Remarks

Fall Height

Cone Base Diameter

Hammer Wt

Final Depth 5.00

Probe Type DPSH

Log Scale 1:50



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log				Borehole No. WS09 Sheet 1 of 2	
Project Name: Quobleigh Breach and Fir Tree Farm		Project No. GE19906		Co-ords: 448525E - 117560N		Hole Type WLS	
Location: Horton Heath				Level: 19.29		Scale 1:25	
Client: Eastleigh Borough Council				Dates: 12/10/2021		Logged By FG	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.10	ES		0.10	19.19		Concrete with green plastic membrane beneath MADE GROUND	1	
		0.25			0.30	18.99		Made Ground comprised of off white reworked gravelly CHALK MADE GROUND		
		0.90	D PP	1.5kg/cm2	0.90	18.39		Firm orange and grey mottled slightly sandy wet sticky CLAY. Sand is fine WITTERING FORMATION		
		1.00								
		1.20								
		1.50	D PP	1.1kg/cm2	1.70	17.59		Firm to stiff orange and grey mottled sticky CLAY WITTERING FORMATION		2
		1.50								
		2.00	D PP	1.4kg/cm2	3.10	16.19		Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION		3
		2.50								
		2.50	D PP	1.5kg/cm2	3.50	14.29				4
4.00										
4.00	D PP	2.2kg/cm2	4.50	14.29						
4.50										
4.50	D PP	3.5kg/cm2	5.00	14.29			5			
5.00										
Continued on Next Sheet										

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
						Poor sample recovery between 2m and 3m bgl	



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Borehole Log

Borehole No.

WS09

Sheet 2 of 2

Project Name:

Quobleigh Breach and Fir Tree Farm

Project No.	GE19906
-------------	---------

Co-ords:

448525E - 117560N

Hole Type	WLS
-----------	-----

Location:

Horton Heath

Level:

19.29

Scale
1:25

Client:

Eastleigh Borough Council

Dates:

12/10/2021

Logged By
FG

[illegible]



Geo-Environmental www.gesl.net

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Borehole Log

Borehole No.

WS10

Sheet 1 of 1

Project Name:	Quobleigh Breach and Fir Tree Farm	Project No.	GE19906	Co-ords:	448375E - 117274N	Hole Type	WLS
Location:	Horton Heath	Level:	15.51	Scale	1:25	Logged By	FG
Client:	Eastleigh Borough Council	Dates:	12/10/2021				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15	ES	0.7kg/cm2	0.40	15.11		Grass over dark brown slightly sandy silty CLAY with frequent roots and rootlets TOPSOIL	1
		0.50	D		0.60	14.91		Soft orange brown slightly sandy CLAY with occasional roots (1-2mm) rootlets and flint gravel. Sand is fine WITTERING FORMATION	
		0.50	PP						
		0.65	ES	0.9kg/cm2				Firm orange and grey mottled sticky wet CLAY with rare rootlets WITTERING FORMATION	
		1.00	D		1.20	14.31		Firm orange and grey mottled sandy CLAY with occasional decaying roots. Sand is fine WITTERING FORMATION	
		1.00	PP		1.40	14.11		Orange and grey mottled clayey fine SAND WITTERING FORMATION	
		1.50	D					Orange and brown mottled clayey fine SAND WITTERING FORMATION	2
		2.00	D		2.10	13.41		Dark grey clayey to very clayey fine SAND WITTERING FORMATION	
		2.50	D		2.40	13.11			
		3.00	D						3
		3.50	D						
		4.00	D						
		4.50	D						4
		5.00	D		5.00	10.51		End of Borehole at 5.00m	5

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks	
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to		
						Borehole collapsed to 4.5m	



Geo-Environmental

Probe Log

Borehole No.

DP10

Sheet 1 of 1

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448375.08 - 117274.09

Hole Type
DP

Location: Horton Heath

Level: 15.51

Scale
1:50

Client: Eastleigh Borough Council

Dates: -

Logged By

Depth (m)	Blows/100mm				Torque (Nm)
	10	20	30	40	
0	1				
0.1	1				
0.2	1				
0.3	1				
0.4	1				
0.5	1				
0.6	1				
0.7	1				
0.8	1				
0.9	1				
1	1				
1.1	1				
1.2	1				
1.3	1				
1.4	1				
1.5	1				
1.6	1				
1.7	1				
1.8	1				
1.9	1				
2	1				
2.1	1				
2.2	1				
2.3	2				
2.4	1				
2.5	2				
2.6	2				
2.7	1				
2.8	2				
2.9	2				
3	2				
3.1	1				
3.2	3				
3.3	1				
3.4	2				
3.5	2				
3.6	3				
3.7	2				
3.8	3				
3.9	4				
4	3				
4.1	3				
4.2	4				
4.3	3				
4.4	3				
4.5	4				
4.6	3				
4.7	4				
4.8	3				
4.9	4				
5	6				
5.1	7				
5.2	4				
5.3	5				
6					
7					
8					
9					
10					

Remarks

Fall Height

Cone Base Diameter

Hammer Wt

Final Depth 5.00

Probe Type DPSH

Log Scale 1:50





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Borehole Log

Borehole No.

WS11

Sheet 1 of 2

Project Name:

Quobleigh Breach and Fir Tree Farm

Project No.	GE19906
-------------	---------

Co-ords:

448510E - 117516N

Hole Type	WLS
1	0.0000
2	0.0000
3	0.0000
4	0.0000
5	0.0000
6	0.0000
7	0.0000
8	0.0000
9	0.0000
10	0.0000
11	0.0000
12	0.0000
13	0.0000
14	0.0000
15	0.0000
16	0.0000
17	0.0000
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20	0.0000
21	0.0000
22	0.0000
23	0.0000
24	0.0000
25	0.0000
26	0.0000
27	0.0000
28	0.0000
29	0.0000
30	0.0000
31	0.0000
32	0.0000
33	0.0000
34	0.0000
35	0.0000
36	0.0000
37	0.0000
38	0.0000
39	0.0000
40	0.0000
41	0.0000
42	0.0000
43	0.0000
44	0.0000
45	0.0000
46	0.0000
47	0.0000
48	0.0000
49	0.0000
50	0.0000
51	0.0000
52	0.0000
53	0.0000
54	0.0000
55	0.0000
56	0.0000
57	0.0000
58	0.0000
59	0.0000
60	0.0000
61	0.0000
62	0.0000
63	0.0000
64	0.0000
65	0.0000
66	0.0000
67	0.0000
68	0.0000
69	0.0000
70	0.0000
71	0.0000
72	0.0000
73	0.0000
74	0.0000
75	0.0000
76	0.0000
77	0.0000
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80	0.0000
81	0.0000
82	0.0000
83	0.0000
84	0.0000
85	0.0000
86	0.0000
87	0.0000
88	0.0000
89	0.0000
90	0.0000
91	0.0000
92	0.0000
93	0.0000
94	0.0000
95	0.0000
96	0.0000
97	0.0000
98	0.0000
99	0.0000
100	0.0000

Location:

Horton Heath

Level:

19.48

Scale
1:25

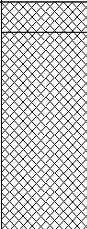
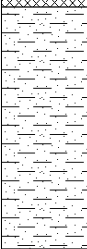
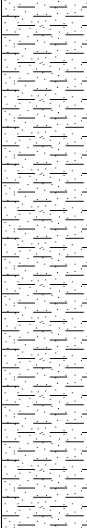
Client:

Eastleigh Borough Council

Dates:

12/10/2021

Logged By
FG

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40	ES		0.10	19.38		Tarmacadam MADE GROUND Made Ground comprised of reddish brown slightly sandy slightly clayey medium to coarse sub angular GRAVEL with frequent brick and occasional concrete MADE GROUND	
		1.00 1.00	D PP	1.9kg/cm2	0.80	18.68		Firm to stiff orange and grey mottled sandy CLAY. Sand is fine WITTERING FORMATION	1 -
		1.50 1.50	D PP	1.4kg/cm2	1.60	17.88		Firm to stiff orange and light grey mottled slightly sandy CLAY. Sand is fine WITTERING FORMATION	2 -
		2.00 2.00	D PP	1.4kg/cm2	3.40	16.08		Stiff dark grey slightly sandy CLAY. Sand is fine WITTERING FORMATION	3 -
		2.50 2.50	D PP	1.8kg/cm2					
		3.00 3.00	D PP	1.8kg/cm2					
		3.50 3.50	D PP	1.5kg/cm2					4 -
		4.00 4.00	D PP	1.6kg/cm2					
		4.50 4.50	D PP	2.1kg/cm2					
		5.00	D		5.00	14.48		Continued on Next Sheet	5 -
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks			
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to				
						Water ingress at 3m bgl. Running sands at points of water ingress			



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Borehole Log

WS11

Sheet 2 of 2

Project Name: Quobleigh Breach and Fir Tree Farm

Project No.
GE19906

Co-ords: 448510E - 117516N

Hole Type
WLS

Location: Horton Heath

Level: 19.48

Scale
1:25

Client: Eastleigh Borough Council

Dates: 12/10/2021

Logged By
FG

[illegible]

APPENDIX C

Geotechnical Laboratory Results



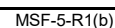
					Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results						
Job No.		Project Name					Programme				
30887		Quobleigh Breach and Fir Tree Farm					Samples received		12/10/2021		
Project No.		Client					Schedule received		19/10/2021		
GE19906		GESL					Project started		20/10/2021		
							Testing Started		03/11/2021		
Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
BH01	4	2.45	-	D	Orangish brown and occasional bluish grey slightly sandy silty CLAY	33	100	59	28	31	
BH01	7	4.45	-	D	Grey slightly fine sandy silty CLAY	24	100	46	20	26	
BH02	2	1.45	-	D	Light orangish brown and light grey silty CLAY	53	100	70	23	47	
BH02	9	6.00	-	D	Brown sandy silty CLAY	23	100	39	21	18	
BH03	6	3.45	-	D	Greyish brown and occasional orangish brown slightly sandy silty CLAY	29	100	54	26	28	
BH03	11	7.50	-	D	Brownish grey slightly sandy silty CLAY	28	100	60	26	34	
BH04	4	2.45	-	D	Orangish brown and occasional light grey slightly gravelly sandy silty CLAY (gravel is fm and sub-angular)	23	92	28	18	10	
BH04	14	9.00	-	D	Brownish grey slightly sandy silty CLAY	26	100	58	26	32	
BH05	7	4.45	-	D	Grey slightly fine sandy silty CLAY with occasional sandy pockets	25	100	50	20	30	
BH05	12	8.45	-	D	Grey slightly fine sandy silty CLAY	28	100	52	21	31	
TP01	1	0.50	-	D	Brown slightly sandy slightly gravelly silty CLAY with traces of fine roots (gravel is fmc and sub-angular to sub-rounded flint gravel)	17	51	33	14	19	Sample washed to obtain test fraction
TP02	4	1.00	-	D	Brown, orange and occasional light grey slightly gravelly slightly sandy silty CLAY with traces of rootlets (gravel is fm and sub-angular)	26	97	50	17	33	

	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0 <i>These results only apply to the items tested</i>	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P Date: 12/11/2021
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	Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)		MSF-5-R1(b)

					Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results						
Job No.		Project Name					Programme				
30887		Quobleigh Breach and Fir Tree Farm					Samples received		12/10/2021		
Project No.		Client					Schedule received		19/10/2021		
GE19906		GESL					Project started		20/10/2021		
							Testing Started		03/11/2021		
Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
TP03	2	0.50	-	D	Dark brown slightly gravelly sandy silty CLAY with occasional rootlets (gravel is fmc and rounded)	20	67	32	17	15	
TP05	6	1.50	-	D	Brown, orange and occasional light grey silty CLAY with traces of rootlets	34	100	70	23	47	
TP06	4	1.00	-	D	Brown and occasional orangish brown and light grey slightly gravelly silty CLAY (gravel is fine and sub-angular)	34	98	72	22	50	
TP08	4	1.00	-	D	Brown, orange and light grey slightly gravelly silty CLAY with traces of rootlets (gravel is fine and sub-angular)	32	97	72	23	49	
TP10	2	0.50	-	D	Brown and occasional orange slightly gravelly sandy silty CLAY with traces of rootlets (gravel is fm and sub-angular)	23	88	43	16	27	
TP11	2	0.50	-	D	Brown, orange and light grey mottled slightly gravelly silty CLAY (gravel is fine and sub-angular)	28	95	66	21	45	
TP11	4	1.00	-	D	Brown and occasional light grey slightly gravelly silty CLAY (gravel is fm and sub-angular)	43	94	62	17	45	
TP11	6	1.50	-	D	Brown and light grey silty CLAY	44	100	56	20	36	
TP13	2	0.50	-	D	Brown slightly sandy slightly gravelly silty CLAY with occasional rootlets (gravel is fmc and rounded to sub-angular)	20	75	36	17	19	
TP15	3	1.00	-	D	Yellowish brown and greenish grey slightly sandy silty gravelly CLAY (gravel is fmc and sub-angular to angular flint gravel)	19	28	48	15	33	Sample washed to obtain test fraction
TP16	1	0.50	-	D	Brown slightly gravelly slightly sandy silty CLAY with occasional rootlets (gravel is fm and rounded to sub-angular)	17	90	43	17	26	
TP18	4	1.00	-	D	Orangish brown and occasional red slightly gravelly slightly sandy silty CLAY with traces of rootlets (gravel is fm and sub-angular)	27	67	52	20	32	

	Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0 <i>These results only apply to the items tested</i>	Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com	Checked and Approved Initials J.P Date: 12/11/2021
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	2519		MSF-5-R1(b)

		Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results									
Job No. 30887		Project Name Quobleigh Breach and Fir Tree Farm						Programme			
Project No. GE19906		Client GESL						Samples received		12/10/2021	
								Schedule received		19/10/2021	
								Project started		20/10/2021	
								Testing Started		03/11/2021	
Hole No.	Sample				Soil Description	NMC %	Passing 425µm %	LL %	PL %	PI %	Remarks
	Ref	Top m	Base m	Type							
TP19	2	0.50	-	D	Brown slightly sandy gravelly silty CLAY with traces of fine roots (gravel is fmc and sub-angular to sub-rounded flint gravel)	15	41	34	14	20	Sample washed to obtain test fraction
TP21	5	1.50	-	D	Brown, orange and light grey slightly gravelly slightly sandy silty CLAY with traces of rootlets (gravel is fine and sub-angular)	26	96	47	18	29	
TP24	3	0.70	-	D	Brown slightly gravelly slightly sandy silty CLAY with occasional rootlets (gravel is fm and rounded to sub-angular)	26	82	40	17	23	
TP25	2	0.50	-	D	Dark brown slightly gravelly sandy silty CLAY with rootlets (gravel is fm and sub-angular)	21	87	37	17	20	
TP25	6	1.50	-	D	Orangish brown and light grey slightly sandy silty CLAY	28	100	48	17	31	
TP28	4	1.00	-	D	Light grey and occasional orange sandy silty CLAY	29	100	39	18	21	
WS01	2	0.50	-	D	Orangish brown slightly mottled bluish grey slightly sandy silty CLAY with traces of fine rootlets	35	100	65	26	39	
WS01	4	1.00	-	D	Orangish brown slightly mottled bluish grey slightly sandy silty CLAY with traces of fine rootlets	31	100	59	27	32	
WS01	5	1.50	-	D	Orangish brown slightly mottled bluish grey slightly sandy silty CLAY	29	100	53	26	27	
WS04	4	2.00	-	D	Reddish brown and orangish brown slightly mottled bluish grey sandy silty CLAY	28	100	42	24	18	
WS05	2	1.00	-	D	Brown slightly gravelly sandy silty CLAY with roots (gravel is fine and sub-angular)	27	95	34	17	17	
WS07	5	2.00	-	D	Orangish brown mottled bluish grey sandy silty CLAY	29	100	37	20	17	
 Test Methods: BS1377: Part 2: 1990: Natural Moisture Content : clause 3.2 Atterberg Limits: clause 4.3 and 5.0 <i>These results only apply to the items tested</i> NOTE: The report shall not be reproduced except in full without authority of the laboratory					Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Tel: 01923 711 288 Email: James@k4soils.com					Checked and Approved Initials J.P Date: 12/11/2021	
2519					Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)					MSF-5-R1(b)	

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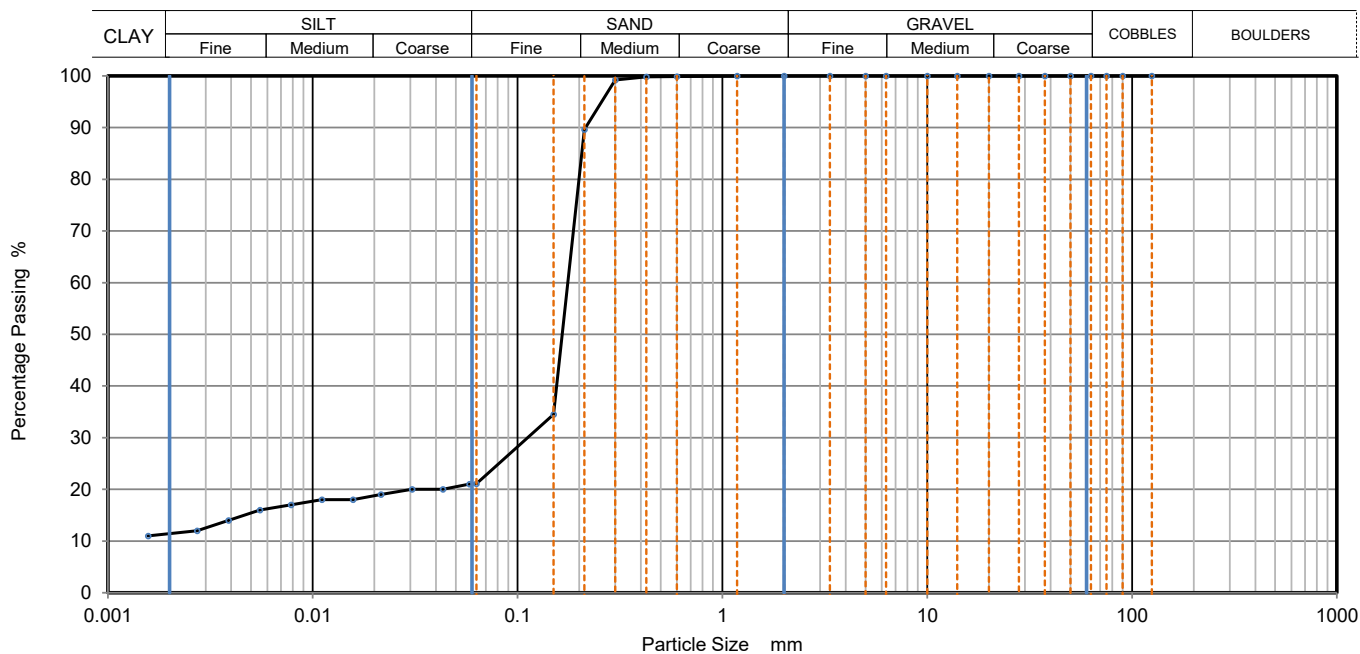


PARTICLE SIZE DISTRIBUTION

Job Ref	30887
Borehole/Pit No.	TP10
Sample No.	6
Depth Top	1.50 m
Depth Base	- m
Sample Type	D
Samples received	12/10/2021
Schedules received	19/10/2021
Project started	20/10/2021
Date tested	05/11/2021

Site Name	Quobleigh Breach and Fir Tree Farm		
Project No.	GE19906	Client	GESL
Soil Description	Brownish orange and bluish grey mottled silty clayey SAND		
Test Method	BS1377:Part 2: 1990, clause 9.0		

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0582	21
90	100	0.0432	20
75	100	0.0305	20
63	100	0.0216	19
50	100	0.0157	18
37.5	100	0.0111	18
28	100	0.0078	17
20	100	0.0055	16
14	100	0.0039	14
10	100	0.0027	12
6.3	100	0.0016	11
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100	Particle density (assumed) 2.70 Mg/m ³	
0.425	100		
0.3	99		
0.212	90		
0.15	35		
0.063	21		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.0
Sand	78.9
Silt	9.9
Clay	11.2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377 unless noted below

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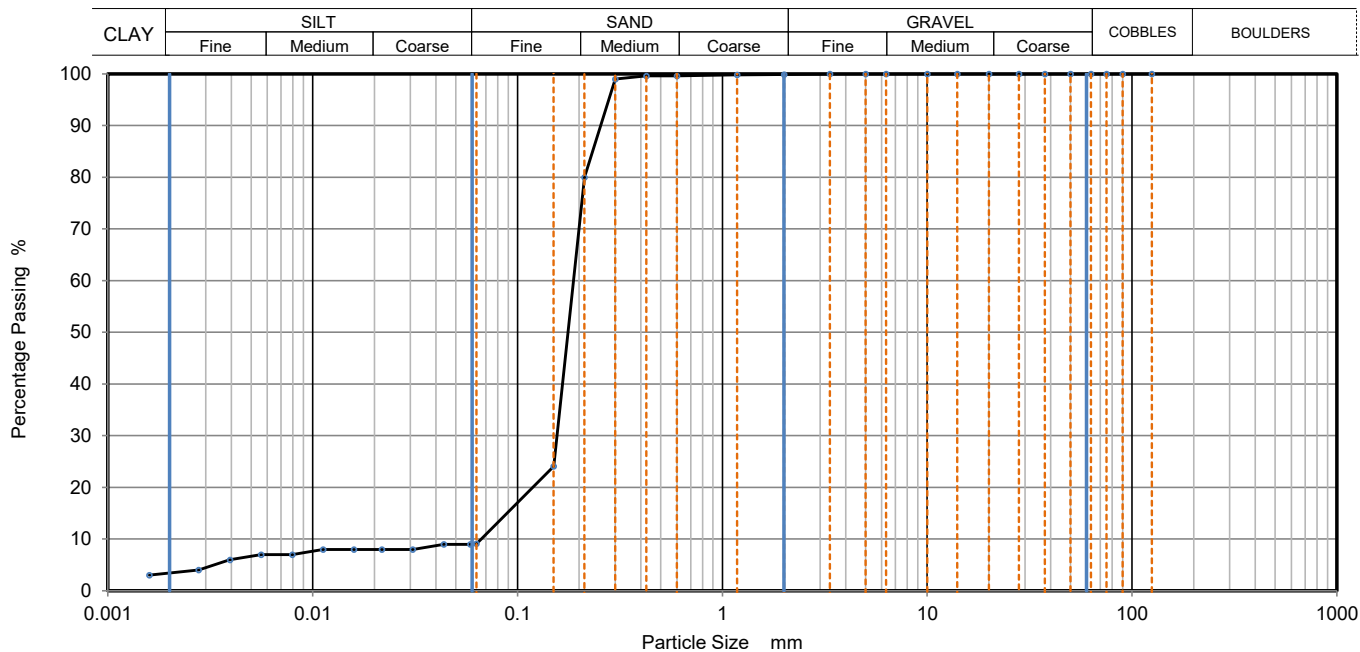


PARTICLE SIZE DISTRIBUTION

Job Ref	30887
Borehole/Pit No.	TP18
Sample No.	7
Depth Top	2.00 m
Depth Base	- m
Sample Type	D
Samples received	12/10/2021
Schedules received	19/10/2021
Project started	20/10/2021
Date tested	05/11/2021

Site Name	Quobleigh Breach and Fir Tree Farm		
Project No.	GE19906	Client	GESL
Soil Description	Greenish brown and orange mottled slightly clayey silty SAND		
Test Method	BS1377:Part 2: 1990, clause 9.0		

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0587	9
90	100	0.0436	9
75	100	0.0308	8
63	100	0.0218	8
50	100	0.0159	8
37.5	100	0.0112	8
28	100	0.0079	7
20	100	0.0056	7
14	100	0.0039	6
10	100	0.0028	4
6.3	100	0.0016	3
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100	Particle density (assumed) 2.70 Mg/m ³	
0.425	100		
0.3	99		
0.212	80		
0.15	24		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.1
Sand	90.7
Silt	6.0
Clay	3.2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	2.8
Curvature Coefficient	1.9

Remarks
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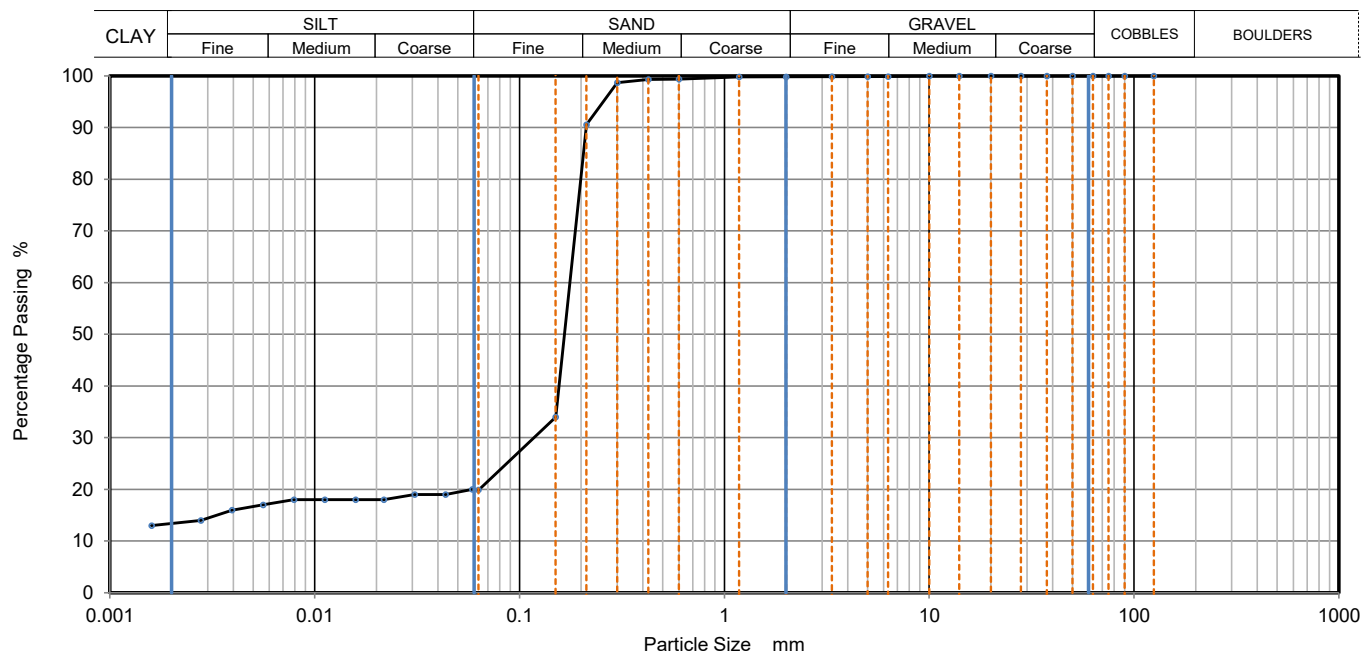


PARTICLE SIZE DISTRIBUTION

Job Ref	30887
Borehole/Pit No.	TP19
Sample No.	4
Depth Top	1.00 m
Depth Base	- m
Sample Type	D
Samples received	12/10/2021
Schedules received	19/10/2021
Project started	20/10/2021
Date tested	05/11/2021

Site Name	Quobleigh Breach and Fir Tree Farm		
Project No.	GE19906	Client	GESL
Soil Description	Orangish brown silty clayey SAND		
Test Method	BS1377:Part 2: 1990, clause 9.0		

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0587	20
90	100	0.0435	19
75	100	0.0308	19
63	100	0.0217	18
50	100	0.0158	18
37.5	100	0.0112	18
28	100	0.0079	18
20	100	0.0056	17
14	100	0.0039	16
10	100	0.0028	14
6.3	100	0.0016	13
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed) 2.70 Mg/m ³	
0.425	99		
0.3	99		
0.212	91		
0.15	34		
0.063	20		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.2
Sand	80.0
Silt	6.2
Clay	13.6

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
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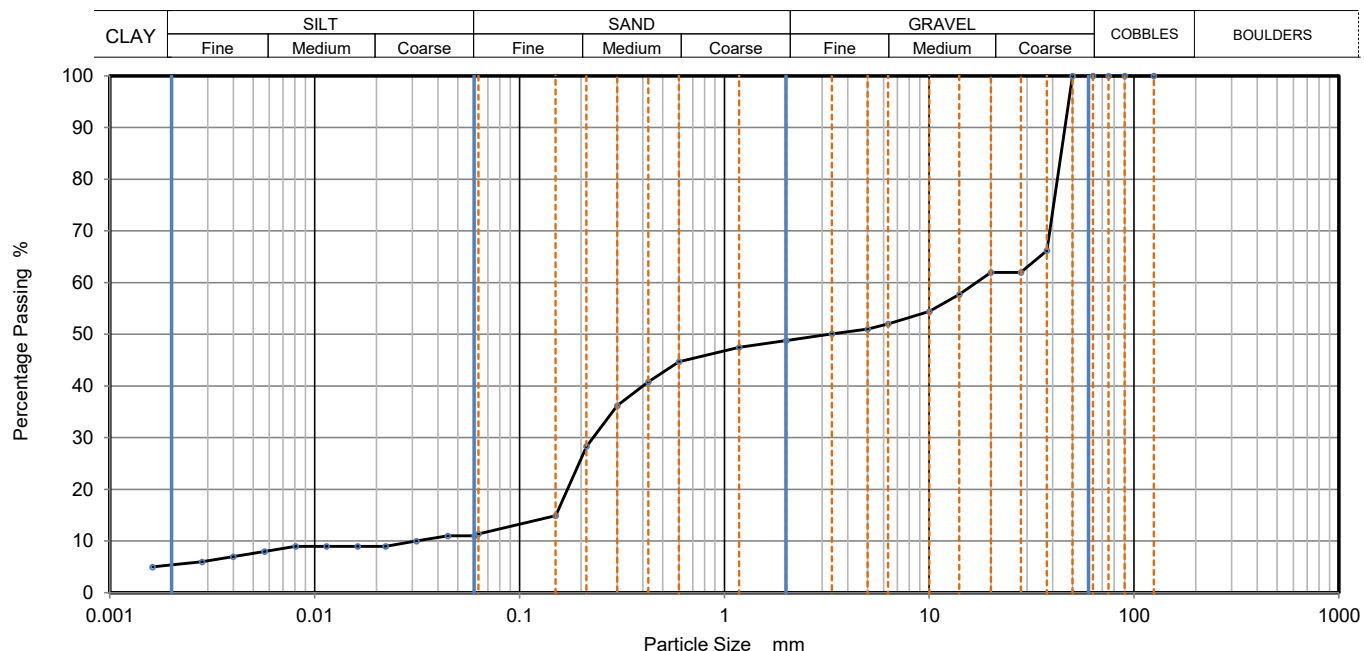


PARTICLE SIZE DISTRIBUTION

Job Ref	30887
Borehole/Pit No.	TP23
Sample No.	3
Depth Top	1.00 m
Depth Base	- m
Sample Type	D
Samples received	12/10/2021
Schedules received	19/10/2021
Project started	20/10/2021
Date tested	05/11/2021

Site Name	Quobleigh Breach and Fir Tree Farm		
Project No.	GE19906	Client	GESL
Soil Description	Brown clayey silty very sandy GRAVEL (gravel is fmc and sub-angular)		
Test Method	BS1377:Part 2: 1990, clause 9.0		

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0602	11
90	100	0.0446	11
75	100	0.0314	10
63	100	0.0221	9
50	100	0.0162	9
37.5	66	0.0114	9
28	62	0.0081	9
20	62	0.0057	8
14	58	0.0040	7
10	54	0.0028	6
6.3	52	0.0016	5
5	51		
3.35	50		
2	49		
1.18	48		
0.6	45	Particle density (assumed) 2.70 Mg/m ³	
0.425	41		
0.3	36		
0.212	28		
0.15	15		
0.063	11		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	51.2
Sand	37.4
Silt	5.9
Clay	5.5

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	480
Curvature Coefficient	0.087

Remarks
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PARTICLE SIZE DISTRIBUTION

Job Ref	30887
Borehole/Pit No.	TP26
Sample No.	5
Depth Top	1.50 m
Depth Base	- m
Sample Type	D
Samples received	12/10/2021
Schedules received	19/10/2021
Project started	20/10/2021
Date tested	05/11/2021

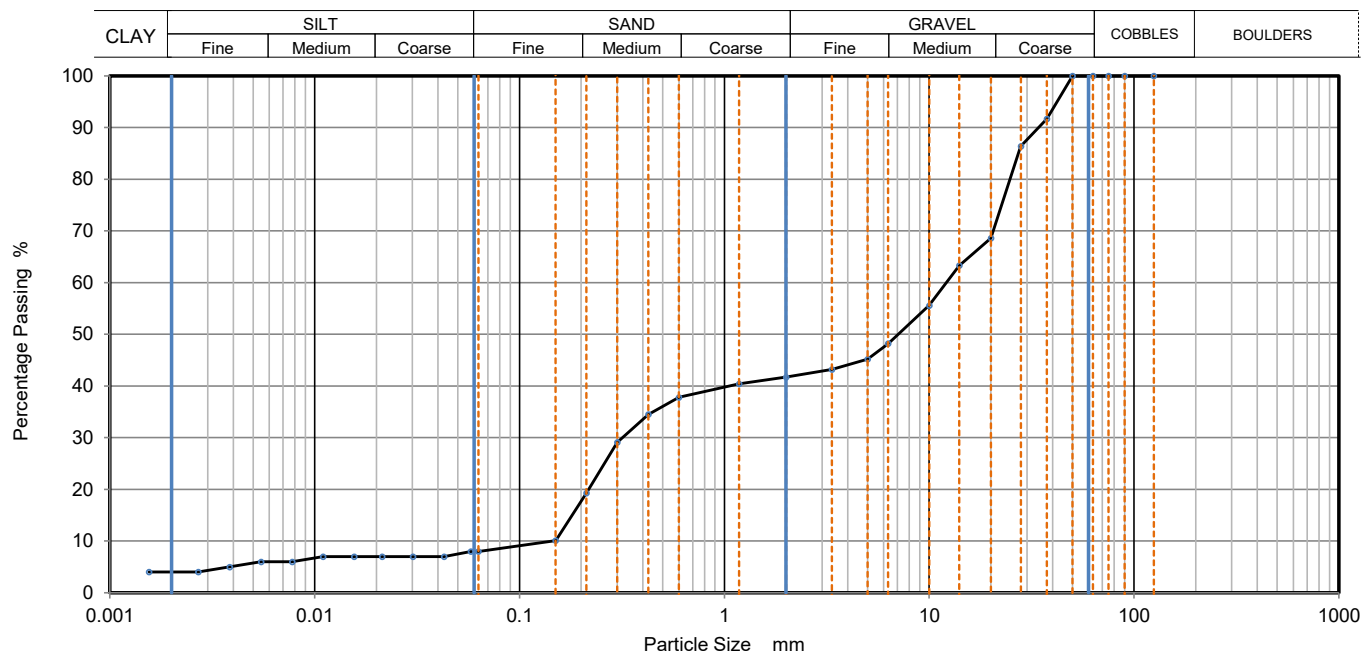
Site Name Quobleigh Breach and Fir Tree Farm

Project No. GE19906 Client GESL

Soil Description Brown slightly clayey slightly silty very sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)

Test Method BS1377:Part 2: 1990, clause 9.0

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0578	8
90	100	0.0428	7
75	100	0.0302	7
63	100	0.0213	7
50	100	0.0156	7
37.5	92	0.0110	7
28	86	0.0077	6
20	69	0.0055	6
14	63	0.0038	5
10	56	0.0027	4
6.3	48	0.0016	4
5	45		
3.35	43		
2	42		
1.18	40		
0.6	38	Particle density (assumed) 2.70 Mg/m ³	
0.425	35		
0.3	29		
0.212	19		
0.15	10		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	58.3
Sand	33.6
Silt	4.0
Clay	4.1

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	86
Curvature Coefficient	0.059

Remarks
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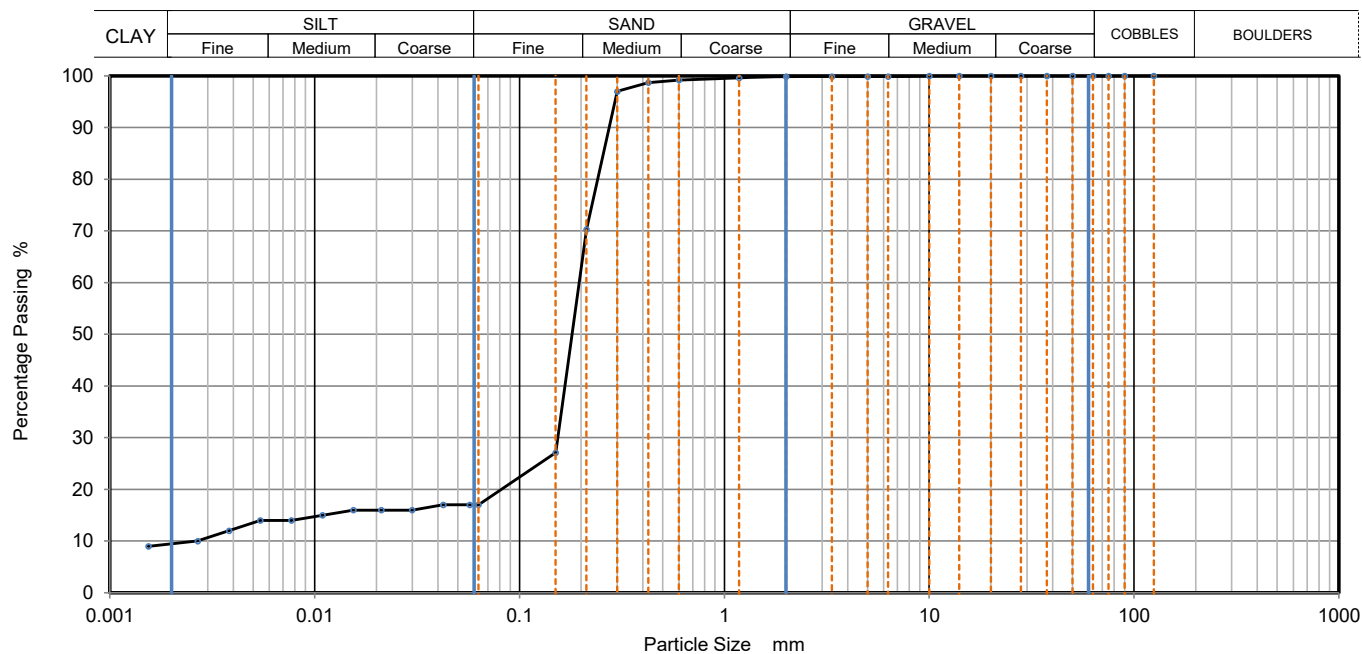


PARTICLE SIZE DISTRIBUTION

Job Ref	30887
Borehole/Pit No.	WS08
Sample No.	3
Depth Top	1.00 m
Depth Base	- m
Sample Type	D
Samples received	12/10/2021
Schedules received	19/10/2021
Project started	20/10/2021
Date tested	04/11/2021

Site Name	Quobleigh Breach and Fir Tree Farm		
Project No.	GE19906	Client	GESL
Soil Description	Brown silty clayey SAND		
Test Method	BS1377:Part 2: 1990, clause 9.0		

These results only apply to the items tested



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0570	17
90	100	0.0424	17
75	100	0.0299	16
63	100	0.0211	16
50	100	0.0154	16
37.5	100	0.0109	15
28	100	0.0077	14
20	100	0.0054	14
14	100	0.0038	12
10	100	0.0027	10
6.3	100	0.0015	9
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed) 2.70 Mg/m ³	
0.425	99		
0.3	97		
0.212	70		
0.15	27		
0.063	17		

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.1
Sand	82.9
Silt	7.8
Clay	9.2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	73
Curvature Coefficient	45

Remarks
Preparation and testing in accordance with BS1377 unless noted below

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Initials: J.P
Date: 12/11/2021

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Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R3



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP06

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 5

Project No. GE19906

Client

GESL

Depth Top 1.00 m

Soil Description

Light brown, bluish grey and orange mottled silty CLAY

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 10/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded 0.64 mm

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.82 Mg/m³

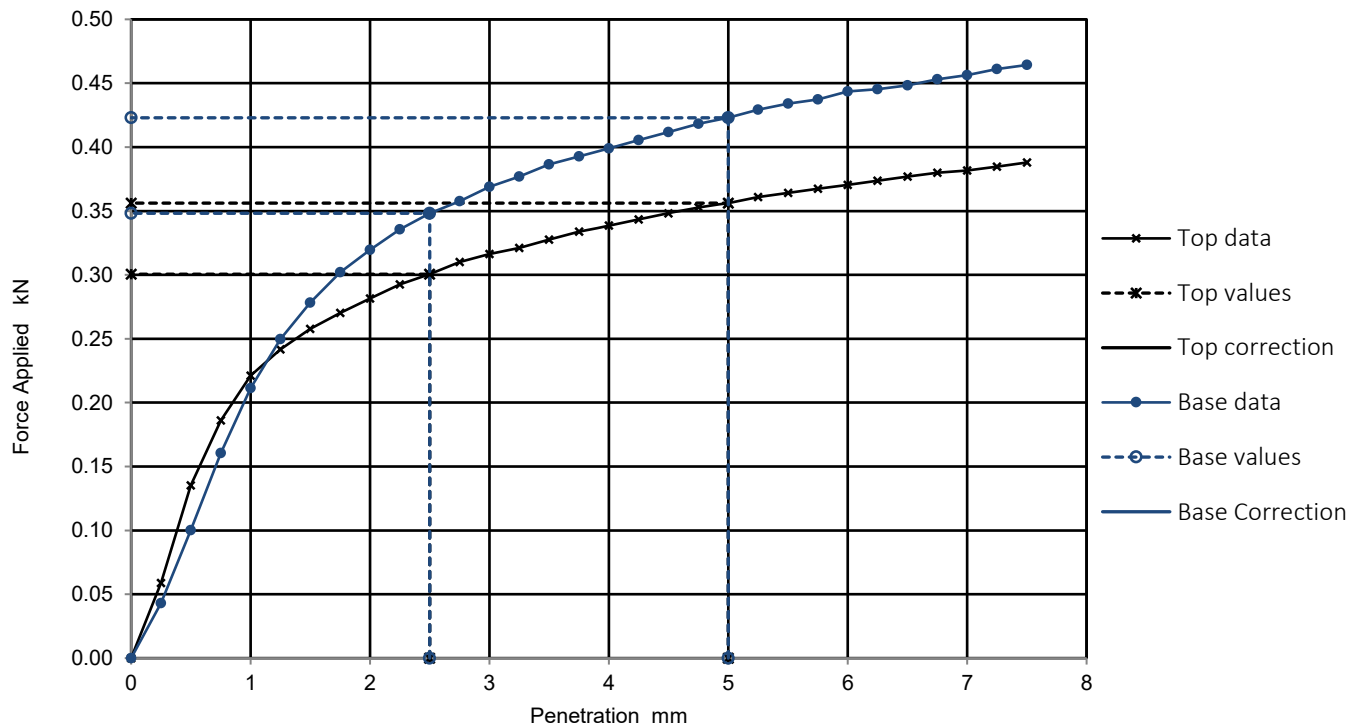
Dry density 1.32 Mg/m³

Moisture content 38 %

Surcharge applied 6 kg

4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.3	1.8	2.3	2.5
No	2.6	2.1	2.6	

Moisture Content %
39
39

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

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Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP07

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 4

Project No. GE19906 Client GESL

Depth Top 1.00 m

Soil Description Brown, bluish grey and orange silty CLAY

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 11/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

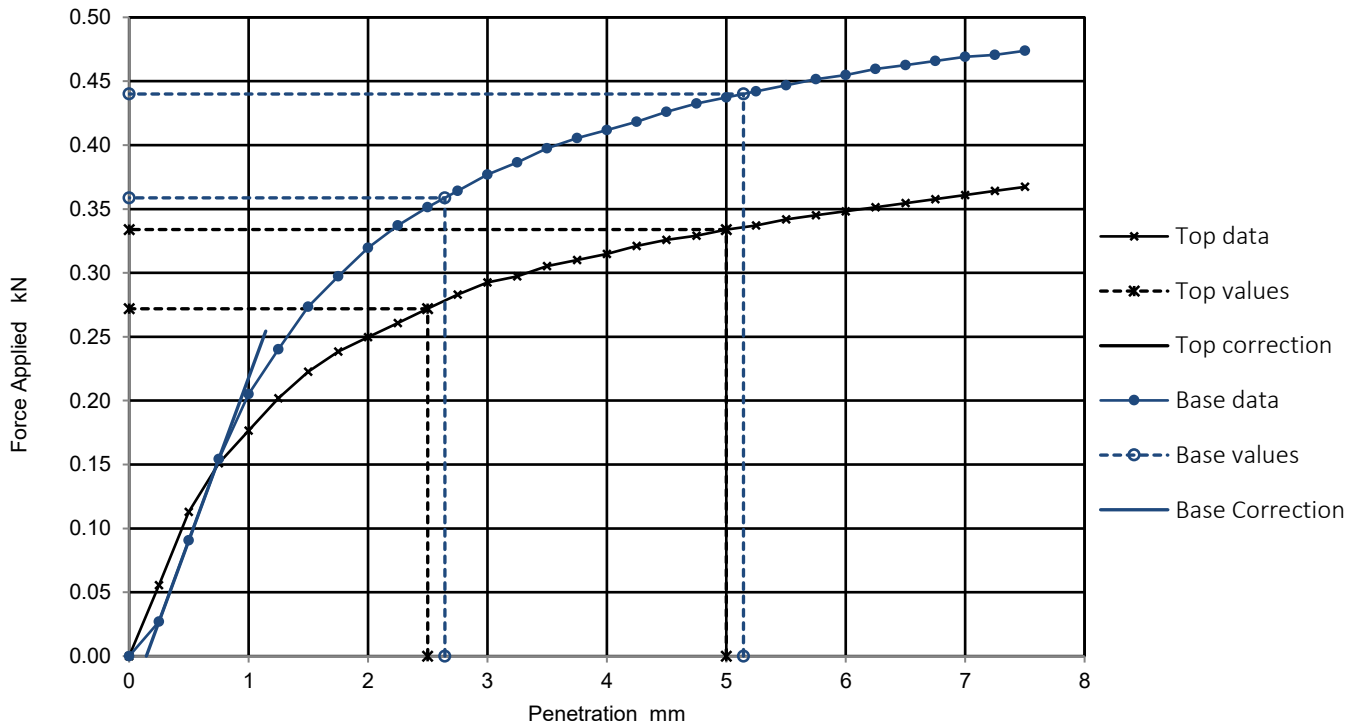
Time to surface 5 days

Amount of swell recorded 0.92 mm

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.81 Mg/m³ Surcharge applied 6 kg
Dry density 1.31 Mg/m³ 4 kPa
Moisture content 38 %

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.1	1.7	2.1	N/A
Yes	2.7	2.2	2.7	

Moisture Content %
43
41

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP10

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 5

Project No. GE19906

Client

GESL

Depth Top 1.00 m

Soil Description

Brown, orange and bluish grey mottled slightly sandy silty CLAY

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 03/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded 0.09 mm

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.90 Mg/m³

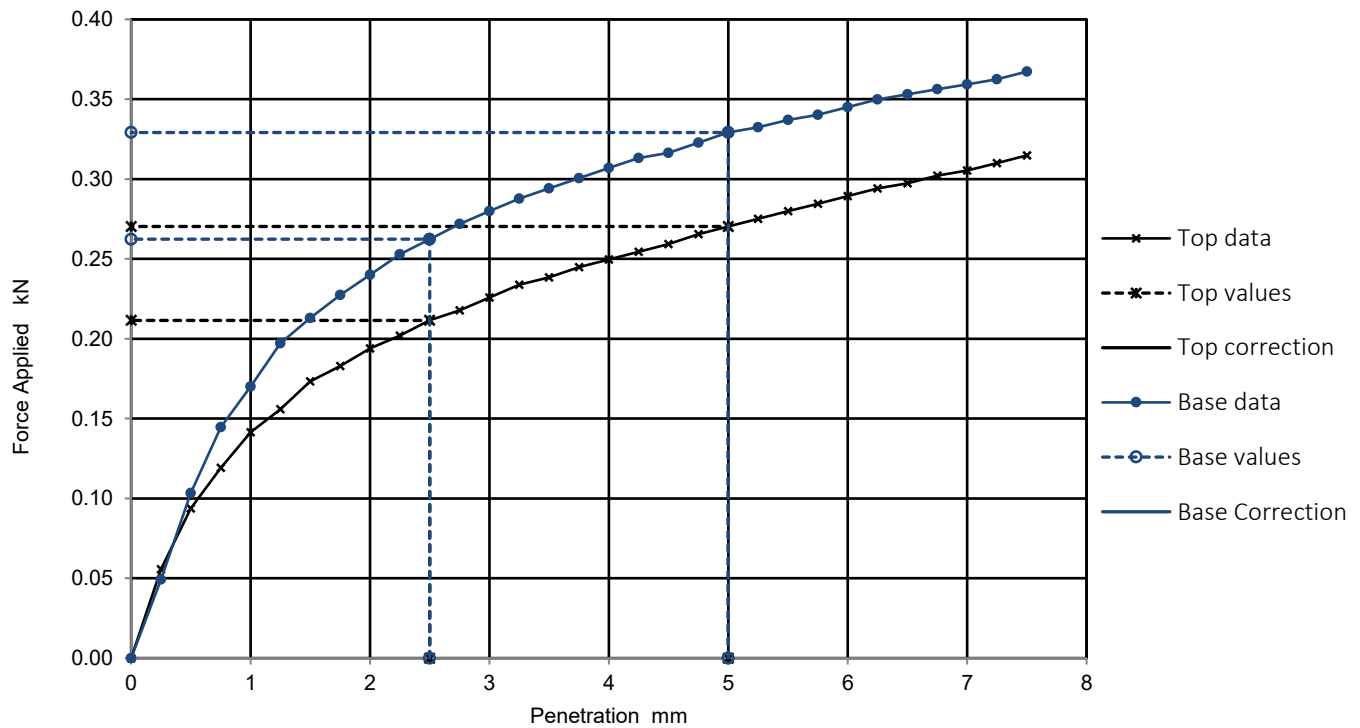
Dry density 1.54 Mg/m³

Moisture content 24 %

Surcharge applied 6 kg

4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	1.6	1.4	1.6	N/A
No	2.0	1.6	2.0	

Moisture Content %
31
27

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021

2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5-R16



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP11

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 3

Project No. GE19906

Client

GESL

Depth Top 0.50 m

Soil Description

Brown, orange and bluish grey mottled slightly sandy silty CLAY

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 03/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded 0.62 mm

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.91 Mg/m³

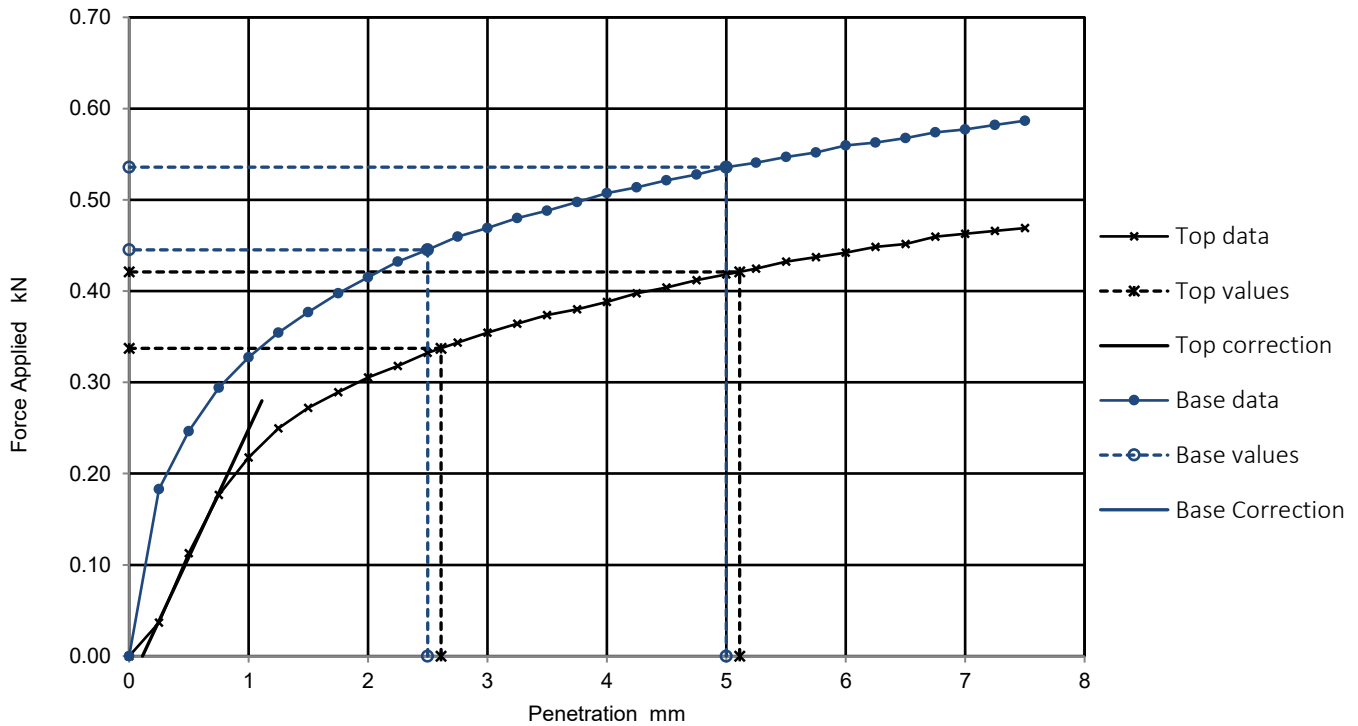
Dry density 1.48 Mg/m³

Moisture content 29 %

Surcharge applied 6 kg

4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
Yes	2.6	2.1	2.6	N/A
No	3.4	2.7	3.4	

Moisture Content %
33
31

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP12

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 4

Project No. GE19906

Client

GESL

Depth Top 1.00 m

Soil Description

Brown, bluish grey and orange mottled silty sandy CLAY

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 09/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded 0.03 mm

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.92 Mg/m³

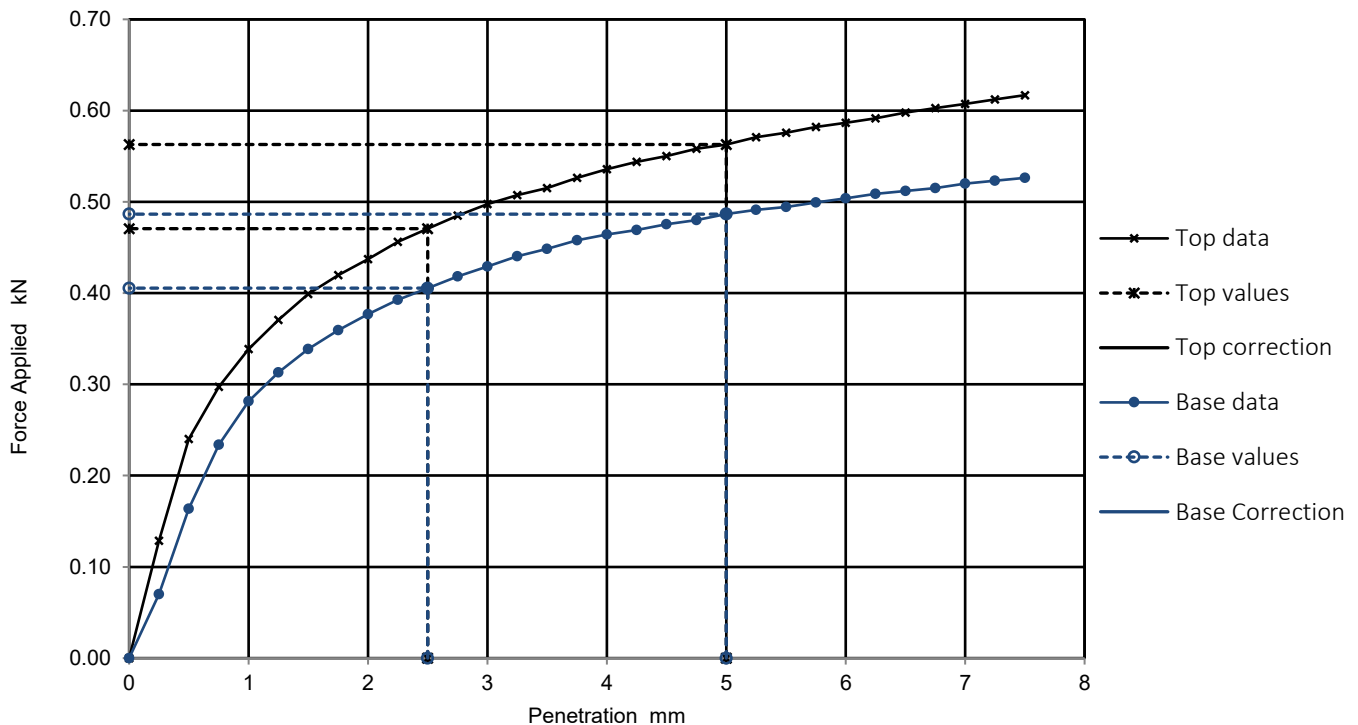
Dry density 1.50 Mg/m³

Moisture content 28 %

Surcharge applied 6 kg

4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	3.6	2.8	3.6	3.3
No	3.1	2.4	3.1	

Moisture Content %
29
31

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP13

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 5

Project No. GE19906

Client

GESL

Depth Top 1.00 m

Soil Description

Brown, bluish grey and orange mottled slightly sandy silty CLAY

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 09/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded 0.17 mm

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.87 Mg/m³

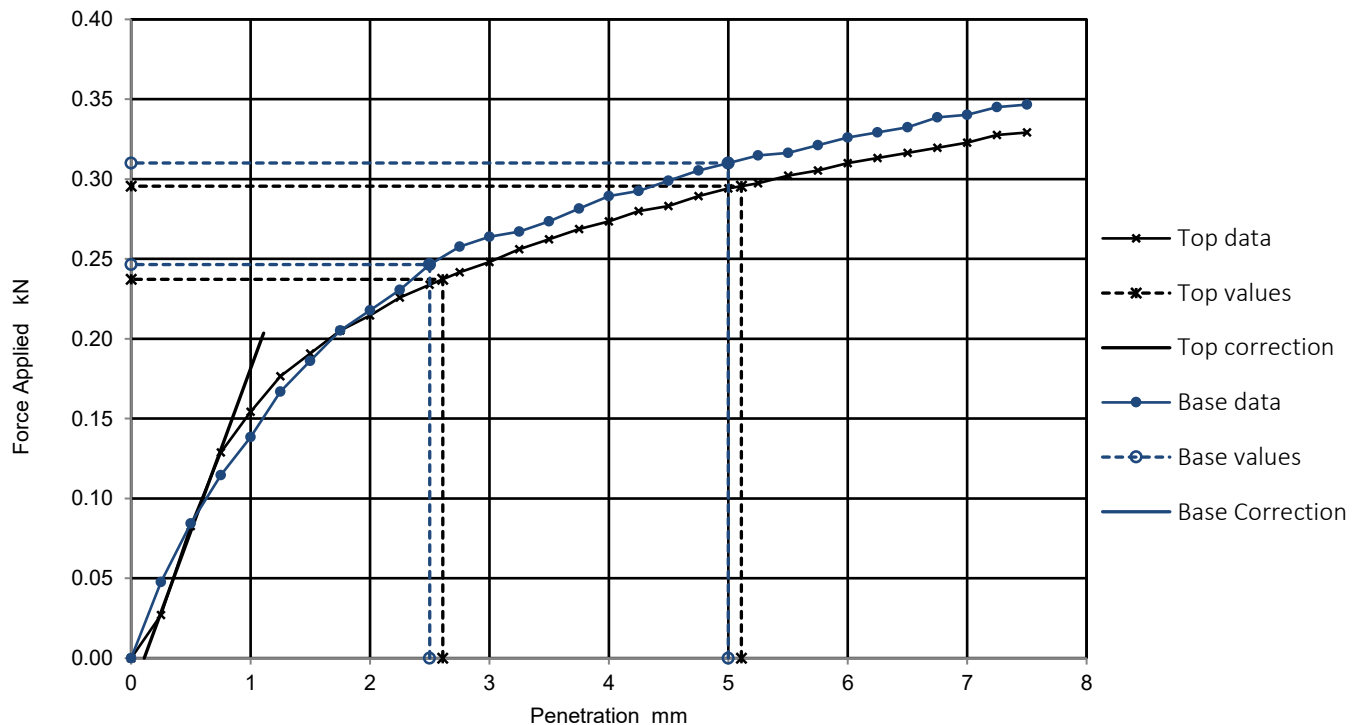
Dry density 1.40 Mg/m³

Moisture content 33 %

Surcharge applied 6 kg

4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
Yes	1.8	1.5	1.8	1.8
No	1.9	1.6	1.9	

Moisture Content %
34
34

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP14

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 3

Project No. GE19906

Client

GESL

Depth Top 0.50 m

Soil Description

Brown slightly gravelly slightly sandy silty CLAY (gravel is fmc and sub-rounded to angular)

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 09/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded -0.10 mm

Material retained on 20mm sieve removed 1.8 %

Initial Specimen details Bulk density 2.03 Mg/m³

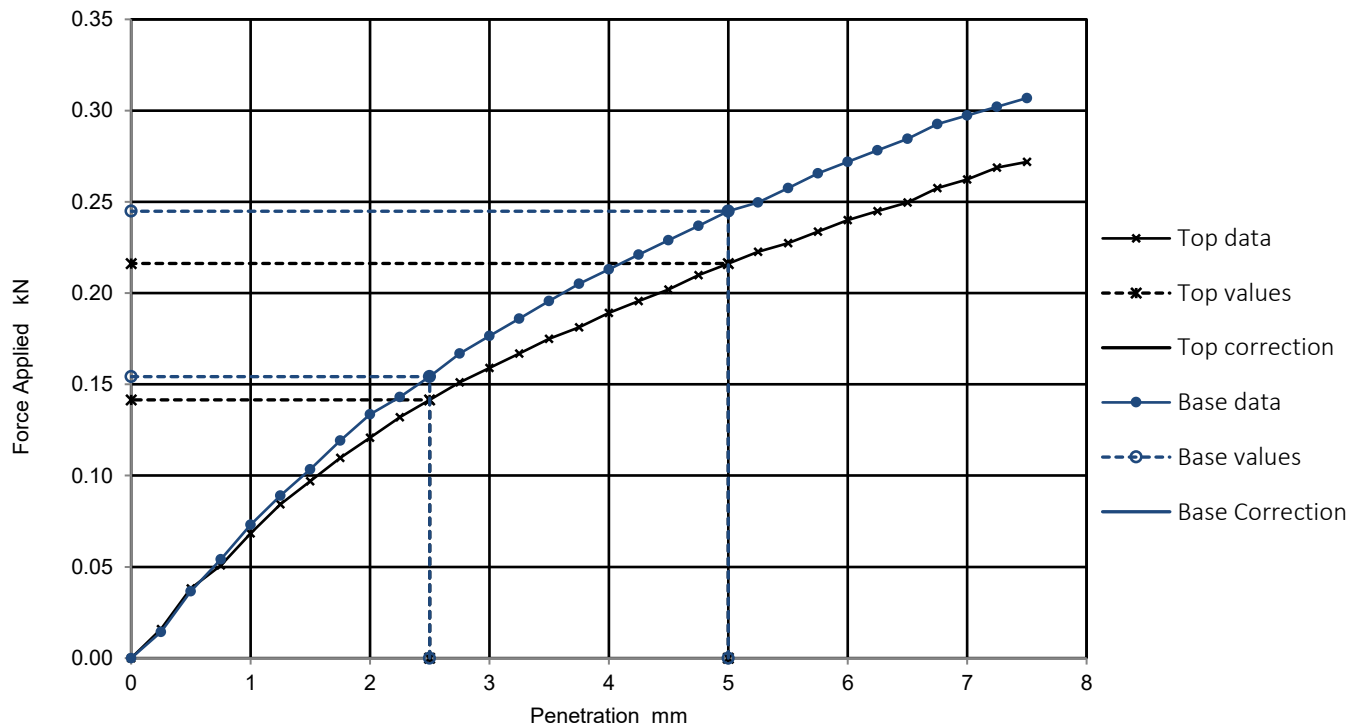
Dry density 1.68 Mg/m³

Moisture content 21 %

Surcharge applied 6 kg

4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	1.1	1.1	1.1	1.2
No	1.2	1.2	1.2	

Moisture Content %
22
21

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP17

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 4

Project No. GE19906 Client GESL

Depth Top 0.60 m

Soil Description Brown slightly mottled bluish grey and orange slightly gravelly silty CLAY (gravel is fmc and sub-angular to angular)

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 03/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

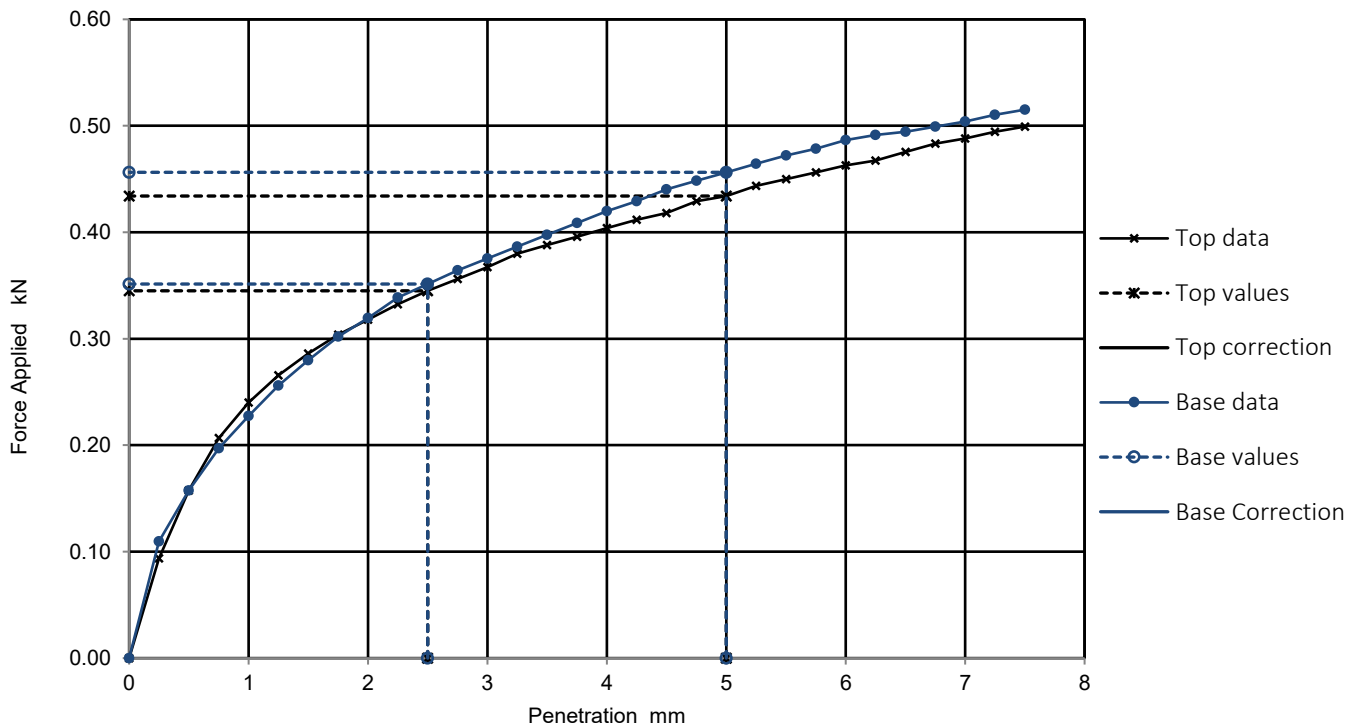
Time to surface 5 days

Amount of swell recorded 0.20 mm

Material retained on 20mm sieve removed 2.2 %

Initial Specimen details Bulk density 2.03 Mg/m³ Surcharge applied 6 kg
Dry density 1.66 Mg/m³ 4 kPa
Moisture content 22 %

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.6	2.2	2.6	2.6
No	2.7	2.3	2.7	

Moisture Content %
22
22

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP18

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 5

Project No. GE19906 Client GESL

Depth Top 1.00 m

Soil Description Orangish brown slightly gravelly slightly sandy silty CLAY (gravel is fmc and sub-angular to rounded)

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 04/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded -0.09 mm

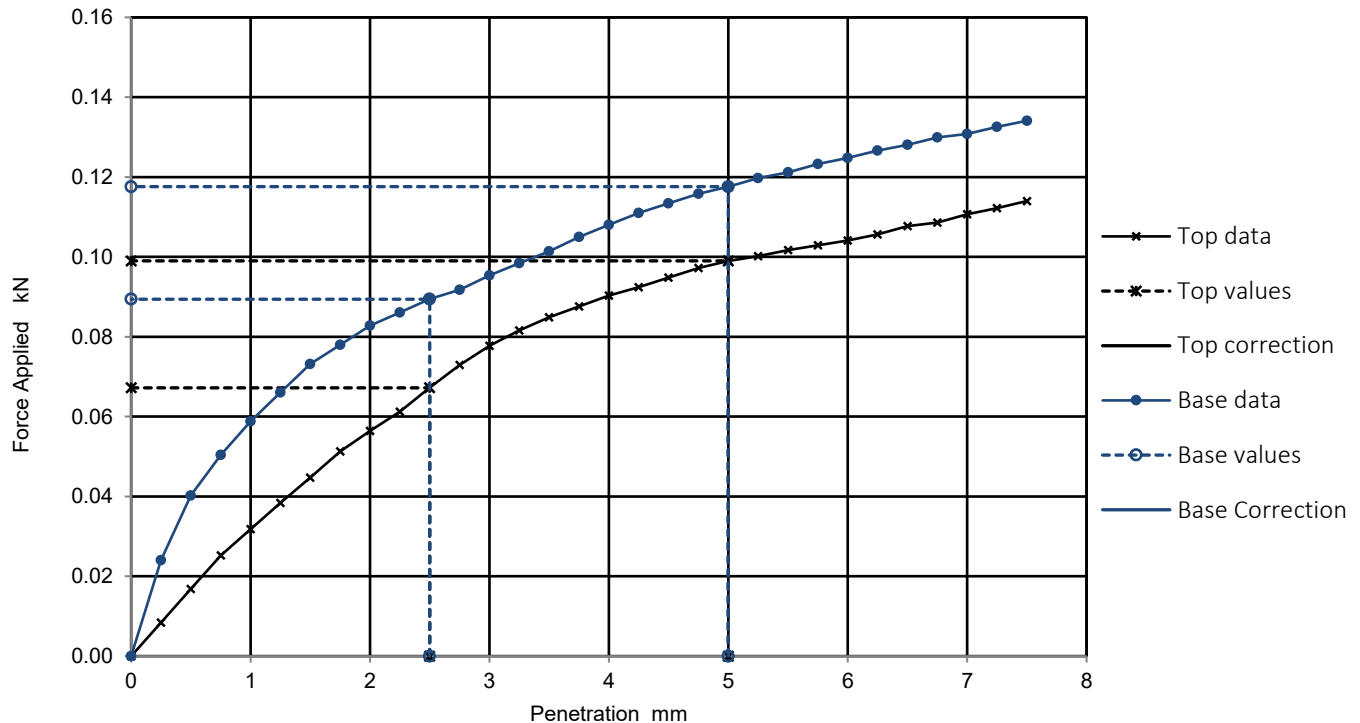
Material retained on 20mm sieve removed 6.1 %

Initial Specimen details Bulk density 1.99 Mg/m³ Surcharge applied 6 kg

Dry density 1.60 Mg/m³ 4 kPa

Moisture content 25 %

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.51	0.50	0.51	N/A
No	0.68	0.59	0.68	

Moisture Content %
25
26

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

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Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP21

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 4

Project No. GE19906 Client GESL

Depth Top 1.00 m

Soil Description Brown, orange and bluish grey and green multicoloured slightly sandy silty CLAY

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 09/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

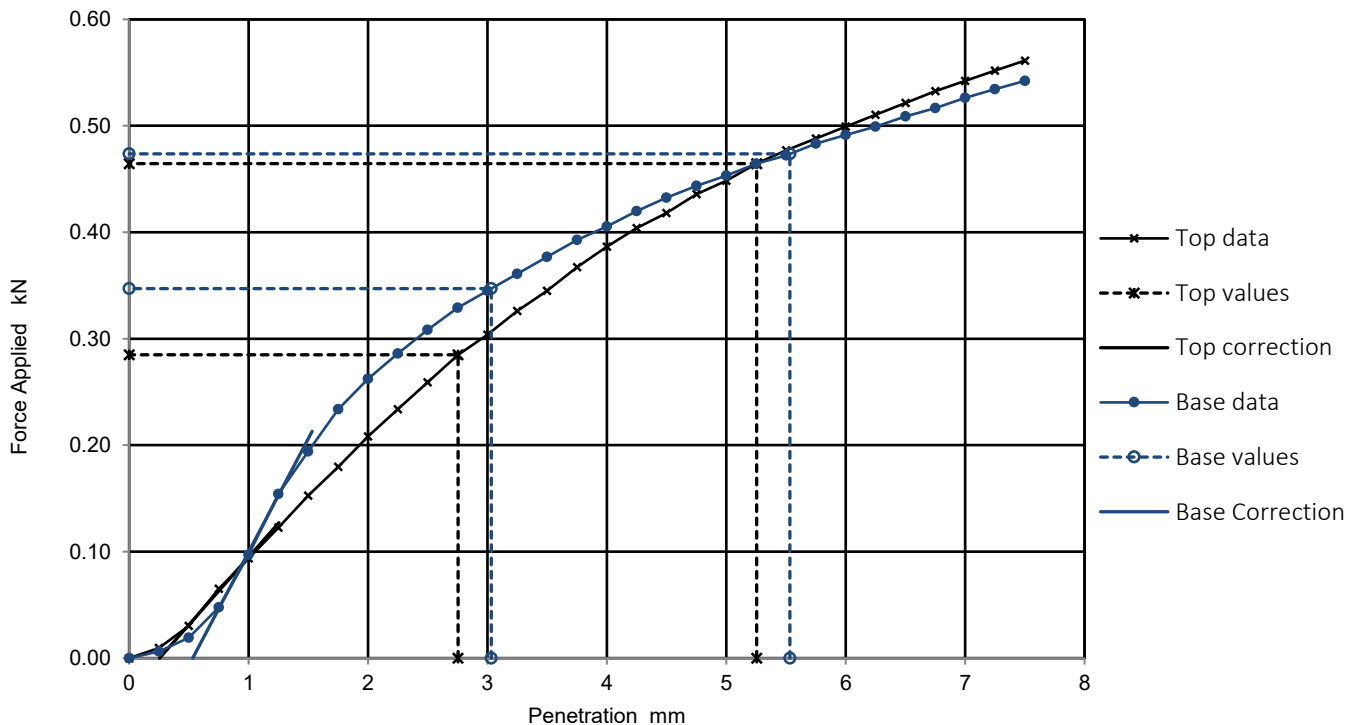
Time to surface 5 days

Amount of swell recorded 0.08 mm

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.98 Mg/m³ Surcharge applied 6 kg
Dry density 1.60 Mg/m³ 4 kPa
Moisture content 24 %

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
Yes	2.2	2.3	2.3	2.5
Yes	2.6	2.4	2.6	

Moisture Content %
25
24

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP22

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 3

Project No. GE19906

Client

GESL

Depth Top 0.50 m

Soil Description

Brown slightly sandy slightly gravelly silty CLAY (gravel is fmc and sub-rounded)

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 09/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded 0.90 mm

Material retained on 20mm sieve removed 0.78 %

Initial Specimen details Bulk density 2.00 Mg/m³

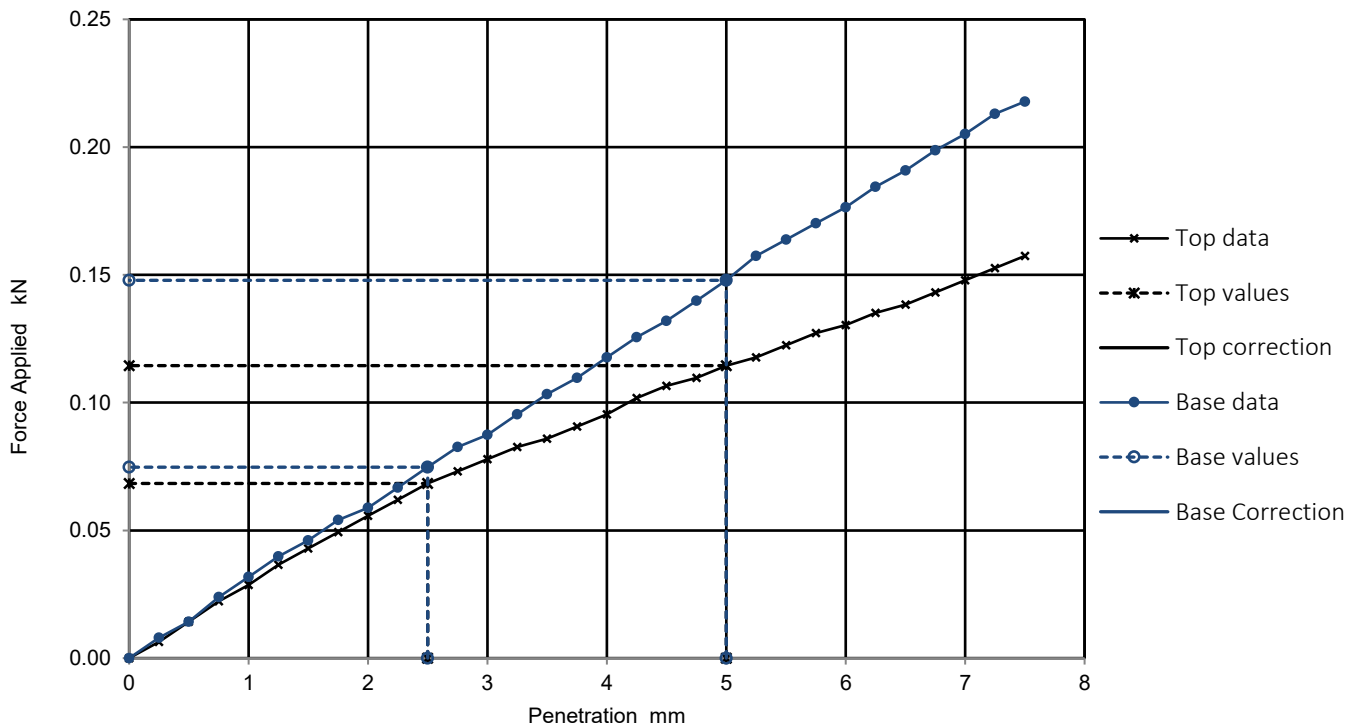
Dry density 1.67 Mg/m³

Moisture content 20 %

Surcharge applied 6 kg

4 kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	0.5	0.6	0.6	N/A
No	0.6	0.7	0.7	

Moisture Content %
21
20

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021



California Bearing Ratio (CBR)

Job Ref 30887

Borehole/Pit No. TP24

Site Name Quobleigh Breach and Fir Tree Farm

Sample No. 4

Project No. GE19906

Client

GESL

Depth Top 0.70 m

Soil Description

Brown, orange and bluish grey mottled slightly sandy silty CLAY

Depth Base - m

Sample Type B

Samples received 12/10/2021

Schedules received 19/10/2021

Test Method BS1377 : Part 4 : 1990, clause 7

Project Started 20/10/2021

Date Tested 03/11/2021

Specimen Preparation

Condition REMOULDED

Details Recompacted with specified standard effort using 2.5kg rammer

Soaking details

Period of soaking 5 days

Time to surface 5 days

Amount of swell recorded 0.41 mm

Material retained on 20mm sieve removed 0 %

Initial Specimen details Bulk density 1.90 Mg/m³

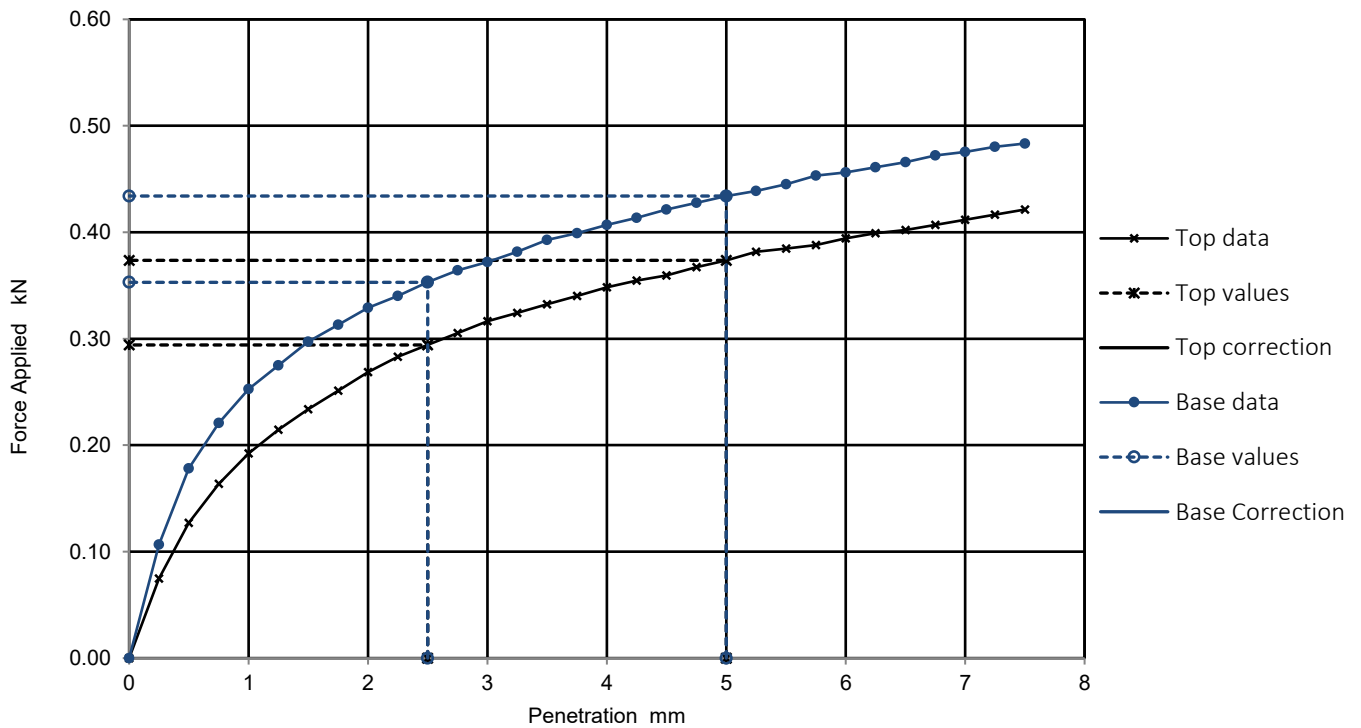
Dry density 1.48 Mg/m³

Moisture content 29 %

Surcharge applied kg

kPa

Force v Penetration Plots



Results

TOP
BASE

Curve correction applied	CBR Values, %			
	2.5mm	5mm	Highest	Average
No	2.2	1.9	2.2	2.5
No	2.7	2.2	2.7	

Moisture Content %
32
31

Remarks

1



Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU

Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 19/11/2021

APPENDIX D

Geochemical Laboratory Results





Final Report

Report No.:	21-35312-1		
Initial Date of Issue:	20-Oct-2021		
Client	Geo-Environmental Services Ltd		
Client Address:	Unit 7, Danworth Farm Cuckfield Road Hurstpierpoint West Sussex BN6 9GL		
Contact(s):	Fiona Goode Laura Legate Reporting		
Project	GE19906 Horton Heath		
Quotation No.:	Q21-25381	Date Received:	11-Oct-2021
Order No.:	PO-4534	Date Instructed:	14-Oct-2021
No. of Samples:	38		
Turnaround (Wkdays):	5	Results Due:	20-Oct-2021
Date Approved:	20-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296240	1296241	1296243	1296244	1296246	1296247	1296249	1296250
	Sample Location:				TP02	TP03	TP08	TP01	TP17	TP22	TP26	TP20
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.2	0.3	0.2	0.2	0.15	0.5	0.15	0.1
	Date Sampled:				06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM						
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-	-						
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected						
Moisture	N	2030	%	0.020	17	17	19	18	14	13	15	15
Soil Colour	N	2040		N/A	Brown	Brown						
Other Material	N	2040		N/A	None	None						
Soil Texture	N	2040		N/A	Clay	Clay						
pH	M	2010		4.0	9.2	9.1						
pH (2.5:1)	N	2010		4.0					8.3			
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.49	0.64						
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.011	0.030			< 0.010			
Total Sulphur	M	2175	%	0.010					0.051			
Sulphur (Elemental)	M	2180	mg/kg	1.0	< 1.0	< 1.0						
Chloride (Water Soluble)	M	2220	g/l	0.010	< 0.010	< 0.010						
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50						
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	2.1	14						
Sulphate (Total)	M	2430	mg/kg	100	310	160						
Sulphate (Acid Soluble)	M	2430	%	0.010					0.011			
Arsenic	M	2450	mg/kg	1.0	3.9	15						
Barium	M	2450	mg/kg	10	17	63						
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0						
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.11						
Chromium	M	2450	mg/kg	1.0	14	17						
Copper	M	2450	mg/kg	0.50	10	24						
Mercury	M	2450	mg/kg	0.10	< 0.10	0.10						
Nickel	M	2450	mg/kg	0.50	7.0	43						
Lead	M	2450	mg/kg	0.50	11	53						
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20						
Vanadium	U	2450	mg/kg	5.0	18	9.9						
Zinc	M	2450	mg/kg	0.50	26	62						
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50						
Total Organic Carbon	M	2625	%	0.20	0.70	0.54						
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0						
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0						
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0						
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0						
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0						
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0						

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296240	1296241	1296243	1296244	1296246	1296247	1296249	1296250
	Sample Location:				TP02	TP03	TP08	TP01	TP17	TP22	TP26	TP20
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.2	0.3	0.2	0.2	0.15	0.5	0.15	0.1
	Date Sampled:				06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM						
Determinand	Accred.	SOP	Units	LOD								
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0						
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0						
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0						
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0						
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0						
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0						
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0						
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0						
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0						
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0						
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0						
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0						
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10						
Benzene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010						
Toluene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010						
Ethylbenzene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010						
m & p-Xylene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010						
o-Xylene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010						
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010						
Naphthalene	N	2800	mg/kg	0.010	< 0.010	< 0.010						
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010	< 0.010						
Acenaphthene	N	2800	mg/kg	0.010	< 0.010	< 0.010						
Fluorene	N	2800	mg/kg	0.010	< 0.010	< 0.010						
Phenanthrene	N	2800	mg/kg	0.010	0.54	1.4						
Anthracene	N	2800	mg/kg	0.010	0.27	0.39						
Fluoranthene	N	2800	mg/kg	0.010	0.46	2.1						
Pyrene	N	2800	mg/kg	0.010	0.43	1.8						
Benzo[a]anthracene	N	2800	mg/kg	0.010	< 0.010	1.1						
Chrysene	N	2800	mg/kg	0.010	< 0.010	1.2						
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010	1.9						
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010	0.70						
Benzo[a]pyrene	N	2800	mg/kg	0.010	< 0.010	1.6						
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	< 0.010	1.0						
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	< 0.010	0.24						
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	< 0.010	1.1						
Total Of 16 PAH's	N	2800	mg/kg	0.20	1.7	15						
Alpha-HCH	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296240	1296241	1296243	1296244	1296246	1296247	1296249	1296250
	Sample Location:				TP02	TP03	TP08	TP01	TP17	TP22	TP26	TP20
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.2	0.3	0.2	0.2	0.15	0.5	0.15	0.1
	Date Sampled:				06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	06-Oct-2021	07-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM						
Determinand	Accred.	SOP	Units	LOD								
Beta-HCH	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Delta-HCH	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Heptachlor	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Aldrin	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Heptachlor Epoxide	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Gamma-Chlordane	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Alpha-Chlordane	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Endosulfan I	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
4,4-DDE	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Dieldrin	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Endrin	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
4,4-DDD	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Endosulfan II	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Endrin Aldehyde	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
4,4-DDT	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Endosulfan Sulphate	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Methoxychlor	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Endrin Ketone	N	2840	mg/kg	0.20			< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10						

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296251	1296252	1296253	1296254	1296255	1296256	1296257	1296258
	Sample Location:				TP18	TP18	TP16	TP14	TP14	TP13	TP13	TP12
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.4	0.7	0.8	0.15	0.7	0.4	0.9	0.7
	Date Sampled:				07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
	Asbestos Lab:				DURHAM		DURHAM	DURHAM		DURHAM		
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-		-	-		-		
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected		
Moisture	N	2030	%	0.020	13	11	19	15	20	18	20	17
Soil Colour	N	2040		N/A	Brown		Brown	Brown		Brown		
Other Material	N	2040		N/A	None		None	None		Roots		
Soil Texture	N	2040		N/A	Loam		Clay	Loam		Clay		
pH	M	2010		4.0	8.5		8.4	8.5		8.4		
pH (2.5:1)	N	2010		4.0		8.3			8.4		8.3	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.71		0.49	0.82		< 0.40		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	
Total Sulphur	M	2175	%	0.010		0.018			0.013		0.027	
Sulphur (Elemental)	M	2180	mg/kg	1.0	< 1.0		< 1.0	< 1.0		44		
Chloride (Water Soluble)	M	2220	g/l	0.010	< 0.010		< 0.010	< 0.010		< 0.010		
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50		< 0.50	< 0.50		< 0.50		
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.5		1.6	1.4		1.5		
Sulphate (Total)	M	2430	mg/kg	100	270		< 100	< 100		290		
Sulphate (Acid Soluble)	M	2430	%	0.010		0.014			< 0.010		< 0.010	
Arsenic	M	2450	mg/kg	1.0	5.6		3.6	6.5		4.0		
Barium	M	2450	mg/kg	10	20		13	16		14		
Beryllium	U	2450	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		
Cadmium	M	2450	mg/kg	0.10	< 0.10		< 0.10	< 0.10		< 0.10		
Chromium	M	2450	mg/kg	1.0	15		20	26		12		
Copper	M	2450	mg/kg	0.50	21		19	13		6.8		
Mercury	M	2450	mg/kg	0.10	< 0.10		< 0.10	< 0.10		< 0.10		
Nickel	M	2450	mg/kg	0.50	5.5		6.9	9.7		7.5		
Lead	M	2450	mg/kg	0.50	10		5.6	6.8		7.4		
Selenium	M	2450	mg/kg	0.20	< 0.20		< 0.20	0.26		< 0.20		
Vanadium	U	2450	mg/kg	5.0	23		30	38		16		
Zinc	M	2450	mg/kg	0.50	24		14	18		20		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50		< 0.50		
Total Organic Carbon	M	2625	%	0.20	0.50		0.30	1.1		1.5		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:					21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:					1296251	1296252	1296253	1296254	1296255	1296256	1296257	1296258
	Sample Location:					TP18	TP18	TP16	TP14	TP14	TP13	TP13	TP12
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0.4	0.7	0.8	0.15	0.7	0.4	0.9	0.7
	Date Sampled:					07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
	Asbestos Lab:					DURHAM		DURHAM	DURHAM		DURHAM		
Determinand	Accred.	SOP	Units	LOD									
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0			< 5.0	< 5.0		< 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0			< 1.0	< 1.0		< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0			< 5.0	< 5.0		< 5.0		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10			< 10	< 10		< 10		
Benzene	M	2760	mg/kg	0.0010	< 0.0010			< 0.0010	< 0.0010		< 0.0010		
Toluene	M	2760	mg/kg	0.0010	< 0.0010			< 0.0010	< 0.0010		< 0.0010		
Ethylbenzene	M	2760	mg/kg	0.0010	< 0.0010			< 0.0010	< 0.0010		< 0.0010		
m & p-Xylene	M	2760	mg/kg	0.0010	< 0.0010			< 0.0010	< 0.0010		< 0.0010		
o-Xylene	M	2760	mg/kg	0.0010	< 0.0010			< 0.0010	< 0.0010		< 0.0010		
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	< 0.0010			< 0.0010	< 0.0010		< 0.0010		
Naphthalene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.19		
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.026		
Acenaphthene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.12		
Fluorene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.13		
Phenanthrene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.24		
Anthracene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.069		
Fluoranthene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.21		
Pyrene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.22		
Benzo[a]anthracene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.13		
Chrysene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.16		
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.14		
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.078		
Benzo[a]pyrene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.10		
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.070		
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.046		
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	< 0.010			< 0.010	< 0.010		0.075		
Total Of 16 PAH's	N	2800	mg/kg	0.20	< 0.20			< 0.20	< 0.20		2.0		
Alpha-HCH	N	2840	mg/kg	0.20									< 0.20
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20									< 0.20

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296251	1296252	1296253	1296254	1296255	1296256	1296257	1296258
	Sample Location:				TP18	TP18	TP16	TP14	TP14	TP13	TP13	TP12
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.4	0.7	0.8	0.15	0.7	0.4	0.9	0.7
	Date Sampled:				07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
	Asbestos Lab:				DURHAM		DURHAM	DURHAM		DURHAM		
Determinand	Accred.	SOP	Units	LOD								
Beta-HCH	N	2840	mg/kg	0.20								< 0.20
Delta-HCH	N	2840	mg/kg	0.20								< 0.20
Heptachlor	N	2840	mg/kg	0.20								< 0.20
Aldrin	N	2840	mg/kg	0.20								< 0.20
Heptachlor Epoxide	N	2840	mg/kg	0.20								< 0.20
Gamma-Chlordane	N	2840	mg/kg	0.20								< 0.20
Alpha-Chlordane	N	2840	mg/kg	0.20								< 0.20
Endosulfan I	N	2840	mg/kg	0.20								< 0.20
4,4-DDE	N	2840	mg/kg	0.20								< 0.20
Dieldrin	N	2840	mg/kg	0.20								< 0.20
Endrin	N	2840	mg/kg	0.20								< 0.20
4,4-DDD	N	2840	mg/kg	0.20								< 0.20
Endosulfan II	N	2840	mg/kg	0.20								< 0.20
Endrin Aldehyde	N	2840	mg/kg	0.20								< 0.20
4,4-DDT	N	2840	mg/kg	0.20								< 0.20
Endosulfan Sulphate	N	2840	mg/kg	0.20								< 0.20
Methoxychlor	N	2840	mg/kg	0.20								< 0.20
Endrin Ketone	N	2840	mg/kg	0.20								< 0.20
Total Phenols	M	2920	mg/kg	0.10	< 0.10		< 0.10	< 0.10		0.13		

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296259	1296260	1296261	1296262	1296263	1296264	1296265	1296266
	Sample Location:				TP11	TP11	TP05	TP05	TP06	TP06	TP07	TP07
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.25	1.3	0.7	1.1	0.25	0.6	0.3	1.2
	Date Sampled:				07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
	Asbestos Lab:				DURHAM		DURHAM		DURHAM		DURHAM	
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-		-		-		-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected		No Asbestos Detected		No Asbestos Detected	
Moisture	N	2030	%	0.020	12	19	22	22	22	24	23	25
Soil Colour	N	2040		N/A	Brown		Brown		Brown		Brown	
Other Material	N	2040		N/A	None		None		None		Roots	
Soil Texture	N	2040		N/A	Loam		Clay		Clay		Clay	
pH	M	2010		4.0	8.4		8.3		8.3		9.4	
pH (2.5:1)	N	2010		4.0		8.4		8.4		8.0		7.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.78		0.40		0.55		1.0	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.026	< 0.010	0.037	0.033	< 0.010	< 0.010	< 0.010
Total Sulphur	M	2175	%	0.010		0.027		0.025		0.026		0.023
Sulphur (Elemental)	M	2180	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Chloride (Water Soluble)	M	2220	g/l	0.010	< 0.010		< 0.010		< 0.010		< 0.010	
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50		< 0.50		< 0.50		0.60	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.3		14		4.3		1.8	
Sulphate (Total)	M	2430	mg/kg	100	430		< 100		< 100		< 100	
Sulphate (Acid Soluble)	M	2430	%	0.010		< 0.010		< 0.010		< 0.010		< 0.010
Arsenic	M	2450	mg/kg	1.0	8.2		7.5		6.6		7.2	
Barium	M	2450	mg/kg	10	22		19		17		18	
Beryllium	U	2450	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Cadmium	M	2450	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	
Chromium	M	2450	mg/kg	1.0	21		26		23		24	
Copper	M	2450	mg/kg	0.50	19		92		9.7		11	
Mercury	M	2450	mg/kg	0.10	0.14		< 0.10		< 0.10		< 0.10	
Nickel	M	2450	mg/kg	0.50	7.1		13		7.3		8.5	
Lead	M	2450	mg/kg	0.50	24		17		9.3		9.7	
Selenium	M	2450	mg/kg	0.20	< 0.20		< 0.20		< 0.20		< 0.20	
Vanadium	U	2450	mg/kg	5.0	30		28		28		29	
Zinc	M	2450	mg/kg	0.50	31		41		23		24	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50		< 0.50		< 0.50	
Total Organic Carbon	M	2625	%	0.20	1.2		0.28		< 0.20		2.5	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0	

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296259	1296260	1296261	1296262	1296263	1296264	1296265
	Sample Location:				TP11	TP11	TP05	TP05	TP06	TP06	TP07
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.25	1.3	0.7	1.1	0.25	0.6	0.3
	Date Sampled:				07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
	Asbestos Lab:				DURHAM		DURHAM		DURHAM		DURHAM
Determinand	Accred.	SOP	Units	LOD							
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0		< 5.0		< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0		< 1.0		< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0		< 5.0		< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10		< 10		< 10		< 10
Benzene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010		< 0.0010		< 0.0010
Toluene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010		< 0.0010		< 0.0010
Ethylbenzene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010		< 0.0010		< 0.0010
m & p-Xylene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010		< 0.0010		< 0.0010
o-Xylene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010		< 0.0010		< 0.0010
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010		< 0.0010		< 0.0010
Naphthalene	N	2800	mg/kg	0.010	0.16		< 0.010		< 0.010		< 0.010
Acenaphthylene	N	2800	mg/kg	0.010	0.022		< 0.010		< 0.010		< 0.010
Acenaphthene	N	2800	mg/kg	0.010	0.048		< 0.010		< 0.010		< 0.010
Fluorene	N	2800	mg/kg	0.010	< 0.010		< 0.010		< 0.010		< 0.010
Phenanthrene	N	2800	mg/kg	0.010	0.049		< 0.010		< 0.010		< 0.010
Anthracene	N	2800	mg/kg	0.010	0.047		< 0.010		< 0.010		< 0.010
Fluoranthene	N	2800	mg/kg	0.010	0.13		< 0.010		< 0.010		< 0.010
Pyrene	N	2800	mg/kg	0.010	0.13		< 0.010		< 0.010		< 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	0.042		< 0.010		< 0.010		< 0.010
Chrysene	N	2800	mg/kg	0.010	0.066		< 0.010		< 0.010		< 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010		< 0.010		< 0.010		< 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010		< 0.010		< 0.010		< 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	0.030		< 0.010		< 0.010		< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	0.029		< 0.010		< 0.010		< 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	0.028		< 0.010		< 0.010		< 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	0.020		< 0.010		< 0.010		< 0.010
Total Of 16 PAH's	N	2800	mg/kg	0.20	0.80		< 0.20		< 0.20		< 0.20
Alpha-HCH	N	2840	mg/kg	0.20							
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20							

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296259	1296260	1296261	1296262	1296263	1296264	1296265	1296266
	Sample Location:				TP11	TP11	TP05	TP05	TP06	TP06	TP07	TP07
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.25	1.3	0.7	1.1	0.25	0.6	0.3	1.2
	Date Sampled:				07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021
	Asbestos Lab:				DURHAM		DURHAM		DURHAM		DURHAM	
Determinand	Accred.	SOP	Units	LOD								
Beta-HCH	N	2840	mg/kg	0.20								
Delta-HCH	N	2840	mg/kg	0.20								
Heptachlor	N	2840	mg/kg	0.20								
Aldrin	N	2840	mg/kg	0.20								
Heptachlor Epoxide	N	2840	mg/kg	0.20								
Gamma-Chlordane	N	2840	mg/kg	0.20								
Alpha-Chlordane	N	2840	mg/kg	0.20								
Endosulfan I	N	2840	mg/kg	0.20								
4,4-DDE	N	2840	mg/kg	0.20								
Dieldrin	N	2840	mg/kg	0.20								
Endrin	N	2840	mg/kg	0.20								
4,4-DDD	N	2840	mg/kg	0.20								
Endosulfan II	N	2840	mg/kg	0.20								
Endrin Aldehyde	N	2840	mg/kg	0.20								
4,4-DDT	N	2840	mg/kg	0.20								
Endosulfan Sulphate	N	2840	mg/kg	0.20								
Methoxychlor	N	2840	mg/kg	0.20								
Endrin Ketone	N	2840	mg/kg	0.20								
Total Phenols	M	2920	mg/kg	0.10	< 0.10		< 0.10		< 0.10		< 0.10	

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296267	1296268	1296269	1296270	1296271	1296272	1296273	1296274
	Sample Location:				TP10	TP10	TP21	TP25	TP25	TP19	TP19	TP23
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.1	0.6	0.4	0.25	0.6	0.15	0.6	0.7
	Date Sampled:				08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021
	Asbestos Lab:				DURHAM		DURHAM	DURHAM		DURHAM		DURHAM
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-		-	-		-		-
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected		No Asbestos Detected
Moisture	N	2030	%	0.020	24	17	13	16	17	11	8.9	20
Soil Colour	N	2040		N/A	Brown		Brown	Brown		Brown		Brown
Other Material	N	2040		N/A	Roots		None	None		None		None
Soil Texture	N	2040		N/A	Loam		Clay	Loam		Loam		Clay
pH	M	2010		4.0	8.5		8.4	8.4		8.6		11.3
pH (2.5:1)	N	2010		4.0		11.8			8.7		8.7	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.83		< 0.40	0.45		< 0.40		< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Sulphur	M	2175	%	0.010		0.019			0.019		0.029	
Sulphur (Elemental)	M	2180	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		< 1.0
Chloride (Water Soluble)	M	2220	g/l	0.010	< 0.010		< 0.010	< 0.010		< 0.010		0.028
Cyanide (Total)	M	2300	mg/kg	0.50	0.50		< 0.50	< 0.50		< 0.50		< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.3		1.6	1.5		1.6		1.4
Sulphate (Total)	M	2430	mg/kg	100	< 100		< 100	380		< 100		< 100
Sulphate (Acid Soluble)	M	2430	%	0.010		< 0.010			< 0.010		0.016	
Arsenic	M	2450	mg/kg	1.0	6.2		4.3	6.0		36		7.2
Barium	M	2450	mg/kg	10	15		11	19		22		< 10
Beryllium	U	2450	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		< 1.0
Cadmium	M	2450	mg/kg	0.10	< 0.10		< 0.10	< 0.10		< 0.10		< 0.10
Chromium	M	2450	mg/kg	1.0	25		19	24		40		9.6
Copper	M	2450	mg/kg	0.50	13		7.2	9.8		51		5.1
Mercury	M	2450	mg/kg	0.10	< 0.10		< 0.10	< 0.10		< 0.10		< 0.10
Nickel	M	2450	mg/kg	0.50	11		7.6	7.5		24		7.9
Lead	M	2450	mg/kg	0.50	9.1		6.1	8.2		12		5.0
Selenium	M	2450	mg/kg	0.20	< 0.20		< 0.20	< 0.20		0.50		< 0.20
Vanadium	U	2450	mg/kg	5.0	25		24	33		49		19
Zinc	M	2450	mg/kg	0.50	31		19	20		38		11
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50		< 0.50		< 0.50
Total Organic Carbon	M	2625	%	0.20	2.9		0.50	1.2		0.57		0.21
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0		< 1.0

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296267	1296268	1296269	1296270	1296271	1296272	1296273
	Sample Location:				TP10	TP10	TP21	TP25	TP25	TP19	TP19
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.1	0.6	0.4	0.25	0.6	0.15	0.6
	Date Sampled:				08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021
	Asbestos Lab:				DURHAM		DURHAM	DURHAM		DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD							
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0	< 5.0		< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0		< 1.0	< 1.0		< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0		< 5.0	< 5.0		< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10		< 10	< 10		< 10	< 10
Benzene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	< 0.0010
Toluene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	< 0.0010
Ethylbenzene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	< 0.0010
m & p-Xylene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	< 0.0010
o-Xylene	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	< 0.0010
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	< 0.0010
Naphthalene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Acenaphthene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Fluorene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Phenanthrene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Anthracene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Fluoranthene	N	2800	mg/kg	0.010	0.35		< 0.010	0.35		< 0.010	< 0.010
Pyrene	N	2800	mg/kg	0.010	0.34		< 0.010	0.39		< 0.010	< 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Chrysene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	< 0.010		< 0.010	< 0.010		< 0.010	< 0.010
Total Of 16 PAH's	N	2800	mg/kg	0.20	0.69		< 0.20	0.74		< 0.20	< 0.20
Alpha-HCH	N	2840	mg/kg	0.20							
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20							

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296267	1296268	1296269	1296270	1296271	1296272	1296273	1296274
	Sample Location:				TP10	TP10	TP21	TP25	TP25	TP19	TP19	TP23
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.1	0.6	0.4	0.25	0.6	0.15	0.6	0.7
	Date Sampled:				08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021	08-Oct-2021
	Asbestos Lab:				DURHAM		DURHAM	DURHAM		DURHAM		DURHAM
Determinand	Accred.	SOP	Units	LOD								
Beta-HCH	N	2840	mg/kg	0.20								
Delta-HCH	N	2840	mg/kg	0.20								
Heptachlor	N	2840	mg/kg	0.20								
Aldrin	N	2840	mg/kg	0.20								
Heptachlor Epoxide	N	2840	mg/kg	0.20								
Gamma-Chlordane	N	2840	mg/kg	0.20								
Alpha-Chlordane	N	2840	mg/kg	0.20								
Endosulfan I	N	2840	mg/kg	0.20								
4,4-DDE	N	2840	mg/kg	0.20								
Dieldrin	N	2840	mg/kg	0.20								
Endrin	N	2840	mg/kg	0.20								
4,4-DDD	N	2840	mg/kg	0.20								
Endosulfan II	N	2840	mg/kg	0.20								
Endrin Aldehyde	N	2840	mg/kg	0.20								
4,4-DDT	N	2840	mg/kg	0.20								
Endosulfan Sulphate	N	2840	mg/kg	0.20								
Methoxychlor	N	2840	mg/kg	0.20								
Endrin Ketone	N	2840	mg/kg	0.20								
Total Phenols	M	2920	mg/kg	0.10	0.16		< 0.10	< 0.10		< 0.10		< 0.10

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296275	1296277	1296278
	Sample Location:				TP27	TP28	TP28
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.4	0.25	1.1
	Date Sampled:				08-Oct-2021	08-Oct-2021	08-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	
Moisture	N	2030	%	0.020	14	25	26
Soil Colour	N	2040		N/A	Brown	Brown	
Other Material	N	2040		N/A	None	Roots	
Soil Texture	N	2040		N/A	Clay	Clay	
pH	M	2010		4.0	11.2	9.0	
pH (2.5:1)	N	2010		4.0			8.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	0.79	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	0.038	< 0.010
Total Sulphur	M	2175	%	0.010			0.015
Sulphur (Elemental)	M	2180	mg/kg	1.0	< 1.0	< 1.0	
Chloride (Water Soluble)	M	2220	g/l	0.010	0.014	< 0.010	
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	2.1	1.3	
Sulphate (Total)	M	2430	mg/kg	100	< 100	< 100	
Sulphate (Acid Soluble)	M	2430	%	0.010			< 0.010
Arsenic	M	2450	mg/kg	1.0	7.8	5.4	
Barium	M	2450	mg/kg	10	< 10	< 10	
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0	
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	
Chromium	M	2450	mg/kg	1.0	11	8.7	
Copper	M	2450	mg/kg	0.50	5.2	19	
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	
Nickel	M	2450	mg/kg	0.50	9.1	6.8	
Lead	M	2450	mg/kg	0.50	7.1	5.3	
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	
Vanadium	U	2450	mg/kg	5.0	20	15	
Zinc	M	2450	mg/kg	0.50	12	9.9	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	
Total Organic Carbon	M	2625	%	0.20	0.37	2.0	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296275	1296277	1296278
	Sample Location:				TP27	TP28	TP28
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.4	0.25	1.1
	Date Sampled:				08-Oct-2021	08-Oct-2021	08-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD			
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	
Benzene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	
Toluene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	
Ethylbenzene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	
m & p-Xylene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	
o-Xylene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	
Naphthalene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Acenaphthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Fluorene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Phenanthrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Fluoranthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Pyrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Benzo[a]anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Chrysene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Benzo[a]pyrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	
Total Of 16 PAH's	N	2800	mg/kg	0.20	< 0.20	< 0.20	
Alpha-HCH	N	2840	mg/kg	0.20			
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20			

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35312	21-35312	21-35312
Quotation No.: Q21-25381	Chemtest Sample ID.:				1296275	1296277	1296278
	Sample Location:				TP27	TP28	TP28
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.4	0.25	1.1
	Date Sampled:				08-Oct-2021	08-Oct-2021	08-Oct-2021
	Asbestos Lab:				DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD			
Beta-HCH	N	2840	mg/kg	0.20			
Delta-HCH	N	2840	mg/kg	0.20			
Heptachlor	N	2840	mg/kg	0.20			
Aldrin	N	2840	mg/kg	0.20			
Heptachlor Epoxide	N	2840	mg/kg	0.20			
Gamma-Chlordane	N	2840	mg/kg	0.20			
Alpha-Chlordane	N	2840	mg/kg	0.20			
Endosulfan I	N	2840	mg/kg	0.20			
4,4-DDE	N	2840	mg/kg	0.20			
Dieldrin	N	2840	mg/kg	0.20			
Endrin	N	2840	mg/kg	0.20			
4,4-DDD	N	2840	mg/kg	0.20			
Endosulfan II	N	2840	mg/kg	0.20			
Endrin Aldehyde	N	2840	mg/kg	0.20			
4,4-DDT	N	2840	mg/kg	0.20			
Endosulfan Sulphate	N	2840	mg/kg	0.20			
Methoxychlor	N	2840	mg/kg	0.20			
Endrin Ketone	N	2840	mg/kg	0.20			
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	

Results - Single Stage WAC

Project: GE19906 Horton Heath

Chemtest Job No: 21-35312					Landfill Waste Acceptance Criteria		
Chemtest Sample ID: 1296242					Limits		
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:							
Sample Location: TP04							
Top Depth(m): 0.4							
Bottom Depth(m):							
Sampling Date: 06-Oct-2021							
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	1.2	3	5	6
Loss On Ignition	2610	M	%	3.5	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	250	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	11	100	--	--
pH	2010	M		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0090	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0008	0.0078	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0009	0.0086	0.5	10	70
Copper	1455	U	0.0008	0.0082	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.0006	0.0056	0.4	10	40
Lead	1455	U	0.0007	0.0066	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.13	1.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	17	170	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	27	270	500	800	1000

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	23

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: GE19906 Horton Heath

Chemtest Job No: 21-35312					Landfill Waste Acceptance Criteria		
Chemtest Sample ID: 1296245					Limits		
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:							
Sample Location: TP15							
Top Depth(m): 0.5							
Bottom Depth(m):							
Sampling Date: 06-Oct-2021							
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	1.2	3	5	6
Loss On Ignition	2610	M	%	1.7	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	170	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0003	0.0029	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	0.0008	0.0078	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	34	340	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	20	200	500	800	1000

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	9.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: GE19906 Horton Heath

Chemtest Job No: 21-35312					Landfill Waste Acceptance Criteria		
Chemtest Sample ID: 1296248					Limits		
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:							
Sample Location: TP24							
Top Depth(m): 0.2							
Bottom Depth(m):							
Sampling Date: 06-Oct-2021							
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	0.58	3	5	6
Loss On Ignition	2610	M	%	3.6	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	190	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0006	0.0063	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0010	0.010	0.5	10	70
Copper	1455	U	0.0019	0.019	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	0.0011	0.011	0.4	10	40
Lead	1455	U	0.0016	0.016	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.003	0.029	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.13	1.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	7.8	78	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	17	170	500	800	1000

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easily liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID

Test Methods

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Diben[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Diben[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2840	Organochlorine (O-Cl) Pesticides in Soils by GC-MS	Organochlorine pesticide representative suite including DDT and its metabolites, 'drins' and HCH etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 21-35726-1
Initial Date of Issue: 20-Oct-2021
Client Geo-Environmental Services Ltd

Client Address: Unit 7, Danworth Farm
Cuckfield Road
Hurstpierpoint
West Sussex
BN6 9GL

Contact(s): Fiona Goode
Laura Legate
Reporting

Project GE19906 Horton Heath

Quotation No.: Q21-25381

Date Received: 14-Oct-2021

Order No.: PO-4534

Date Instructed: 14-Oct-2021

No. of Samples: 11

Turnaround (Wkdays): 5

Results Due: 20-Oct-2021

Date Approved: 20-Oct-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35726	21-35726	21-35726	21-35726	21-35726	21-35726	21-35726	21-35726
Quotation No.: Q21-25381	Chemtest Sample ID.:				1298297	1298298	1298299	1298300	1298301	1298304	1298305	1298306
	Sample Location:				WS05	WS04	WS04	WS03	WS02	WS01	WS09	WS09
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.25	0.3	0.6		0.15	0.7	0.25	1.2
	Date Sampled:				11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	12-Oct-2021	12-Oct-2021
	Asbestos Lab:				COVENTRY	COVENTRY		COVENTRY	COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-	-		-	-		-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	
Moisture	N	2030	%	0.020	16	20	19	22	8.3	12	8.9	18
Soil Colour	N	2040		N/A	Brown	Brown		Brown	Brown		Brown	
Other Material	N	2040		N/A	None	Roots		Roots	Roots		None	
Soil Texture	N	2040		N/A	Loam	Loam		Loam	Loam		Clay	
pH	M	2010		4.0	9.0	9.2		9.0	9.1		9.0	
pH (2.5:1)	N	2010		4.0			8.0			7.9		7.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.65	0.81		< 0.40	0.52		< 0.40	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	0.011	< 0.010	< 0.010	0.060	0.030
Total Sulphur	M	2175	%	0.010			0.053			0.024		0.030
Sulphur (Elemental)	M	2180	mg/kg	1.0	< 1.0	8.5		< 1.0	< 1.0		< 1.0	
Chloride (Water Soluble)	M	2220	g/l	0.010	< 0.010	< 0.010		< 0.010	< 0.010		< 0.010	
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50		< 0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.3	1.6		1.4	1.3		1.8	
Sulphate (Total)	M	2430	mg/kg	100	310	710		670	290		310	
Sulphate (Acid Soluble)	M	2430	%	0.010			< 0.010			< 0.010		0.035
Arsenic	M	2450	mg/kg	1.0	4.0	4.0		4.7	3.7		7.5	
Barium	M	2450	mg/kg	10	12	18		23	17		10	
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10	
Chromium	M	2450	mg/kg	1.0	8.2	13		16	14		4.1	
Copper	M	2450	mg/kg	0.50	11	13		12	12		5.3	
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10	
Nickel	M	2450	mg/kg	0.50	4.1	5.8		8.3	7.6		2.6	
Lead	M	2450	mg/kg	0.50	20	23		24	15		2.3	
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20		< 0.20	< 0.20		< 0.20	
Vanadium	U	2450	mg/kg	5.0	12	18		24	24		< 5.0	
Zinc	M	2450	mg/kg	0.50	49	38		38	31		10	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50		< 0.50	
Total Organic Carbon	M	2625	%	0.20	1.6	3.3		2.5	0.46		< 0.20	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35726	21-35726	21-35726	21-35726	21-35726	21-35726	21-35726	21-35726
Quotation No.: Q21-25381	Chemtest Sample ID.:				1298297	1298298	1298299	1298300	1298301	1298304	1298305	1298306
	Sample Location:				WS05	WS04	WS04	WS03	WS02	WS01	WS09	WS09
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.25	0.3	0.6		0.15	0.7	0.25	1.2
	Date Sampled:				11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	12-Oct-2021	12-Oct-2021
	Asbestos Lab:				COVENTRY	COVENTRY		COVENTRY	COVENTRY		COVENTRY	
Determinand	Accred.	SOP	Units	LOD								
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0		< 5.0	< 5.0		< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0		< 1.0	< 1.0		< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0		< 5.0	< 5.0		< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10		< 10	< 10		< 10	
Benzene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	
Toluene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	
Ethylbenzene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	
m & p-Xylene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	
o-Xylene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010		< 0.0010	< 0.0010		< 0.0010	
Naphthalene	N	2800	mg/kg	0.010	0.38	< 0.010		< 0.010	< 0.010		< 0.010	
Acenaphthylene	N	2800	mg/kg	0.010	0.028	< 0.010		< 0.010	< 0.010		< 0.010	
Acenaphthene	N	2800	mg/kg	0.010	0.028	< 0.010		< 0.010	< 0.010		< 0.010	
Fluorene	N	2800	mg/kg	0.010	0.038	< 0.010		< 0.010	< 0.010		< 0.010	
Phenanthrene	N	2800	mg/kg	0.010	0.11	< 0.010		< 0.010	0.35		< 0.010	
Anthracene	N	2800	mg/kg	0.010	0.059	< 0.010		< 0.010	0.067		< 0.010	
Fluoranthene	N	2800	mg/kg	0.010	0.39	0.16		0.10	0.40		< 0.010	
Pyrene	N	2800	mg/kg	0.010	0.41	0.096		0.13	0.28		< 0.010	
Benzo[a]anthracene	N	2800	mg/kg	0.010	0.28	< 0.010		< 0.010	0.16		< 0.010	
Chrysene	N	2800	mg/kg	0.010	0.23	< 0.010		< 0.010	0.16		< 0.010	
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	0.36	< 0.010		< 0.010	< 0.010		< 0.010	
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	0.16	< 0.010		< 0.010	< 0.010		< 0.010	
Benzo[a]pyrene	N	2800	mg/kg	0.010	0.26	< 0.010		< 0.010	< 0.010		< 0.010	
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	0.28	< 0.010		< 0.010	< 0.010		< 0.010	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	0.17	< 0.010		< 0.010	< 0.010		< 0.010	
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	0.18	< 0.010		< 0.010	< 0.010		< 0.010	
Total Of 16 PAH's	N	2800	mg/kg	0.20	3.4	0.26		0.23	1.4		< 0.20	
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10		< 0.10	

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35726	21-35726	21-35726
Quotation No.: Q21-25381	Chemtest Sample ID.:				1298307	1298309	1298310
	Sample Location:				WS11	WS08	WS10
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.4	0.45	0.15
	Date Sampled:				12-Oct-2021	12-Oct-2021	12-Oct-2021
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	3.2	5.1	25
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	None	Roots
Soil Texture	N	2040		N/A	Gravel	Clay	Loam
pH	M	2010		4.0	9.2	9.0	9.2
pH (2.5:1)	N	2010		4.0			
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	1.4	0.15	0.043
Total Sulphur	M	2175	%	0.010			
Sulphur (Elemental)	M	2180	mg/kg	1.0	< 1.0	< 1.0	100
Chloride (Water Soluble)	M	2220	g/l	0.010	< 0.010	< 0.010	< 0.010
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	1.1	1.1	1.3
Sulphate (Total)	M	2430	mg/kg	100	29000	340	1200
Sulphate (Acid Soluble)	M	2430	%	0.010			
Arsenic	M	2450	mg/kg	1.0	5.9	7.9	6.0
Barium	M	2450	mg/kg	10	61	12	37
Beryllium	U	2450	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	0.11
Chromium	M	2450	mg/kg	1.0	14	15	17
Copper	M	2450	mg/kg	0.50	25	5.7	9.9
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	0.10
Nickel	M	2450	mg/kg	0.50	7.3	5.3	9.5
Lead	M	2450	mg/kg	0.50	86	5.1	34
Selenium	M	2450	mg/kg	0.20	< 0.20	0.26	0.21
Vanadium	U	2450	mg/kg	5.0	13	18	30
Zinc	M	2450	mg/kg	0.50	67	20	43
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	0.30	0.50	2.5
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: GE19906 Horton Heath

Client: Geo-Environmental Services Ltd	Chemtest Job No.:				21-35726	21-35726	21-35726
Quotation No.: Q21-25381	Chemtest Sample ID.:				1298307	1298309	1298310
	Sample Location:				WS11	WS08	WS10
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.4	0.45	0.15
	Date Sampled:				12-Oct-2021	12-Oct-2021	12-Oct-2021
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Benzene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Toluene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Ethylbenzene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
m & p-Xylene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
o-Xylene	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Methyl Tert-Butyl Ether	M	2760	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Naphthalene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.61
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.042
Acenaphthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.37
Fluorene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.29
Phenanthrene	N	2800	mg/kg	0.010	0.16	< 0.010	2.1
Anthracene	N	2800	mg/kg	0.010	0.083	< 0.010	0.43
Fluoranthene	N	2800	mg/kg	0.010	0.44	< 0.010	2.9
Pyrene	N	2800	mg/kg	0.010	0.44	< 0.010	2.5
Benzo[a]anthracene	N	2800	mg/kg	0.010	0.40	< 0.010	1.3
Chrysene	N	2800	mg/kg	0.010	0.39	< 0.010	1.5
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	0.48	< 0.010	1.5
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	0.30	< 0.010	0.58
Benzo[a]pyrene	N	2800	mg/kg	0.010	0.36	< 0.010	0.97
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	0.37	< 0.010	0.58
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	0.27	< 0.010	0.17
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	0.32	< 0.010	0.69
Total Of 16 PAH's	N	2800	mg/kg	0.20	4.0	< 0.20	17
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easily liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.:	21-35733-1		
Initial Date of Issue:	22-Oct-2021		
Client	Geo-Environmental Services Ltd		
Client Address:	Unit 7, Danworth Farm Cuckfield Road Hurstpierpoint West Sussex BN6 9GL		
Contact(s):	Fiona Goode Laura Legate Reporting		
Project	GE19906 Horton Heath		
Quotation No.:	Q21-25381	Date Received:	14-Oct-2021
Order No.:	PO-4534	Date Instructed:	14-Oct-2021
No. of Samples:	2		
Turnaround (Wkdays):	7	Results Due:	22-Oct-2021
Date Approved:	22-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - 2 Stage WAC

Project: GE19906 Horton Heath

Chemtest Job No: 21-35733 Chemtest Sample ID: 1298335 Sample Ref: Sample ID: Sample Location: WS01 Top Depth(m): 0.35 Bottom Depth(m): Sampling Date: 11-Oct-2021							Landfill Waste Acceptance Criteria							
			Limits											
			Inert Waste Landfill				Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill						
Determinand	SOP	Accred.							Units					
Total Organic Carbon	2625	M							%		0.50	3	5	6
Loss On Ignition	2610	M							%		3.2	--	--	10
Total BTEX	2760	M							mg/kg		< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M							mg/kg		< 0.10	1	--	--
TPH Total WAC	2670	M							mg/kg		< 10	500	--	--
Total (Of 17) PAH's	2700	N		mg/kg	< 2.0	100			--		--			
pH	2010	M		8.3	--	>6	--							
Acid Neutralisation Capacity	2015	N	mol/kg	0.024	--	To evaluate	To evaluate							
Eluate Analysis						2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg				
Arsenic	1455	U	0.0003	0.0005	0.0007	0.0046	0.5	2	25					
Barium	1455	U	< 0.005	< 0.005	< 0.0005	< 0.0005	20	100	300					
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5					
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70					
Copper	1455	U	0.0017	0.0007	0.0035	0.0011	2	50	100					
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2					
Molybdenum	1455	U	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.5	10	30					
Nickel	1455	U	0.0006	< 0.0005	0.0011	< 0.0005	0.4	10	40					
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50					
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5					
Selenium	1455	U	0.0006	< 0.0005	0.0011	< 0.0005	0.1	0.5	7					
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200					
Chloride	1220	U	1.7	< 1.0	< 10	< 10	800	15000	25000					
Fluoride	1220	U	0.11	0.10	< 1.0	1.0	10	150	500					
Sulphate	1220	U	5.0	< 1.0	< 10	< 10	1000	20000	50000					
Total Dissolved Solids	1020	N	38	9.1	76	110	4000	60000	100000					
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-					
Dissolved Organic Carbon	1610	U	13	7.3	< 50	77	500	800	1000					

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.7

Leachate Test Information	
Leachant volume 1st extract/l	0.331
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.112

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: GE19906 Horton Heath

Chemtest Job No: 21-35733							Landfill Waste Acceptance Criteria		
Chemtest Sample ID: 1298336							Limits		
Sample Ref:							Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:									
Sample Location: WS07									
Top Depth(m): 0.30									
Bottom Depth(m):									
Sampling Date: 12-Oct-2021									
Determinand	SOP	Accred.	Units						
Total Organic Carbon	2625	M	%				0.45		
Loss On Ignition	2610	M	%				2.7		
Total BTEX	2760	M	mg/kg				< 0.010		
Total PCBs (7 Congeners)	2815	M	mg/kg				< 0.10		
TPH Total WAC	2670	M	mg/kg				< 10		
Total (Of 17) PAH's	2700	N	mg/kg				< 2.0		
pH	2010	M					8.5		
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020			To evaluate		
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0006	0.0005	0.0013	0.0051	0.5	2	25
Barium	1455	U	0.015	0.006	0.030	0.065	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0055	0.0034	0.011	0.0052	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0003	0.0005	0.0005	0.0049	0.5	10	30
Nickel	1455	U	0.0017	0.0011	0.0035	0.012	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0009	0.0006	0.0018	0.0065	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200
Chloride	1220	U	3.2	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.20	0.25	< 1.0	2.5	10	150	500
Sulphate	1220	U	11	< 1.0	22	10	1000	20000	50000
Total Dissolved Solids	1020	N	210	120	430	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	19	14	< 50	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.1

Leachate Test Information	
Leachant volume 1st extract/l	0.333
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.167

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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APPENDIX E

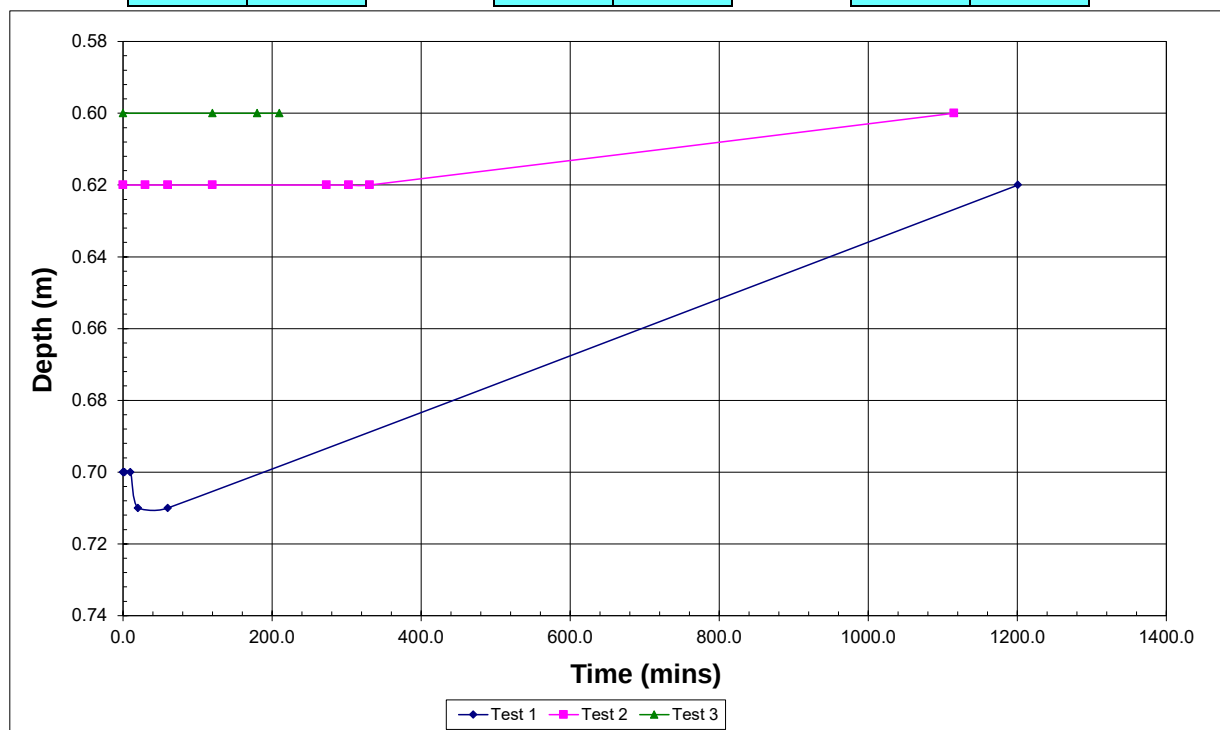
Soakage Testing Results

Soil infiltration rate (m/s)	Insufficient fall in water to calculate infiltration rate
Soil infiltration rate (mm/hr)	Insufficient fall in water to calculate infiltration rate

Soil infiltration rate (m/s)	Insufficient fall in water to calculate infiltration rate
Soil infiltration rate (mm/hr)	Insufficient fall in water to calculate infiltration rate

Project Name : Quobleigh Breach and Fir Tree Farm	Job No. : GE19906
Client : Eastleigh Borough Council	Date : 19/10/2021

Pit reference	TP08
Pit depth (m)	1.30
Pit width (m)	1.90
Pit length (m)	0.60
Depth to standing water (m)	1.20

[illegible][illegible][illegible]

Max. depth (m)	1.30	1.30	1.30
Effective depth (m)	0.60	0.68	0.70
75% effective depth (m)	0.85	0.79	0.78
50% effective depth (m)	1.00	0.96	0.95
25% effective depth (m)	1.15	1.13	1.13
t75 (min)			
t50 (min)			
t25 (min)			
Vp 75-25	0.34	0.39	0.40
ap 50	2.64	2.84	2.89
tp 75-25	0.00	0.00	0.00

Soil infiltration rate (m/s)	Insufficient fall in water to calculate infiltration rate
Soil infiltration rate (mm/hr)	Insufficient fall in water to calculate infiltration rate

Soil infiltration rate (m/s)	Insufficient fall in water to calculate infiltration rate
Soil infiltration rate (mm/hr)	Insufficient fall in water to calculate infiltration rate

Soil infiltration rate (m/s)	Insufficient fall in water to calculate infiltration rate
Soil infiltration rate (mm/hr)	Insufficient fall in water to calculate infiltration rate

Soil infiltration rate (m/s)	Insufficient fall in water to calculate infiltration rate
Soil infiltration rate (mm/hr)	Insufficient fall in water to calculate infiltration rate

Soil infiltration rate (m/s)	Insufficient fall in water to calculate infiltration rate
Soil infiltration rate (mm/hr)	Insufficient fall in water to calculate infiltration rate

APPENDIX F

Groundwater and Gas Monitoring Results



Project: One Horton Heath - Quobleigh Breach
 Ref: GE19906
 Client: Eastleigh Borough Council



Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS1	19/10/21	0							4.88	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/10/21	10							4.88	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/10/21	20							4.88	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/10/21	30							4.88	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/10/21	60							4.88	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/10/21	90							4.88	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/10/21	120							4.88	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	19/10/21	180							4.88	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	19/10/21	0	0.0	0.0	20.7	0.0	0.2	1012	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	19/10/21	10	0.0	1.4	20.6	0.0	0.2	1012	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	19/10/21	20	0.0	1.1	20.6	0.0	0.2	1012	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	19/10/21	30	0.0	1.1	20.5	0.0	0.2	1012	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	19/10/21	60	0.0	0.7	20.7	0.0	0.2	1012	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	19/10/21	90	0.0	0.6	20.8	0.0	0.2	1012	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	19/10/21	120	0.0	0.4	20.9	0.0	0.2	1012	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	19/10/21	180	0.0	0.1	21.0	0.0	0.2	1012	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	19/10/21	0							0.84	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	19/10/21	10							0.84	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	19/10/21	20							0.84	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	19/10/21	30							0.84	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	19/10/21	60							0.84	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	19/10/21	90							0.84	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	19/10/21	120							0.84	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	19/10/21	180							0.84	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/10/21	0	0.0	0.2	19.8	0.0	0.1	1012	0.91	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/10/21	10	0.0	0.7	20.5	0.0	0.1	1012	0.91	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/10/21	20	0.0	0.8	20.2	0.0	0.1	1012	0.91	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/10/21	30	0.0	0.8	20.2	0.0	0.1	1012	0.91	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/10/21	60	0.0	0.8	20.2	0.0	0.1	1012	0.91	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/10/21	90	0.0	0.8	20.2	0.0	0.1	1012	0.91	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/10/21	120	0.0	0.8	20.2	0.0	0.1	1012	0.91	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	19/10/21	180	0.0	0.8	18.6	0.0	0.1	1012	0.91	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	19/10/21	0	0.0	0.3	20.4	0.0	0.2	1012	0.90	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	19/10/21	10	0.0	0.5	18.4	0.0	0.2	1012	0.90	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	19/10/21	20	0.0	0.5	18.1	0.0	0.2	1012	0.90	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	19/10/21	30	0.0	0.5	18.2	0.0	0.2	1012	0.90	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	19/10/21	60	0.0	0.5	18.3	0.0	0.2	1012	0.90	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	19/10/21	90	0.0	0.5	18.3	0.0	0.2	1012	0.90	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	19/10/21	120	0.0	0.5	18.3	0.0	0.2	1012	0.90	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	19/10/21	180	0.0	0.5	18.2	0.0	0.2	1012	0.90	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/11/21	0							1.06	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/11/21	10							1.06	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/11/21	20							1.06	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/11/21	30							1.06	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/11/21	60							1.06	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/11/21	90							1.06	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: One Horton Heath - Quobleigh Breach
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Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS1	02/11/21	120							1.06	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/11/21	180							1.06	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/11/21	0							0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/11/21	10							0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/11/21	20							0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/11/21	30							0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/11/21	60							0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/11/21	90							0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/11/21	120							0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/11/21	180							0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/11/21	0	0.0	0.1	18.0	0.0	1.0	999	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/11/21	10	0.0	0.1	19.0	0.0	1.0	999	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/11/21	20	0.0	0.2	19.6	0.0	1.0	999	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/11/21	30	0.0	0.2	19.8	0.0	1.0	999	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/11/21	60	0.0	1.0	17.5	0.0	1.0	999	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/11/21	90	0.0	1.6	15.1	0.0	1.0	999	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/11/21	120	0.0	1.7	14.6	0.0	1.0	999	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/11/21	180	0.0	1.7	14.4	0.0	1.0	999	0.45	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/11/21	0	0.0	0.1	20.2	0.0	0.6	999	0.11	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/11/21	10	0.0	0.9	20.1	0.0	0.6	999	0.11	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/11/21	20	0.0	1.0	19.6	0.0	0.6	999	0.11	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/11/21	30	0.0	1.1	19.5	0.0	0.6	999	0.11	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/11/21	60	0.0	1.2	19.5	0.0	0.6	999	0.11	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/11/21	90	0.0	1.2	19.4	0.0	0.6	999	0.11	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/11/21	120	0.0	1.2	19.2	0.0	0.6	999	0.11	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/11/21	180	0.0	1.3	18.6	0.0	0.6	999	0.11	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	16/11/21	0	0.0	0.0	20.7	0.0	0.2	1021	0.97	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	16/11/21	10	0.0	0.4	19.5	0.0	0.2	1021	0.97	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	16/11/21	20	0.0	0.5	16.9	0.0	0.2	1021	0.97	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	16/11/21	30	0.0	0.5	16.5	0.0	0.2	1021	0.97	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	16/11/21	60	0.0	0.6	16.4	0.0	0.2	1021	0.97	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	16/11/21	90	0.0	0.5	16.3	0.0	0.2	1021	0.97	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	16/11/21	120	0.0	0.5	16.3	0.0	0.2	1021	0.97	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	16/11/21	180	0.0	0.5	16.3	0.0	0.2	1021	0.97	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	16/11/21	0	0.0	0.0	20.6	0.0	0.0	1019	0.14	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	16/11/21	10	0.0	0.5	21.0	0.0	0.0	1019	0.14	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	16/11/21	20	0.0	0.4	20.9	0.0	0.0	1019	0.14	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	16/11/21	30	0.0	0.3	20.9	0.0	0.0	1019	0.14	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	16/11/21	60	0.0	0.2	20.9	0.0	0.0	1019	0.14	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	16/11/21	90	0.0	0.2	20.9	0.0	0.0	1019	0.14	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	16/11/21	120	0.0	0.2	20.9	0.0	0.0	1019	0.14	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	16/11/21	180	0.0	0.1	20.9	0.0	0.0	1019	0.14	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	16/11/21	0	0.0	0.1	20.8	0.0	0.2	1021	0.33	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	16/11/21	10	0.0	1.0	20.7	0.0	0.2	1021	0.33	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	16/11/21	20	0.0	2.3	19.8	0.0	0.2	1021	0.33	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	16/11/21	30	0.0	3.5	19.2	0.0	0.2	1021	0.33	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

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Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS2	16/11/21	60	0.0	5.8	17.9	0.0	0.2	1021	0.33	0.000	0.000	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1
WS2	16/11/21	90	0.0	5.9	17.8	0.0	0.2	1021	0.33	0.000	0.000	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1
WS2	16/11/21	120	0.0	6.0	17.8	0.0	0.2	1021	0.33	0.000	0.000	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1
WS2	16/11/21	180	0.0	6.1	17.7	0.0	0.2	1021	0.33	0.000	0.000	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1
WS7	16/11/21	0	0.0	0.2	20.5	0.0	0.1	1020	0.29	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	16/11/21	10	0.0	1.5	18.9	0.0	0.1	1020	0.29	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	16/11/21	20	0.0	2.3	17.4	0.0	0.1	1020	0.29	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	16/11/21	30	0.0	2.4	17.0	0.0	0.1	1020	0.29	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	16/11/21	60	0.0	2.6	16.6	0.0	0.1	1020	0.29	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	16/11/21	90	0.0	3.0	15.9	0.0	0.1	1020	0.29	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	16/11/21	120	0.0	3.1	15.8	0.0	0.1	1020	0.29	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	16/11/21	180	0.0	3.1	15.7	0.0	0.1	1020	0.29	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	16/11/21	0	0.0	0.1	20.6	0.0	0.1	1019	0.77	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	16/11/21	10	0.0	0.5	21.0	0.0	0.1	1019	0.77	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	16/11/21	20	0.0	0.6	20.7	0.0	0.1	1019	0.77	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	16/11/21	30	0.0	0.4	20.8	0.0	0.1	1019	0.77	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	16/11/21	60	0.0	0.2	20.9	0.0	0.1	1019	0.77	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	16/11/21	90	0.0	0.1	20.9	0.0	0.1	1019	0.77	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	16/11/21	120	0.0	0.1	20.9	0.0	0.1	1019	0.77	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	16/11/21	180	0.0	0.1	20.9	0.0	0.1	1019	0.77	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	30/11/21	0	0.0	0.3	19.8	0.0	0.2	1012	1.51	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	30/11/21	10	0.0	0.6	17.9	0.0	0.2	1012	1.51	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	30/11/21	20	0.0	0.7	15.1	0.0	0.2	1012	1.51	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	30/11/21	30	0.0	0.7	14.6	0.0	0.2	1012	1.51	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	30/11/21	60	0.0	0.8	14.3	0.0	0.2	1012	1.51	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	30/11/21	90	0.0	0.8	14.2	0.0	0.2	1012	1.51	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	30/11/21	120	0.0	0.8	14.0	0.0	0.2	1012	1.51	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	30/11/21	180	0.0	0.8	13.9	0.0	0.2	1012	1.51	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	30/11/21	0	0.0	0.0	20.4	0.0	0.2	1010	0.02	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	30/11/21	10	0.0	4.5	16.8	0.0	0.2	1010	0.02	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	30/11/21	20	0.0	5.8	15.0	0.0	0.2	1010	0.02	0.000	0.000	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1
WS10	30/11/21	30	0.0	5.5	15.1	0.0	0.2	1010	0.02	0.000	0.000	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1
WS10	30/11/21	60	0.0	1.9	18.3	0.0	0.2	1010	0.02	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	30/11/21	90	0.0	2.4	18.2	0.0	0.2	1010	0.02	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	30/11/21	120	0.0	2.1	18.4	0.0	0.2	1010	0.02	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	30/11/21	180	0.0	1.6	18.9	0.0	0.2	1010	0.02	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	30/11/21	0	0.0	0.0	20.7	0.0	0.1	1011	0.50	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	30/11/21	10	0.0	0.5	20.5	0.0	0.1	1011	0.50	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	30/11/21	20	0.0	1.2	19.4	0.0	0.1	1011	0.50	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	30/11/21	30	0.0	1.2	19.7	0.0	0.1	1011	0.50	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	30/11/21	60	0.0	2.4	18.7	0.0	0.1	1011	0.50	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	30/11/21	90	0.0	3.6	17.7	0.0	0.1	1011	0.50	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	30/11/21	120	0.0	4.6	17.1	0.0	0.1	1011	0.50	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	30/11/21	180	0.0	5.1	16.6	0.0	0.1	1011	0.50	0.000	0.000	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1
WS7	30/11/21	0	0.0	2.4	19.3	0.0	0.1	1011	0.80	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	30/11/21	10	0.0	1.5	19.4	0.0	0.1	1011	0.80	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

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Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS7	30/11/21	20	0.0	0.8	20.1	0.0	0.1	1011	0.80	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	30/11/21	30	0.0	0.6	20.3	0.0	0.1	1011	0.80	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	30/11/21	60	0.0	0.4	20.5	0.0	0.1	1011	0.80	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	30/11/21	90	0.0	0.3	20.5	0.0	0.1	1011	0.80	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	30/11/21	120	0.0	0.2	19.8	0.0	0.1	1011	0.80	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	30/11/21	180	0.0	0.2	20.6	0.0	0.1	1011	0.80	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	30/11/21	0	0.0	0.0	20.3	0.0	0.1	1010	0.92	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	30/11/21	10	0.0	0.3	20.7	0.0	0.1	1010	0.92	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	30/11/21	20	0.0	0.3	20.6	0.0	0.1	1010	0.92	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	30/11/21	30	0.0	0.2	20.6	0.0	0.1	1010	0.92	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	30/11/21	60	0.0	0.2	20.6	0.0	0.1	1010	0.92	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	30/11/21	90	0.0	0.2	20.6	0.0	0.1	1010	0.92	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	30/11/21	120	0.0	0.1	20.7	0.0	0.1	1010	0.92	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	30/11/21	180	0.0	0.1	20.7	0.0	0.1	1010	0.92	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	14/12/21	0	0.0	0.1	18.8	0.0	0.2	1023	1.13	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	14/12/21	10	0.0	0.9	13.8	0.0	0.2	1023	1.13	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	14/12/21	20	0.0	1.1	13.1	0.0	0.2	1023	1.13	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	14/12/21	30	0.0	1.1	12.9	0.0	0.2	1023	1.13	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	14/12/21	60	0.0	1.1	12.9	0.0	0.2	1023	1.13	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	14/12/21	90	0.0	1.0	13.0	0.0	0.2	1023	1.13	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	14/12/21	120	0.0	1.0	12.8	0.0	0.2	1023	1.13	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	14/12/21	180	0.0	0.9	13.7	0.0	0.2	1023	1.13	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	14/12/21	0	0.0	0.0	20.4	0.0	0.3	1024	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	14/12/21	10	0.0	0.8	20.5	0.0	0.3	1024	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	14/12/21	20	0.0	1.2	20.3	0.0	0.3	1024	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	14/12/21	30	0.0	0.9	20.3	0.0	0.3	1024	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	14/12/21	60	0.0	0.7	20.4	0.0	0.3	1024	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	14/12/21	90	0.0	0.4	20.5	0.0	0.3	1024	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	14/12/21	120	0.0	0.3	20.6	0.0	0.3	1024	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	14/12/21	180	0.0	0.1	20.6	0.0	0.3	1024	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	14/12/21	0	0.0	0.1	20.7	0.0	0.3	1023	0.23	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	14/12/21	10	0.0	2.1	19.4	0.0	0.3	1023	0.23	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	14/12/21	20	0.0	3.6	18.1	0.0	0.3	1023	0.23	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	14/12/21	30	0.0	4.2	17.6	0.0	0.3	1023	0.23	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	14/12/21	60	0.0	4.7	16.9	0.0	0.3	1023	0.23	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	14/12/21	90	0.0	4.9	16.7	0.0	0.3	1023	0.23	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	14/12/21	120	0.0	4.9	16.6	0.0	0.3	1023	0.23	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	14/12/21	180	0.0	4.9	16.6	0.0	0.3	1023	0.23	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	14/12/21	0	0.0	0.3	20.6	0.0	0.3	1024	0.17	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	14/12/21	10	0.0	1.3	20.2	0.0	0.3	1024	0.17	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	14/12/21	20	0.0	2.3	19.1	0.0	0.3	1024	0.17	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	14/12/21	30	0.0	2.4	18.8	0.0	0.3	1024	0.17	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	14/12/21	60	0.0	2.6	18.6	0.0	0.3	1024	0.17	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	14/12/21	90	0.0	2.7	18.6	0.0	0.3	1024	0.17	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	14/12/21	120	0.0	2.7	18.6	0.0	0.3	1024	0.17	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	14/12/21	180	0.0	2.7	18.5	0.0	0.3	1024	0.17	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: One Horton Heath - Quobleigh Breach
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Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS8	14/12/21	0	0.0	0.1	20.2	0.0	0.3	1023	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	14/12/21	10	0.0	0.5	20.6	0.0	0.3	1023	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	14/12/21	20	0.0	0.4	20.4	0.0	0.3	1023	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	14/12/21	30	0.0	0.3	20.5	0.0	0.3	1023	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	14/12/21	60	0.0	0.2	20.5	0.0	0.3	1023	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	14/12/21	90	0.0	0.2	20.5	0.0	0.3	1023	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	14/12/21	120	0.0	0.1	20.5	0.0	0.3	1023	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	14/12/21	180	0.0	0.1	20.6	0.0	0.3	1023	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	04/01/22	0	0.0	0.1	15.3	0.0	0.1	994	1.03	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	04/01/22	10	0.0	1.5	12.8	0.0	0.1	994	1.03	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	04/01/22	20	0.0	1.7	10.8	0.0	0.1	994	1.03	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	04/01/22	30	0.0	1.8	10.5	0.0	0.1	994	1.03	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	04/01/22	60	0.0	1.8	10.3	0.0	0.1	994	1.03	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	04/01/22	90	0.0	1.8	10.3	0.0	0.1	994	1.03	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	04/01/22	120	0.0	1.8	10.3	0.0	0.1	994	1.03	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	04/01/22	180	0.0	1.8	10.4	0.0	0.1	994	1.03	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	04/01/22	0	0.0	0.0	20.3	0.0	0.3	996	0.04	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	04/01/22	10	0.0	1.5	20.3	0.0	0.3	996	0.04	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	04/01/22	20	0.0	2.0	20.0	0.0	0.3	996	0.04	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	04/01/22	30	0.0	1.7	20.0	0.0	0.3	996	0.04	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	04/01/22	60	0.0	0.8	20.3	0.0	0.3	996	0.04	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	04/01/22	90	0.0	0.4	20.5	0.0	0.3	996	0.04	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	04/01/22	120	0.0	0.0	20.5	0.0	0.3	996	0.04	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	04/01/22	180	0.0	0.0	20.5	0.0	0.3	996	0.04	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	04/01/22	0	0.0	0.0	20.4	0.0	0.3	994	0.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	04/01/22	10	0.0	1.5	19.2	0.0	0.3	994	0.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	04/01/22	20	0.0	2.7	17.9	0.0	0.3	994	0.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	04/01/22	30	0.0	3.4	17.1	0.0	0.3	994	0.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	04/01/22	60	0.0	4.5	16.0	0.0	0.3	994	0.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	04/01/22	90	0.0	4.8	15.6	0.0	0.3	994	0.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	04/01/22	120	0.0	4.9	15.5	0.0	0.3	994	0.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	04/01/22	180	0.0	4.9	15.4	0.0	0.3	994	0.28	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	04/01/22	0	0.0	0.1	19.4	0.0	0.2	994	0.10	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	04/01/22	10	0.0	1.9	18.8	0.0	0.2	994	0.10	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	04/01/22	20	0.0	3.2	17.7	0.0	0.2	994	0.10	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	04/01/22	30	0.0	3.3	17.5	0.0	0.2	994	0.10	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	04/01/22	60	0.0	3.3	17.4	0.0	0.2	994	0.10	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	04/01/22	90	0.0	3.3	17.4	0.0	0.2	994	0.10	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	04/01/22	120	0.0	3.3	17.5	0.0	0.2	994	0.10	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	04/01/22	180				0.0	0.2	994	0.10	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	04/01/22	0	0.0	0.1	20.3	0.0	0.1	994	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	04/01/22	10	0.0	2.0	18.5	0.0	0.1	994	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	04/01/22	20	0.0	2.5	17.8	0.0	0.1	994	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	04/01/22	30	0.0	2.3	18.0	0.0	0.1	994	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	04/01/22	60	0.0	1.7	18.6	0.0	0.1	994	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	04/01/22	90	0.0	1.2	19.1	0.0	0.1	994	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

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Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS8	04/01/22	120	0.0	0.9	19.4	0.0	0.1	994	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	04/01/22	180	0.0	0.7	19.8	0.0	0.1	994	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/02/22	0							0.64	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/02/22	10				-	-	-	0.64	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/02/22	20				-	-	-	0.64	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/02/22	30				-	-	-	0.64	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/02/22	60				-	-	-	0.64	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/02/22	90				-	-	-	0.64	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/02/22	120				-	-	-	0.64	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	02/02/22	180				-	-	-	0.64	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	02/02/22	0							0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	02/02/22	10				-	-	-	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	02/02/22	20				-	-	-	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	02/02/22	30				-	-	-	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	02/02/22	60				-	-	-	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	02/02/22	90				-	-	-	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	02/02/22	120				-	-	-	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	02/02/22	180				-	-	-	0.25	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/02/22	0							0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/02/22	10				-	-	-	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/02/22	20				-	-	-	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/02/22	30				-	-	-	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/02/22	60				-	-	-	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/02/22	90				-	-	-	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/02/22	120				-	-	-	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	02/02/22	180				-	-	-	0.41	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/02/22	0							0.47	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/02/22	10				-	-	-	0.47	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/02/22	20				-	-	-	0.47	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/02/22	30				-	-	-	0.47	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/02/22	60				-	-	-	0.47	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/02/22	90				-	-	-	0.47	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/02/22	120				-	-	-	0.47	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	02/02/22	180				-	-	-	0.47	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/02/22	0							0.81	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/02/22	10				-	-	-	0.81	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/02/22	20				-	-	-	0.81	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/02/22	30				-	-	-	0.81	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/02/22	60				-	-	-	0.81	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/02/22	90				-	-	-	0.81	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/02/22	120				-	-	-	0.81	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	02/02/22	180				-	-	-	0.81	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	01/03/22	0							0.60	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	01/03/22	10				-	-	-	0.60	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	01/03/22	20				-	-	-	0.60	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	01/03/22	30				-	-	-	0.60	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: One Horton Heath - Quobleigh Breach
Ref: GE19906
Client: Eastleigh Borough Council



Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS1	01/03/22	60				-	-	-	0.60	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	01/03/22	90				-	-	-	0.60	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	01/03/22	120				-	-	-	0.60	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS1	01/03/22	180				-	-	-	0.60	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	01/03/22	0				-	-	-	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	01/03/22	10				-	-	-	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	01/03/22	20				-	-	-	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	01/03/22	30				-	-	-	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	01/03/22	60				-	-	-	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	01/03/22	90				-	-	-	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	01/03/22	120				-	-	-	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS10	01/03/22	180				-	-	-	0.05	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	01/03/22	0				-	-	-	0.49	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	01/03/22	10				-	-	-	0.49	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	01/03/22	20				-	-	-	0.49	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	01/03/22	30				-	-	-	0.49	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	01/03/22	60				-	-	-	0.49	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	01/03/22	90				-	-	-	0.49	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	01/03/22	120				-	-	-	0.49	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	01/03/22	180				-	-	-	0.49	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	01/03/22	0				-	-	-	0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	01/03/22	10				-	-	-	0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	01/03/22	20				-	-	-	0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	01/03/22	30				-	-	-	0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	01/03/22	60				-	-	-	0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	01/03/22	90				-	-	-	0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	01/03/22	120				-	-	-	0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS7	01/03/22	180				-	-	-	0.48	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	01/03/22	0				-	-	-	0.32	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	01/03/22	10				-	-	-	0.32	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	01/03/22	20				-	-	-	0.32	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	01/03/22	30				-	-	-	0.32	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	01/03/22	60				-	-	-	0.32	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	01/03/22	90				-	-	-	0.32	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	01/03/22	120				-	-	-	0.32	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS8	01/03/22	180				-	-	-	0.32	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
Max values			0.0	6.1	21.0	0.0	1.0	1024.0	4.9	0.000	0.000	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1
Min Vaules			0.0	0.0	10.3	0.0	0.0	994.0	0.0	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
BH Flow LoD check			0.0	6.1	21.0	0.1	-	-	-	0.000	0.006	CS1	CS1	NO	NO	CO2>CS1 limit	GREEN	GREEN	GREEN	AMBER 1

APPENDIX G

CATWASTE Output



Site Name	Quobleigh Breach and Fir Tree Farm
Location	Horton Heath
Site ID	
Job Number	GE19906
Date	12/20/2021
User Name	gavin.roberts@gesl.net
Company Name	Geo-Environmental Services Limited

Hole ID	Sample Depth	Hazardous Waste Y/N	HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16
TP02	0.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP03	0.3	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP18	0.4	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP16	0.8	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP14	0.15	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP13	0.4	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP11	0.25	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP05	0.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP06	0.25	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP07	0.3	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP10	0.1	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP21	0.4	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP25	0.25	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP19	0.15	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP23	0.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP27	0.4	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP28	0.25	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WS05	0.25	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WS04	0.3	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WS03	0.1	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WS02	0.15	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WS09	0.25	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WS11	0.4	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WS08	0.45	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
WS10	0.15	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Site Name	Quobleigh Breach and Fir Tree Farm
Location	Horton Heath
Site ID	
Job Number	GE19906
Date	12/20/2021
User Name	gavin.roberts@gesl.net
Company Name	Geo-Environmental Services Limited

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP02	0.2	pH	0.00000	N				
TP02	0.2	Benzene	0.00000	N				H225 test
TP02	0.2	Toluene	0.00000	N				H225 test
TP02	0.2	Ethylbenzene	0.00000	N				H225 test
TP02	0.2	m,p-xylene	0.00000	N				H226 test
TP02	0.2	o-xylene	0.00000	N				H226 test
TP02	0.2	Naphthalene	0.00000	N				H228 test
TP02	0.2	Acenaphthylene	0.00000	N				
TP02	0.2	Acenaphthene	0.00000	N				
TP02	0.2	Fluorene	0.00000	N				
TP02	0.2	Phenanthrene	0.00005	N				
TP02	0.2	Anthracene	0.00003	N				
TP02	0.2	Fluoranthene	0.00005	N				
TP02	0.2	Pyrene	0.00004	N				
TP02	0.2	Benzo(a)anthracene	0.00000	N				
TP02	0.2	Chrysene	0.00000	N				
TP02	0.2	Benzo(b)fluoranthene	0.00000	N				
TP02	0.2	Benzo(k)fluoranthene	0.00000	N				
TP02	0.2	Benzo(a)pyrene	0.00000	N				
TP02	0.2	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP02	0.2	Di-benz(a,h)anthracene	0.00000	N				
TP02	0.2	Benzo(g,h,i)perylene	0.00000	N				
TP02	0.2	Phenol	0.00000	N				
TP02	0.2	Arsenic	0.00060	N				
TP02	0.2	Boron	0.00113	N				
TP02	0.2	Cadmium	0.00000	N				
TP02	0.2	Hexavalent Chromium	0.00000	N				
TP02	0.2	Chromium (Total)	0.00205	N				
TP02	0.2	Copper	0.00251	N				
TP02	0.2	Lead	0.00110	N				
TP02	0.2	Mercury	0.00000	N				
TP02	0.2	Nickel	0.00185	N				
TP02	0.2	Selenium	0.00000	N				
TP02	0.2	Zinc	0.00000	N				
TP02	0.2	Zincx	0.00642	N				
TP02	0.2	Vanadium	0.00321	N				
TP03	0.3	pH	0.00000	N				
TP03	0.3	Benzene	0.00000	N				H225 test
TP03	0.3	Toluene	0.00000	N				H225 test
TP03	0.3	Ethylbenzene	0.00000	N				H225 test
TP03	0.3	m,p-xylene	0.00000	N				H226 test
TP03	0.3	o-xylene	0.00000	N				H226 test
TP03	0.3	Naphthalene	0.00000	N				H228 test
TP03	0.3	Acenaphthylene	0.00000	N				
TP03	0.3	Acenaphthene	0.00000	N				
TP03	0.3	Fluorene	0.00000	N				
TP03	0.3	Phenanthrene	0.00014	N				

Site Name	Quobleigh Breach and Fir Tree Farm
Location	Horton Heath
Site ID	
Job Number	GE19906
Date	12/20/2021
User Name	gavin.roberts@gesl.net
Company Name	Geo-Environmental Services Limited

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP03	0.3	Anthracene	0.00004	N				
TP03	0.3	Fluoranthene	0.00021	N				
TP03	0.3	Pyrene	0.00018	N				
TP03	0.3	Benzo(a)anthracene	0.00011	N				
TP03	0.3	Chrysene	0.00012	N				
TP03	0.3	Benzo(b)fluoranthene	0.00019	N				
TP03	0.3	Benzo(k)fluoranthene	0.00007	N				
TP03	0.3	Benzo(a)pyrene	0.00016	N				
TP03	0.3	Indeno(1,2,3-cd)pyrene	0.00010	N				
TP03	0.3	Di-benz(a,h)anthracene	0.00002	N				
TP03	0.3	Benzo(g,h,i)perylene	0.00011	N				
TP03	0.3	Phenol	0.00000	N				
TP03	0.3	Arsenic	0.00230	N				
TP03	0.3	Boron	0.00148	N				
TP03	0.3	Cadmium	0.00002	N				
TP03	0.3	Hexavalent Chromium	0.00000	N				
TP03	0.3	Chromium (Total)	0.00248	N				
TP03	0.3	Copper	0.00603	N				
TP03	0.3	Lead	0.00530	N				
TP03	0.3	Mercury	0.00001	N				
TP03	0.3	Nickel	0.01134	N				
TP03	0.3	Selenium	0.00000	N				
TP03	0.3	Zinc	0.00000	N				
TP03	0.3	Zincx	0.01531	N				
TP03	0.3	Vanadium	0.00177	N				
TP18	0.4	pH	0.00000	N				
TP18	0.4	Benzene	0.00000	N				H225 test
TP18	0.4	Toluene	0.00000	N				H225 test
TP18	0.4	Ethylbenzene	0.00000	N				H225 test
TP18	0.4	m,p-xylene	0.00000	N				H226 test
TP18	0.4	o-xylene	0.00000	N				H226 test
TP18	0.4	Naphthalene	0.00000	N				H228 test
TP18	0.4	Acenaphthylene	0.00000	N				
TP18	0.4	Acenaphthene	0.00000	N				
TP18	0.4	Fluorene	0.00000	N				
TP18	0.4	Phenanthrene	0.00000	N				
TP18	0.4	Anthracene	0.00000	N				
TP18	0.4	Fluoranthene	0.00000	N				
TP18	0.4	Pyrene	0.00000	N				
TP18	0.4	Benzo(a)anthracene	0.00000	N				
TP18	0.4	Chrysene	0.00000	N				
TP18	0.4	Benzo(b)fluoranthene	0.00000	N				
TP18	0.4	Benzo(k)fluoranthene	0.00000	N				
TP18	0.4	Benzo(a)pyrene	0.00000	N				
TP18	0.4	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP18	0.4	Di-benz(a,h)anthracene	0.00000	N				
TP18	0.4	Benzo(g,h,i)perylene	0.00000	N				

Site Name	Quobleigh Breach and Fir Tree Farm
Location	Horton Heath
Site ID	
Job Number	GE19906
Date	12/20/2021
User Name	gavin.roberts@gesl.net
Company Name	Geo-Environmental Services Limited

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP18	0.4	Phenol	0.00000	N				
TP18	0.4	Arsenic	0.00086	N				
TP18	0.4	Boron	0.00164	N				
TP18	0.4	Cadmium	0.00002	N				
TP18	0.4	Hexavalent Chromium	0.00005	N				
TP18	0.4	Chromium (Total)	0.00212	N				
TP18	0.4	Copper	0.00528	N				
TP18	0.4	Lead	0.00100	N				
TP18	0.4	Mercury	0.00001	N				
TP18	0.4	Nickel	0.00145	N				
TP18	0.4	Selenium	0.00008	N				
TP18	0.4	Zinc	0.00000	N				
TP18	0.4	Zincx	0.00593	N				
TP18	0.4	Vanadium	0.00411	N				
TP16	0.8	pH	0.00000	N				
TP16	0.8	Benzene	0.00000	N				H225 test
TP16	0.8	Toluene	0.00000	N				H225 test
TP16	0.8	Ethylbenzene	0.00000	N				H225 test
TP16	0.8	m,p-xylene	0.00000	N				H226 test
TP16	0.8	o-xylene	0.00000	N				H226 test
TP16	0.8	Naphthalene	0.00000	N				H228 test
TP16	0.8	Acenaphthylene	0.00000	N				
TP16	0.8	Acenaphthene	0.00000	N				
TP16	0.8	Fluorene	0.00000	N				
TP16	0.8	Phenanthrene	0.00000	N				
TP16	0.8	Anthracene	0.00000	N				
TP16	0.8	Fluoranthene	0.00000	N				
TP16	0.8	Pyrene	0.00000	N				
TP16	0.8	Benzo(a)anthracene	0.00000	N				
TP16	0.8	Chrysene	0.00000	N				
TP16	0.8	Benzo(b)fluoranthene	0.00000	N				
TP16	0.8	Benzo(k)fluoranthene	0.00000	N				
TP16	0.8	Benzo(a)pyrene	0.00000	N				
TP16	0.8	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP16	0.8	Di-benz(a,h)anthracene	0.00000	N				
TP16	0.8	Benzo(g,h,i)perylene	0.00000	N				
TP16	0.8	Phenol	0.00000	N				
TP16	0.8	Arsenic	0.00055	N				
TP16	0.8	Boron	0.00113	N				
TP16	0.8	Cadmium	0.00002	N				
TP16	0.8	Hexavalent Chromium	0.00005	N				
TP16	0.8	Chromium (Total)	0.00285	N				
TP16	0.8	Copper	0.00477	N				
TP16	0.8	Lead	0.00056	N				
TP16	0.8	Mercury	0.00001	N				
TP16	0.8	Nickel	0.00182	N				
TP16	0.8	Selenium	0.00008	N				

Site Name	Quobleigh Breach and Fir Tree Farm
Location	Horton Heath
Site ID	
Job Number	GE19906
Date	12/20/2021
User Name	gavin.roberts@gesl.net
Company Name	Geo-Environmental Services Limited

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP16	0.8	Zinc	0.00000	N				
TP16	0.8	Zincx	0.00346	N				
TP16	0.8	Vanadium	0.00536	N				
TP14	0.15	pH	0.00000	N				
TP14	0.15	Benzene	0.00000	N				H225 test
TP14	0.15	Toluene	0.00000	N				H225 test
TP14	0.15	Ethylbenzene	0.00000	N				H225 test
TP14	0.15	m,p-xylene	0.00000	N				H226 test
TP14	0.15	o-xylene	0.00000	N				H226 test
TP14	0.15	Naphthalene	0.00000	N				H228 test
TP14	0.15	Acenaphthylene	0.00000	N				
TP14	0.15	Acenaphthene	0.00000	N				
TP14	0.15	Fluorene	0.00000	N				
TP14	0.15	Phenanthrene	0.00000	N				
TP14	0.15	Anthracene	0.00000	N				
TP14	0.15	Fluoranthene	0.00000	N				
TP14	0.15	Pyrene	0.00000	N				
TP14	0.15	Benzo(a)anthracene	0.00000	N				
TP14	0.15	Chrysene	0.00000	N				
TP14	0.15	Benzo(b)fluoranthene	0.00000	N				
TP14	0.15	Benzo(k)fluoranthene	0.00000	N				
TP14	0.15	Benzo(a)pyrene	0.00000	N				
TP14	0.15	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP14	0.15	Di-benz(a,h)anthracene	0.00000	N				
TP14	0.15	Benzo(g,h,i)perylene	0.00000	N				
TP14	0.15	Phenol	0.00000	N				
TP14	0.15	Arsenic	0.00100	N				
TP14	0.15	Boron	0.00190	N				
TP14	0.15	Cadmium	0.00002	N				
TP14	0.15	Hexavalent Chromium	0.00005	N				
TP14	0.15	Chromium (Total)	0.00373	N				
TP14	0.15	Copper	0.00327	N				
TP14	0.15	Lead	0.00068	N				
TP14	0.15	Mercury	0.00001	N				
TP14	0.15	Nickel	0.00256	N				
TP14	0.15	Selenium	0.00008	N				
TP14	0.15	Zinc	0.00000	N				
TP14	0.15	Zincx	0.00444	N				
TP14	0.15	Vanadium	0.00678	N				
TP13	0.4	pH	0.00000	N				
TP13	0.4	Benzene	0.00000	N				H225 test
TP13	0.4	Toluene	0.00000	N				H225 test
TP13	0.4	Ethylbenzene	0.00000	N				H225 test
TP13	0.4	m,p-xylene	0.00000	N				H226 test
TP13	0.4	o-xylene	0.00000	N				H226 test
TP13	0.4	Naphthalene	0.00002	N				H228 test
TP13	0.4	Acenaphthylene	0.00000	N				

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Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP13	0.4	Acenaphthene	0.00001	N				
TP13	0.4	Fluorene	0.00001	N				
TP13	0.4	Phenanthrene	0.00002	N				
TP13	0.4	Anthracene	0.00001	N				
TP13	0.4	Fluoranthene	0.00002	N				
TP13	0.4	Pyrene	0.00002	N				
TP13	0.4	Benzo(a)anthracene	0.00001	N				
TP13	0.4	Chrysene	0.00002	N				
TP13	0.4	Benzo(b)fluoranthene	0.00001	N				
TP13	0.4	Benzo(k)fluoranthene	0.00001	N				
TP13	0.4	Benzo(a)pyrene	0.00001	N				
TP13	0.4	Indeno(1,2,3-cd)pyrene	0.00001	N				
TP13	0.4	Di-benz(a,h)anthracene	0.00000	N				
TP13	0.4	Benzo(g,h,i)perylene	0.00001	N				
TP13	0.4	Phenol	0.00001	N				
TP13	0.4	Arsenic	0.00061	N				
TP13	0.4	Boron	0.00093	N				
TP13	0.4	Cadmium	0.00002	N				
TP13	0.4	Hexavalent Chromium	0.00005	N				
TP13	0.4	Chromium (Total)	0.00168	N				
TP13	0.4	Copper	0.00171	N				
TP13	0.4	Lead	0.00074	N				
TP13	0.4	Mercury	0.00001	N				
TP13	0.4	Nickel	0.00198	N				
TP13	0.4	Selenium	0.00008	N				
TP13	0.4	Zinc	0.00000	N				
TP13	0.4	Zincx	0.00494	N				
TP13	0.4	Vanadium	0.00286	N				
TP11	0.25	pH	0.00000	N				
TP11	0.25	Benzene	0.00000	N				H225 test
TP11	0.25	Toluene	0.00000	N				H225 test
TP11	0.25	Ethylbenzene	0.00000	N				H225 test
TP11	0.25	m,p-xylene	0.00000	N				H226 test
TP11	0.25	o-xylene	0.00000	N				H226 test
TP11	0.25	Naphthalene	0.00002	N				H228 test
TP11	0.25	Acenaphthylene	0.00000	N				
TP11	0.25	Acenaphthene	0.00000	N				
TP11	0.25	Fluorene	0.00000	N				
TP11	0.25	Phenanthrene	0.00000	N				
TP11	0.25	Anthracene	0.00000	N				
TP11	0.25	Fluoranthene	0.00001	N				
TP11	0.25	Pyrene	0.00001	N				
TP11	0.25	Benzo(a)anthracene	0.00000	N				
TP11	0.25	Chrysene	0.00001	N				
TP11	0.25	Benzo(b)fluoranthene	0.00000	N				
TP11	0.25	Benzo(k)fluoranthene	0.00000	N				
TP11	0.25	Benzo(a)pyrene	0.00000	N				

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Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP11	0.25	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP11	0.25	Di-benz(a,h)anthracene	0.00000	N				
TP11	0.25	Benzo(g,h,i)perylene	0.00000	N				
TP11	0.25	Phenol	0.00000	N				
TP11	0.25	Arsenic	0.00126	N				
TP11	0.25	Boron	0.00181	N				
TP11	0.25	Cadmium	0.00002	N				
TP11	0.25	Hexavalent Chromium	0.00005	N				
TP11	0.25	Chromium (Total)	0.00300	N				
TP11	0.25	Copper	0.00477	N				
TP11	0.25	Lead	0.00240	N				
TP11	0.25	Mercury	0.00001	N				
TP11	0.25	Nickel	0.00187	N				
TP11	0.25	Selenium	0.00008	N				
TP11	0.25	Zinc	0.00000	N				
TP11	0.25	Zincx	0.00765	N				
TP11	0.25	Vanadium	0.00536	N				
TP05	0.7	pH	0.00000	N				
TP05	0.7	Benzene	0.00000	N				H225 test
TP05	0.7	Toluene	0.00000	N				H225 test
TP05	0.7	Ethylbenzene	0.00000	N				H225 test
TP05	0.7	m,p-xylene	0.00000	N				H226 test
TP05	0.7	o-xylene	0.00000	N				H226 test
TP05	0.7	Naphthalene	0.00000	N				H228 test
TP05	0.7	Acenaphthylene	0.00000	N				
TP05	0.7	Acenaphthene	0.00000	N				
TP05	0.7	Fluorene	0.00000	N				
TP05	0.7	Phenanthrene	0.00000	N				
TP05	0.7	Anthracene	0.00000	N				
TP05	0.7	Fluoranthene	0.00000	N				
TP05	0.7	Pyrene	0.00000	N				
TP05	0.7	Benzo(a)anthracene	0.00000	N				
TP05	0.7	Chrysene	0.00000	N				
TP05	0.7	Benzo(b)fluoranthene	0.00000	N				
TP05	0.7	Benzo(k)fluoranthene	0.00000	N				
TP05	0.7	Benzo(a)pyrene	0.00000	N				
TP05	0.7	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP05	0.7	Di-benz(a,h)anthracene	0.00000	N				
TP05	0.7	Benzo(g,h,i)perylene	0.00000	N				
TP05	0.7	Phenol	0.00000	N				
TP05	0.7	Arsenic	0.00115	N				
TP05	0.7	Boron	0.00093	N				
TP05	0.7	Cadmium	0.00002	N				
TP05	0.7	Hexavalent Chromium	0.00005	N				
TP05	0.7	Chromium (Total)	0.00373	N				
TP05	0.7	Copper	0.02311	N				
TP05	0.7	Lead	0.00170	N				

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Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP05	0.7	Mercury	0.00001	N				
TP05	0.7	Nickel	0.00343	N				
TP05	0.7	Selenium	0.00008	N				
TP05	0.7	Zinc	0.00000	N				
TP05	0.7	Zincx	0.01012	N				
TP05	0.7	Vanadium	0.00500	N				
TP06	0.25	pH	0.00000	N				
TP06	0.25	Benzene	0.00000	N				H225 test
TP06	0.25	Toluene	0.00000	N				H225 test
TP06	0.25	Ethylbenzene	0.00000	N				H225 test
TP06	0.25	m,p-xylene	0.00000	N				H226 test
TP06	0.25	o-xylene	0.00000	N				H226 test
TP06	0.25	Naphthalene	0.00000	N				H228 test
TP06	0.25	Acenaphthylene	0.00000	N				
TP06	0.25	Acenaphthene	0.00000	N				
TP06	0.25	Fluorene	0.00000	N				
TP06	0.25	Phenanthrene	0.00000	N				
TP06	0.25	Anthracene	0.00000	N				
TP06	0.25	Fluoranthene	0.00000	N				
TP06	0.25	Pyrene	0.00000	N				
TP06	0.25	Benzo(a)anthracene	0.00000	N				
TP06	0.25	Chrysene	0.00000	N				
TP06	0.25	Benzo(b)fluoranthene	0.00000	N				
TP06	0.25	Benzo(k)fluoranthene	0.00000	N				
TP06	0.25	Benzo(a)pyrene	0.00000	N				
TP06	0.25	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP06	0.25	Di-benz(a,h)anthracene	0.00000	N				
TP06	0.25	Benzo(g,h,i)perylene	0.00000	N				
TP06	0.25	Phenol	0.00000	N				
TP06	0.25	Arsenic	0.00101	N				
TP06	0.25	Boron	0.00127	N				
TP06	0.25	Cadmium	0.00002	N				
TP06	0.25	Hexavalent Chromium	0.00005	N				
TP06	0.25	Chromium (Total)	0.00329	N				
TP06	0.25	Copper	0.00244	N				
TP06	0.25	Lead	0.00093	N				
TP06	0.25	Mercury	0.00001	N				
TP06	0.25	Nickel	0.00192	N				
TP06	0.25	Selenium	0.00008	N				
TP06	0.25	Zinc	0.00000	N				
TP06	0.25	Zincx	0.00568	N				
TP06	0.25	Vanadium	0.00500	N				
TP07	0.3	pH	0.00000	N				
TP07	0.3	Benzene	0.00000	N				H225 test
TP07	0.3	Toluene	0.00000	N				H225 test
TP07	0.3	Ethylbenzene	0.00000	N				H225 test
TP07	0.3	m,p-xylene	0.00000	N				H226 test

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Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP07	0.3	o-xylene	0.00000	N				H226 test
TP07	0.3	Naphthalene	0.00000	N				H228 test
TP07	0.3	Acenaphthylene	0.00000	N				
TP07	0.3	Acenaphthene	0.00000	N				
TP07	0.3	Fluorene	0.00000	N				
TP07	0.3	Phenanthrene	0.00000	N				
TP07	0.3	Anthracene	0.00000	N				
TP07	0.3	Fluoranthene	0.00000	N				
TP07	0.3	Pyrene	0.00000	N				
TP07	0.3	Benzo(a)anthracene	0.00000	N				
TP07	0.3	Chrysene	0.00000	N				
TP07	0.3	Benzo(b)fluoranthene	0.00000	N				
TP07	0.3	Benzo(k)fluoranthene	0.00000	N				
TP07	0.3	Benzo(a)pyrene	0.00000	N				
TP07	0.3	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP07	0.3	Di-benz(a,h)anthracene	0.00000	N				
TP07	0.3	Benzo(g,h,i)perylene	0.00000	N				
TP07	0.3	Phenol	0.00000	N				
TP07	0.3	Arsenic	0.00110	N				
TP07	0.3	Boron	0.00231	N				
TP07	0.3	Cadmium	0.00002	N				
TP07	0.3	Hexavalent Chromium	0.00005	N				
TP07	0.3	Chromium (Total)	0.00343	N				
TP07	0.3	Copper	0.00276	N				
TP07	0.3	Lead	0.00097	N				
TP07	0.3	Mercury	0.00001	N				
TP07	0.3	Nickel	0.00224	N				
TP07	0.3	Selenium	0.00008	N				
TP07	0.3	Zinc	0.00000	N				
TP07	0.3	Zincx	0.00593	N				
TP07	0.3	Vanadium	0.00518	N				
TP10	0.1	pH	0.00000	N				
TP10	0.1	Benzene	0.00000	N				H225 test
TP10	0.1	Toluene	0.00000	N				H225 test
TP10	0.1	Ethylbenzene	0.00000	N				H225 test
TP10	0.1	m,p-xylene	0.00000	N				H226 test
TP10	0.1	o-xylene	0.00000	N				H226 test
TP10	0.1	Naphthalene	0.00000	N				H228 test
TP10	0.1	Acenaphthylene	0.00000	N				
TP10	0.1	Acenaphthene	0.00000	N				
TP10	0.1	Fluorene	0.00000	N				
TP10	0.1	Phenanthrene	0.00000	N				
TP10	0.1	Anthracene	0.00000	N				
TP10	0.1	Fluoranthene	0.00004	N				
TP10	0.1	Pyrene	0.00003	N				
TP10	0.1	Benzo(a)anthracene	0.00000	N				
TP10	0.1	Chrysene	0.00000	N				

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Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP10	0.1	Benzo(b)fluoranthene	0.00000	N				
TP10	0.1	Benzo(k)fluoranthene	0.00000	N				
TP10	0.1	Benzo(a)pyrene	0.00000	N				
TP10	0.1	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP10	0.1	Di-benz(a,h)anthracene	0.00000	N				
TP10	0.1	Benzo(g,h,i)perylene	0.00000	N				
TP10	0.1	Phenol	0.00002	N				
TP10	0.1	Arsenic	0.00095	N				
TP10	0.1	Boron	0.00192	N				
TP10	0.1	Cadmium	0.00002	N				
TP10	0.1	Hexavalent Chromium	0.00005	N				
TP10	0.1	Chromium (Total)	0.00358	N				
TP10	0.1	Copper	0.00327	N				
TP10	0.1	Lead	0.00091	N				
TP10	0.1	Mercury	0.00001	N				
TP10	0.1	Nickel	0.00290	N				
TP10	0.1	Selenium	0.00008	N				
TP10	0.1	Zinc	0.00000	N				
TP10	0.1	Zincx	0.00765	N				
TP10	0.1	Vanadium	0.00446	N				
TP21	0.4	pH	0.00000	N				
TP21	0.4	Benzene	0.00000	N				H225 test
TP21	0.4	Toluene	0.00000	N				H225 test
TP21	0.4	Ethylbenzene	0.00000	N				H225 test
TP21	0.4	m,p-xylene	0.00000	N				H226 test
TP21	0.4	o-xylene	0.00000	N				H226 test
TP21	0.4	Naphthalene	0.00000	N				H228 test
TP21	0.4	Acenaphthylene	0.00000	N				
TP21	0.4	Acenaphthene	0.00000	N				
TP21	0.4	Fluorene	0.00000	N				
TP21	0.4	Phenanthrene	0.00000	N				
TP21	0.4	Anthracene	0.00000	N				
TP21	0.4	Fluoranthene	0.00000	N				
TP21	0.4	Pyrene	0.00000	N				
TP21	0.4	Benzo(a)anthracene	0.00000	N				
TP21	0.4	Chrysene	0.00000	N				
TP21	0.4	Benzo(b)fluoranthene	0.00000	N				
TP21	0.4	Benzo(k)fluoranthene	0.00000	N				
TP21	0.4	Benzo(a)pyrene	0.00000	N				
TP21	0.4	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP21	0.4	Di-benz(a,h)anthracene	0.00000	N				
TP21	0.4	Benzo(g,h,i)perylene	0.00000	N				
TP21	0.4	Phenol	0.00000	N				
TP21	0.4	Arsenic	0.00066	N				
TP21	0.4	Boron	0.00093	N				
TP21	0.4	Cadmium	0.00002	N				
TP21	0.4	Hexavalent Chromium	0.00005	N				

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TP21	0.4	Chromium (Total)	0.00270	N				
TP21	0.4	Copper	0.00181	N				
TP21	0.4	Lead	0.00061	N				
TP21	0.4	Mercury	0.00001	N				
TP21	0.4	Nickel	0.00200	N				
TP21	0.4	Selenium	0.00008	N				
TP21	0.4	Zinc	0.00000	N				
TP21	0.4	Zincx	0.00469	N				
TP21	0.4	Vanadium	0.00428	N				
TP25	0.25	pH	0.00000	N				
TP25	0.25	Benzene	0.00000	N				H225 test
TP25	0.25	Toluene	0.00000	N				H225 test
TP25	0.25	Ethylbenzene	0.00000	N				H225 test
TP25	0.25	m,p-xylene	0.00000	N				H226 test
TP25	0.25	o-xylene	0.00000	N				H226 test
TP25	0.25	Naphthalene	0.00000	N				H228 test
TP25	0.25	Acenaphthylene	0.00000	N				
TP25	0.25	Acenaphthene	0.00000	N				
TP25	0.25	Fluorene	0.00000	N				
TP25	0.25	Phenanthrene	0.00000	N				
TP25	0.25	Anthracene	0.00000	N				
TP25	0.25	Fluoranthene	0.00004	N				
TP25	0.25	Pyrene	0.00004	N				
TP25	0.25	Benzo(a)anthracene	0.00000	N				
TP25	0.25	Chrysene	0.00000	N				
TP25	0.25	Benzo(b)fluoranthene	0.00000	N				
TP25	0.25	Benzo(k)fluoranthene	0.00000	N				
TP25	0.25	Benzo(a)pyrene	0.00000	N				
TP25	0.25	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP25	0.25	Di-benz(a,h)anthracene	0.00000	N				
TP25	0.25	Benzo(g,h,i)perylene	0.00000	N				
TP25	0.25	Phenol	0.00000	N				
TP25	0.25	Arsenic	0.00092	N				
TP25	0.25	Boron	0.00104	N				
TP25	0.25	Cadmium	0.00002	N				
TP25	0.25	Hexavalent Chromium	0.00005	N				
TP25	0.25	Chromium (Total)	0.00343	N				
TP25	0.25	Copper	0.00246	N				
TP25	0.25	Lead	0.00082	N				
TP25	0.25	Mercury	0.00001	N				
TP25	0.25	Nickel	0.00198	N				
TP25	0.25	Selenium	0.00008	N				
TP25	0.25	Zinc	0.00000	N				
TP25	0.25	Zincx	0.00494	N				
TP25	0.25	Vanadium	0.00589	N				
TP19	0.15	pH	0.00000	N				
TP19	0.15	Benzene	0.00000	N				H225 test

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Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP19	0.15	Toluene	0.00000	N				H225 test
TP19	0.15	Ethylbenzene	0.00000	N				H225 test
TP19	0.15	m,p-xylene	0.00000	N				H226 test
TP19	0.15	o-xylene	0.00000	N				H226 test
TP19	0.15	Naphthalene	0.00000	N				H228 test
TP19	0.15	Acenaphthylene	0.00000	N				
TP19	0.15	Acenaphthene	0.00000	N				
TP19	0.15	Fluorene	0.00000	N				
TP19	0.15	Phenanthrene	0.00000	N				
TP19	0.15	Anthracene	0.00000	N				
TP19	0.15	Fluoranthene	0.00000	N				
TP19	0.15	Pyrene	0.00000	N				
TP19	0.15	Benzo(a)anthracene	0.00000	N				
TP19	0.15	Chrysene	0.00000	N				
TP19	0.15	Benzo(b)fluoranthene	0.00000	N				
TP19	0.15	Benzo(k)fluoranthene	0.00000	N				
TP19	0.15	Benzo(a)pyrene	0.00000	N				
TP19	0.15	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP19	0.15	Di-benz(a,h)anthracene	0.00000	N				
TP19	0.15	Benzo(g,h,i)perylene	0.00000	N				
TP19	0.15	Phenol	0.00000	N				
TP19	0.15	Arsenic	0.00552	N				
TP19	0.15	Boron	0.00093	N				
TP19	0.15	Cadmium	0.00002	N				
TP19	0.15	Hexavalent Chromium	0.00005	N				
TP19	0.15	Chromium (Total)	0.00577	N				
TP19	0.15	Copper	0.01281	N				
TP19	0.15	Lead	0.00120	N				
TP19	0.15	Mercury	0.00001	N				
TP19	0.15	Nickel	0.00633	N				
TP19	0.15	Selenium	0.00019	N				
TP19	0.15	Zinc	0.00000	N				
TP19	0.15	Zincx	0.00938	N				
TP19	0.15	Vanadium	0.00875	N				
TP23	0.7	pH	0.00000	N				
TP23	0.7	Benzene	0.00000	N				H225 test
TP23	0.7	Toluene	0.00000	N				H225 test
TP23	0.7	Ethylbenzene	0.00000	N				H225 test
TP23	0.7	m,p-xylene	0.00000	N				H226 test
TP23	0.7	o-xylene	0.00000	N				H226 test
TP23	0.7	Naphthalene	0.00000	N				H228 test
TP23	0.7	Acenaphthylene	0.00000	N				
TP23	0.7	Acenaphthene	0.00000	N				
TP23	0.7	Fluorene	0.00000	N				
TP23	0.7	Phenanthrene	0.00000	N				
TP23	0.7	Anthracene	0.00000	N				
TP23	0.7	Fluoranthene	0.00000	N				

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Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP23	0.7	Pyrene	0.00000	N				
TP23	0.7	Benzo(a)anthracene	0.00000	N				
TP23	0.7	Chrysene	0.00000	N				
TP23	0.7	Benzo(b)fluoranthene	0.00000	N				
TP23	0.7	Benzo(k)fluoranthene	0.00000	N				
TP23	0.7	Benzo(a)pyrene	0.00000	N				
TP23	0.7	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP23	0.7	Di-benz(a,h)anthracene	0.00000	N				
TP23	0.7	Benzo(g,h,i)perylene	0.00000	N				
TP23	0.7	Phenol	0.00000	N				
TP23	0.7	Arsenic	0.00110	N				
TP23	0.7	Boron	0.00093	N				
TP23	0.7	Cadmium	0.00002	N				
TP23	0.7	Hexavalent Chromium	0.00005	N				
TP23	0.7	Chromium (Total)	0.00133	N				
TP23	0.7	Copper	0.00128	N				
TP23	0.7	Lead	0.00050	N				
TP23	0.7	Mercury	0.00001	N				
TP23	0.7	Nickel	0.00208	N				
TP23	0.7	Selenium	0.00008	N				
TP23	0.7	Zinc	0.00000	N				
TP23	0.7	Zincx	0.00272	N				
TP23	0.7	Vanadium	0.00339	N				
TP27	0.4	pH	0.00000	N				
TP27	0.4	Benzene	0.00000	N				H225 test
TP27	0.4	Toluene	0.00000	N				H225 test
TP27	0.4	Ethylbenzene	0.00000	N				H225 test
TP27	0.4	m,p-xylene	0.00000	N				H226 test
TP27	0.4	o-xylene	0.00000	N				H226 test
TP27	0.4	Naphthalene	0.00000	N				H228 test
TP27	0.4	Acenaphthylene	0.00000	N				
TP27	0.4	Acenaphthene	0.00000	N				
TP27	0.4	Fluorene	0.00000	N				
TP27	0.4	Phenanthrene	0.00000	N				
TP27	0.4	Anthracene	0.00000	N				
TP27	0.4	Fluoranthene	0.00000	N				
TP27	0.4	Pyrene	0.00000	N				
TP27	0.4	Benzo(a)anthracene	0.00000	N				
TP27	0.4	Chrysene	0.00000	N				
TP27	0.4	Benzo(b)fluoranthene	0.00000	N				
TP27	0.4	Benzo(k)fluoranthene	0.00000	N				
TP27	0.4	Benzo(a)pyrene	0.00000	N				
TP27	0.4	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP27	0.4	Di-benz(a,h)anthracene	0.00000	N				
TP27	0.4	Benzo(g,h,i)perylene	0.00000	N				
TP27	0.4	Phenol	0.00000	N				
TP27	0.4	Arsenic	0.00120	N				

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TP27	0.4	Boron	0.00093	N				
TP27	0.4	Cadmium	0.00002	N				
TP27	0.4	Hexavalent Chromium	0.00005	N				
TP27	0.4	Chromium (Total)	0.00153	N				
TP27	0.4	Copper	0.00131	N				
TP27	0.4	Lead	0.00071	N				
TP27	0.4	Mercury	0.00001	N				
TP27	0.4	Nickel	0.00240	N				
TP27	0.4	Selenium	0.00008	N				
TP27	0.4	Zinc	0.00000	N				
TP27	0.4	Zincx	0.00296	N				
TP27	0.4	Vanadium	0.00357	N				
TP28	0.25	pH	0.00000	N				
TP28	0.25	Benzene	0.00000	N				H225 test
TP28	0.25	Toluene	0.00000	N				H225 test
TP28	0.25	Ethylbenzene	0.00000	N				H225 test
TP28	0.25	m,p-xylene	0.00000	N				H226 test
TP28	0.25	o-xylene	0.00000	N				H226 test
TP28	0.25	Naphthalene	0.00000	N				H228 test
TP28	0.25	Acenaphthylene	0.00000	N				
TP28	0.25	Acenaphthene	0.00000	N				
TP28	0.25	Fluorene	0.00000	N				
TP28	0.25	Phenanthrene	0.00000	N				
TP28	0.25	Anthracene	0.00000	N				
TP28	0.25	Fluoranthene	0.00000	N				
TP28	0.25	Pyrene	0.00000	N				
TP28	0.25	Benzo(a)anthracene	0.00000	N				
TP28	0.25	Chrysene	0.00000	N				
TP28	0.25	Benzo(b)fluoranthene	0.00000	N				
TP28	0.25	Benzo(k)fluoranthene	0.00000	N				
TP28	0.25	Benzo(a)pyrene	0.00000	N				
TP28	0.25	Indeno(1,2,3-cd)pyrene	0.00000	N				
TP28	0.25	Di-benz(a,h)anthracene	0.00000	N				
TP28	0.25	Benzo(g,h,i)perylene	0.00000	N				
TP28	0.25	Phenol	0.00000	N				
TP28	0.25	Arsenic	0.00083	N				
TP28	0.25	Boron	0.00183	N				
TP28	0.25	Cadmium	0.00002	N				
TP28	0.25	Hexavalent Chromium	0.00005	N				
TP28	0.25	Chromium (Total)	0.00120	N				
TP28	0.25	Copper	0.00477	N				
TP28	0.25	Lead	0.00053	N				
TP28	0.25	Mercury	0.00001	N				
TP28	0.25	Nickel	0.00179	N				
TP28	0.25	Selenium	0.00008	N				
TP28	0.25	Zinc	0.00000	N				
TP28	0.25	Zincx	0.00244	N				

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Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP28	0.25	Vanadium	0.00268	N				
WS05	0.25	pH	0.00000	N				
WS05	0.25	Benzene	0.00000	N				H225 test
WS05	0.25	Toluene	0.00000	N				H225 test
WS05	0.25	Ethylbenzene	0.00000	N				H225 test
WS05	0.25	m,p-xylene	0.00000	N				H226 test
WS05	0.25	o-xylene	0.00000	N				H226 test
WS05	0.25	Naphthalene	0.00004	N				H228 test
WS05	0.25	Acenaphthylene	0.00000	N				
WS05	0.25	Acenaphthene	0.00000	N				
WS05	0.25	Fluorene	0.00000	N				
WS05	0.25	Phenanthrene	0.00001	N				
WS05	0.25	Anthracene	0.00001	N				
WS05	0.25	Fluoranthene	0.00004	N				
WS05	0.25	Pyrene	0.00004	N				
WS05	0.25	Benzo(a)anthracene	0.00003	N				
WS05	0.25	Chrysene	0.00002	N				
WS05	0.25	Benzo(b)fluoranthene	0.00004	N				
WS05	0.25	Benzo(k)fluoranthene	0.00002	N				
WS05	0.25	Benzo(a)pyrene	0.00003	N				
WS05	0.25	Indeno(1,2,3-cd)pyrene	0.00003	N				
WS05	0.25	Di-benz(a,h)anthracene	0.00002	N				
WS05	0.25	Benzo(g,h,i)perylene	0.00002	N				
WS05	0.25	Phenol	0.00000	N				
WS05	0.25	Arsenic	0.00061	N				
WS05	0.25	Boron	0.00150	N				
WS05	0.25	Cadmium	0.00002	N				
WS05	0.25	Hexavalent Chromium	0.00005	N				
WS05	0.25	Chromium (Total)	0.00113	N				
WS05	0.25	Copper	0.00276	N				
WS05	0.25	Lead	0.00200	N				
WS05	0.25	Mercury	0.00001	N				
WS05	0.25	Nickel	0.00108	N				
WS05	0.25	Selenium	0.00008	N				
WS05	0.25	Zinc	0.00000	N				
WS05	0.25	Zincx	0.01210	N				
WS05	0.25	Vanadium	0.00214	N				
WS04	0.3	pH	0.00000	N				
WS04	0.3	Benzene	0.00000	N				H225 test
WS04	0.3	Toluene	0.00000	N				H225 test
WS04	0.3	Ethylbenzene	0.00000	N				H225 test
WS04	0.3	m,p-xylene	0.00000	N				H226 test
WS04	0.3	o-xylene	0.00000	N				H226 test
WS04	0.3	Naphthalene	0.00000	N				H228 test
WS04	0.3	Acenaphthylene	0.00000	N				
WS04	0.3	Acenaphthene	0.00000	N				
WS04	0.3	Fluorene	0.00000	N				

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WS04	0.3	Phenanthrene	0.00000	N				
WS04	0.3	Anthracene	0.00000	N				
WS04	0.3	Fluoranthene	0.00002	N				
WS04	0.3	Pyrene	0.00001	N				
WS04	0.3	Benzo(a)anthracene	0.00000	N				
WS04	0.3	Chrysene	0.00000	N				
WS04	0.3	Benzo(b)fluoranthene	0.00000	N				
WS04	0.3	Benzo(k)fluoranthene	0.00000	N				
WS04	0.3	Benzo(a)pyrene	0.00000	N				
WS04	0.3	Indeno(1,2,3-cd)pyrene	0.00000	N				
WS04	0.3	Di-benz(a,h)anthracene	0.00000	N				
WS04	0.3	Benzo(g,h,i)perylene	0.00000	N				
WS04	0.3	Phenol	0.00000	N				
WS04	0.3	Arsenic	0.00061	N				
WS04	0.3	Boron	0.00188	N				
WS04	0.3	Cadmium	0.00002	N				
WS04	0.3	Hexavalent Chromium	0.00005	N				
WS04	0.3	Chromium (Total)	0.00183	N				
WS04	0.3	Copper	0.00327	N				
WS04	0.3	Lead	0.00230	N				
WS04	0.3	Mercury	0.00001	N				
WS04	0.3	Nickel	0.00153	N				
WS04	0.3	Selenium	0.00008	N				
WS04	0.3	Zinc	0.00000	N				
WS04	0.3	Zincx	0.00938	N				
WS04	0.3	Vanadium	0.00321	N				
WS03	0.1	pH	0.00000	N				
WS03	0.1	Benzene	0.00000	N				H225 test
WS03	0.1	Toluene	0.00000	N				H225 test
WS03	0.1	Ethylbenzene	0.00000	N				H225 test
WS03	0.1	m,p-xylene	0.00000	N				H226 test
WS03	0.1	o-xylene	0.00000	N				H226 test
WS03	0.1	Naphthalene	0.00000	N				H228 test
WS03	0.1	Acenaphthylene	0.00000	N				
WS03	0.1	Acenaphthene	0.00000	N				
WS03	0.1	Fluorene	0.00000	N				
WS03	0.1	Phenanthrene	0.00000	N				
WS03	0.1	Anthracene	0.00000	N				
WS03	0.1	Fluoranthene	0.00001	N				
WS03	0.1	Pyrene	0.00001	N				
WS03	0.1	Benzo(a)anthracene	0.00000	N				
WS03	0.1	Chrysene	0.00000	N				
WS03	0.1	Benzo(b)fluoranthene	0.00000	N				
WS03	0.1	Benzo(k)fluoranthene	0.00000	N				
WS03	0.1	Benzo(a)pyrene	0.00000	N				
WS03	0.1	Indeno(1,2,3-cd)pyrene	0.00000	N				
WS03	0.1	Di-benz(a,h)anthracene	0.00000	N				

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WS03	0.1	Benzo(g,h,i)perylene	0.00000	N				
WS03	0.1	Phenol	0.00000	N				
WS03	0.1	Arsenic	0.00072	N				
WS03	0.1	Boron	0.00093	N				
WS03	0.1	Cadmium	0.00002	N				
WS03	0.1	Hexavalent Chromium	0.00005	N				
WS03	0.1	Chromium (Total)	0.00227	N				
WS03	0.1	Copper	0.00301	N				
WS03	0.1	Lead	0.00240	N				
WS03	0.1	Mercury	0.00001	N				
WS03	0.1	Nickel	0.00219	N				
WS03	0.1	Selenium	0.00008	N				
WS03	0.1	Zinc	0.00000	N				
WS03	0.1	Zinc	0.00938	N				
WS03	0.1	Vanadium	0.00428	N				
WS02	0.15	pH	0.00000	N				
WS02	0.15	Benzene	0.00000	N				H225 test
WS02	0.15	Toluene	0.00000	N				H225 test
WS02	0.15	Ethylbenzene	0.00000	N				H225 test
WS02	0.15	m,p-xylene	0.00000	N				H226 test
WS02	0.15	o-xylene	0.00000	N				H226 test
WS02	0.15	Naphthalene	0.00000	N				H228 test
WS02	0.15	Acenaphthylene	0.00000	N				
WS02	0.15	Acenaphthene	0.00000	N				
WS02	0.15	Fluorene	0.00000	N				
WS02	0.15	Phenanthrene	0.00004	N				
WS02	0.15	Anthracene	0.00001	N				
WS02	0.15	Fluoranthene	0.00004	N				
WS02	0.15	Pyrene	0.00003	N				
WS02	0.15	Benzo(a)anthracene	0.00002	N				
WS02	0.15	Chrysene	0.00002	N				
WS02	0.15	Benzo(b)fluoranthene	0.00000	N				
WS02	0.15	Benzo(k)fluoranthene	0.00000	N				
WS02	0.15	Benzo(a)pyrene	0.00000	N				
WS02	0.15	Indeno(1,2,3-cd)pyrene	0.00000	N				
WS02	0.15	Di-benz(a,h)anthracene	0.00000	N				
WS02	0.15	Benzo(g,h,i)perylene	0.00000	N				
WS02	0.15	Phenol	0.00000	N				
WS02	0.15	Arsenic	0.00057	N				
WS02	0.15	Boron	0.00120	N				
WS02	0.15	Cadmium	0.00002	N				
WS02	0.15	Hexavalent Chromium	0.00005	N				
WS02	0.15	Chromium (Total)	0.00197	N				
WS02	0.15	Copper	0.00301	N				
WS02	0.15	Lead	0.00150	N				
WS02	0.15	Mercury	0.00001	N				
WS02	0.15	Nickel	0.00200	N				

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WS02	0.15	Selenium	0.00008	N				
WS02	0.15	Zinc	0.00000	N				
WS02	0.15	Zincx	0.00765	N				
WS02	0.15	Vanadium	0.00428	N				
WS09	0.25	pH	0.00000	N				
WS09	0.25	Benzene	0.00000	N				H225 test
WS09	0.25	Toluene	0.00000	N				H225 test
WS09	0.25	Ethylbenzene	0.00000	N				H225 test
WS09	0.25	m,p-xylene	0.00000	N				H226 test
WS09	0.25	o-xylene	0.00000	N				H226 test
WS09	0.25	Naphthalene	0.00000	N				H228 test
WS09	0.25	Acenaphthylene	0.00000	N				
WS09	0.25	Acenaphthene	0.00000	N				
WS09	0.25	Fluorene	0.00000	N				
WS09	0.25	Phenanthrene	0.00000	N				
WS09	0.25	Anthracene	0.00000	N				
WS09	0.25	Fluoranthene	0.00000	N				
WS09	0.25	Pyrene	0.00000	N				
WS09	0.25	Benzo(a)anthracene	0.00000	N				
WS09	0.25	Chrysene	0.00000	N				
WS09	0.25	Benzo(b)fluoranthene	0.00000	N				
WS09	0.25	Benzo(k)fluoranthene	0.00000	N				
WS09	0.25	Benzo(a)pyrene	0.00000	N				
WS09	0.25	Indeno(1,2,3-cd)pyrene	0.00000	N				
WS09	0.25	Di-benz(a,h)anthracene	0.00000	N				
WS09	0.25	Benzo(g,h,i)perylene	0.00000	N				
WS09	0.25	Phenol	0.00000	N				
WS09	0.25	Arsenic	0.00115	N				
WS09	0.25	Boron	0.00093	N				
WS09	0.25	Cadmium	0.00002	N				
WS09	0.25	Hexavalent Chromium	0.00005	N				
WS09	0.25	Chromium (Total)	0.00053	N				
WS09	0.25	Copper	0.00133	N				
WS09	0.25	Lead	0.00023	N				
WS09	0.25	Mercury	0.00001	N				
WS09	0.25	Nickel	0.00069	N				
WS09	0.25	Selenium	0.00008	N				
WS09	0.25	Zinc	0.00000	N				
WS09	0.25	Zincx	0.00247	N				
WS09	0.25	Vanadium	0.00089	N				
WS11	0.4	pH	0.00000	N				
WS11	0.4	Benzene	0.00000	N				H225 test
WS11	0.4	Toluene	0.00000	N				H225 test
WS11	0.4	Ethylbenzene	0.00000	N				H225 test
WS11	0.4	m,p-xylene	0.00000	N				H226 test
WS11	0.4	o-xylene	0.00000	N				H226 test
WS11	0.4	Naphthalene	0.00000	N				H228 test

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WS11	0.4	Acenaphthylene	0.00000	N				
WS11	0.4	Acenaphthene	0.00000	N				
WS11	0.4	Fluorene	0.00000	N				
WS11	0.4	Phenanthrene	0.00002	N				
WS11	0.4	Anthracene	0.00001	N				
WS11	0.4	Fluoranthene	0.00004	N				
WS11	0.4	Pyrene	0.00004	N				
WS11	0.4	Benzo(a)anthracene	0.00004	N				
WS11	0.4	Chrysene	0.00004	N				
WS11	0.4	Benzo(b)fluoranthene	0.00005	N				
WS11	0.4	Benzo(k)fluoranthene	0.00003	N				
WS11	0.4	Benzo(a)pyrene	0.00004	N				
WS11	0.4	Indeno(1,2,3-cd)pyrene	0.00004	N				
WS11	0.4	Di-benz(a,h)anthracene	0.00003	N				
WS11	0.4	Benzo(g,h,i)perylene	0.00003	N				
WS11	0.4	Phenol	0.00000	N				
WS11	0.4	Arsenic	0.00091	N				
WS11	0.4	Boron	0.00093	N				
WS11	0.4	Cadmium	0.00002	N				
WS11	0.4	Hexavalent Chromium	0.00005	N				
WS11	0.4	Chromium (Total)	0.00197	N				
WS11	0.4	Copper	0.00628	N				
WS11	0.4	Lead	0.00000	N				
WS11	0.4	Leadx	0.00860	N				
WS11	0.4	Mercury	0.00001	N				
WS11	0.4	Nickel	0.00192	N				
WS11	0.4	Selenium	0.00008	N				
WS11	0.4	Zinc	0.00000	N				
WS11	0.4	Zincx	0.01654	N				
WS11	0.4	Vanadium	0.00232	N				
WS08	0.45	pH	0.00000	N				
WS08	0.45	Benzene	0.00000	N				H225 test
WS08	0.45	Toluene	0.00000	N				H225 test
WS08	0.45	Ethylbenzene	0.00000	N				H225 test
WS08	0.45	m,p-xylene	0.00000	N				H226 test
WS08	0.45	o-xylene	0.00000	N				H226 test
WS08	0.45	Naphthalene	0.00000	N				H228 test
WS08	0.45	Acenaphthylene	0.00000	N				
WS08	0.45	Acenaphthene	0.00000	N				
WS08	0.45	Fluorene	0.00000	N				
WS08	0.45	Phenanthrene	0.00000	N				
WS08	0.45	Anthracene	0.00000	N				
WS08	0.45	Fluoranthene	0.00000	N				
WS08	0.45	Pyrene	0.00000	N				
WS08	0.45	Benzo(a)anthracene	0.00000	N				
WS08	0.45	Chrysene	0.00000	N				
WS08	0.45	Benzo(b)fluoranthene	0.00000	N				

Site Name	Quobleigh Breach and Fir Tree Farm
Location	Horton Heath
Site ID	
Job Number	GE19906
Date	12/20/2021
User Name	gavin.roberts@gesl.net
Company Name	Geo-Environmental Services Limited

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
WS08	0.45	Benzo(k)fluoranthene	0.00000	N				
WS08	0.45	Benzo(a)pyrene	0.00000	N				
WS08	0.45	Indeno(1,2,3-cd)pyrene	0.00000	N				
WS08	0.45	Di-benz(a,h)anthracene	0.00000	N				
WS08	0.45	Benzo(g,h,i)perylene	0.00000	N				
WS08	0.45	Phenol	0.00000	N				
WS08	0.45	Arsenic	0.00121	N				
WS08	0.45	Boron	0.00093	N				
WS08	0.45	Cadmium	0.00002	N				
WS08	0.45	Hexavalent Chromium	0.00005	N				
WS08	0.45	Chromium (Total)	0.00212	N				
WS08	0.45	Copper	0.00143	N				
WS08	0.45	Lead	0.00051	N				
WS08	0.45	Mercury	0.00001	N				
WS08	0.45	Nickel	0.00140	N				
WS08	0.45	Selenium	0.00010	N				
WS08	0.45	Zinc	0.00000	N				
WS08	0.45	Zincx	0.00494	N				
WS08	0.45	Vanadium	0.00321	N				
WS10	0.15	pH	0.00000	N				
WS10	0.15	Benzene	0.00000	N				H225 test
WS10	0.15	Toluene	0.00000	N				H225 test
WS10	0.15	Ethylbenzene	0.00000	N				H225 test
WS10	0.15	m,p-xylene	0.00000	N				H226 test
WS10	0.15	o-xylene	0.00000	N				H226 test
WS10	0.15	Naphthalene	0.00006	N				H228 test
WS10	0.15	Acenaphthylene	0.00000	N				
WS10	0.15	Acenaphthene	0.00004	N				
WS10	0.15	Fluorene	0.00003	N				
WS10	0.15	Phenanthrene	0.00021	N				
WS10	0.15	Anthracene	0.00004	N				
WS10	0.15	Fluoranthene	0.00029	N				
WS10	0.15	Pyrene	0.00025	N				
WS10	0.15	Benzo(a)anthracene	0.00013	N				
WS10	0.15	Chrysene	0.00015	N				
WS10	0.15	Benzo(b)fluoranthene	0.00015	N				
WS10	0.15	Benzo(k)fluoranthene	0.00006	N				
WS10	0.15	Benzo(a)pyrene	0.00010	N				
WS10	0.15	Indeno(1,2,3-cd)pyrene	0.00006	N				
WS10	0.15	Di-benz(a,h)anthracene	0.00002	N				
WS10	0.15	Benzo(g,h,i)perylene	0.00007	N				
WS10	0.15	Phenol	0.00000	N				
WS10	0.15	Arsenic	0.00092	N				
WS10	0.15	Boron	0.00093	N				
WS10	0.15	Cadmium	0.00002	N				
WS10	0.15	Hexavalent Chromium	0.00005	N				
WS10	0.15	Chromium (Total)	0.00241	N				

Site Name	Quobleigh Breach and Fir Tree Farm
Location	Horton Heath
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Company Name	Geo-Environmental Services Limited

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
WS10	0.15	Copper	0.00249	N				
WS10	0.15	Lead	0.00340	N				
WS10	0.15	Mercury	0.00001	N				
WS10	0.15	Nickel	0.00250	N				
WS10	0.15	Selenium	0.00008	N				
WS10	0.15	Zinc	0.00000	N				
WS10	0.15	Zincx	0.01062	N				
WS10	0.15	Vanadium	0.00536	N				

Notes - Additional Information on Hazard Properties

Hazardous Property	Description	Hazard Statement	Note
HP1	Explosive	H200, H201, H202, H203, H204, H240 and H241	A waste is assessed for HP1 via test methods, rather than a concentration limit. If you have substances or a mixture containing explosive properties the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria.
HP2	Oxidising	H270, H271, H272	A waste is assessed for HP2 via test methods, rather than a concentration limit. If you have substances or a mixture containing oxidising properties the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria.
HP3	Flammable	H220 to H226, H228, H242, H250, H251m H252, H260, H261	A waste is assessed for HP3 via test methods, rather than a concentration limit. If you have substances or a mixture containing flammable properties the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria. If a waste contains either H220, H221, H260 or H261 a calculation can be performed to identify the minimum amount of that substance that will trigger HP3.
HP5	Specific Target Organ Toxicity (STOT)	H304	Should a waste contain two or more compounds displaying H304 (Asp. Tox 1) and equal or exceed its specific concentration limit of 10%, then a waste will be hazardous by HP5 if its kinematic viscosity exceeds 20.5 mm ² /s. Guidance should be sought from the CLP Criteria.
HP9	Infectious	N/A	A waste is assessed for HP9 via further testing, rather than a concentration limit. In cases where there is the potential for toxins to be present, further testing will be required. For healthcare waste reference should be made to the Department of health guidance: Safe management of healthcare waste.
HP12	Release of acute toxic gas	EUH029, EUH031, EUH032, H260 or H261	A waste is assessed for HP12 via test methods, rather than a concentration limit. If you have substances or a mixture that may release acute toxic gas the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria.
HP15	Explosive or explosive properties	H205, EUH001, EUH019 or EUH044	A waste is assessed for HP15 via test methods, rather than a concentration limit. If you have substances or a mixture that may exhibit explosive or explosive properties the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria.
HP16	Persistent organic pollutants	N/A	A waste is considered hazardous if the concentration of one or more compound (persistent organic pollutant) as listed in Appendix C of Environment Agency guidance WM3 is above its assigned concentration limit. For reference for dioxins and furans, this assessment incorporates the use of specific toxicity equivalent factors.

APPENDIX H

Water Pipe Material Risk Assessment



Section 1: Development Details	
Development Name <i>(if it has one)</i>	One Horton Heath, Quobleigh Breach and Fir Tree Farm Development Parcel
Development Address	Land West of Horton Heath, Horton Heath, Hampshire, SO30 2HH
OS Grid Reference <i>(mid point)</i>	448493, 117509
Developer's Name	Eastleigh Borough Council
Water company reference number	Southern Water
Please provide details below of the current and historical use of the site and adjacent sites.	
<i>If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.</i>	
At the time of the site investigation works, October 2021, the site comprised three open, two residential properties, Fir Tree Farm and Victoria House, and a site compound area. Adjacent land uses were noted to comprise mainly farmland with a solar farm to the south. Historically the site was shown to comprise agricultural farmland. Surrounding land uses were historically shown to comprise in the main agricultural fields with a solar farm to the south and residential development to the east of the site.	
Section 2: Preliminary Risk Assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	Yes ~~No~~
If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection.	
<i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i>	
Ground Investigation Report – GE19906/GIR/DEC21, dated December 2021 undertaken by Geo-Environmental Services Ltd	
Section 3: Intrusive Site Investigation	
Have you completed any intrusive site investigation?	Yes ~~No~~
Date(s) when the site investigation(s) undertaken	6 th – 12 th October 2021
At what level has groundwater been encountered?	Between 0.02 and 4.88 metres below ground level
Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing.	
<i>If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.</i>	
If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE please provide details below of the rationale behind the intended pipe selection.	
<i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i>	

Section 4: Site Remediation						
Please provide details below of any site remediation (which may include a change in site levels) already completed.						
<i>If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.</i>						
N/A						
Has the PSRAS (Table 1) been completed using appropriate data after remediation?				Yes	No	N/A
Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection.						
<i>If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.</i>						
N/A						
Section 5: Final Use of Site						
Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection.						
<i>If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.</i>						
N/A						
What water pipe materials are intended to be used on site?	Y/N	PE	Y/N	PE Barrier Pipe Type A	Y/N	PE Barrier Pipe Type B Other (please specify):
Section 6: Additional Information						
Please use the section below to provide any additional details to support your intended pipe selection.						
If your supporting information has additional information to support your intended pipe selection, please reference below the relevant sections of your report.						
Section 7: Risk Assessor						
Name and relevant qualifications of person directing the risk assessment for water pipes		Fiona Goode BSc (Hons), MSc, FGS, MEnvSc, RSoBRA				
Name and address of risk assessor's company		Geo-Environmental Services limited				
Date risk assessment performed		21/12/2021				
Section 8: Declaration						
I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and the water company's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information. I understand that failure to supply any of the required information may delay my application being processed.						
Name	Fiona Goode	Company	Geo-Environmental Services Limited			
Phone Number	01273 832972	Date	12/12/2021			

Table 1 - Pipe Selection Risk Assessment Summary (PSRAS)

1) Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2) If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below? Y/N Existing ground materials Y/N Remediated materials Y/N Imported capping materials

All concentrations in mg/kg

Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth See Note [2]	Maximum site concentration See Note [3]	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	Not Identified as a risk to the site in preliminary risk assessment				
Total BTEX & MTBE		0.1	Pass	0.001mg/kg	Y	<0.001mg/kg	<0.001mg/kg	-
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	Not Identified as a risk to the site in preliminary risk assessment				
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	1mg/kg	Y	<1mg/kg	<1mg/kg	-
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	1mg/kg	Y	<1mg/kg	<1mg/kg	-
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	1mg/kg	Y	<1mg/kg	<1mg/kg	-
Phenols* (from SVOC analysis)		2	Pass	0.1mg/kg	Y	0.16mg/kg	0.13mg/kg	-
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	Not Identified as a risk to the site in preliminary risk assessment				
Ethers*	Only where identified	0.5	Pass	Not Identified as a risk to the site in preliminary risk assessment				
Nitrobenzene*		0.5	Pass	Not Identified as a risk to the site in preliminary risk assessment				
Ketones*		0.5	Pass	Not Identified as a risk to the site in preliminary risk assessment				
Aldehydes*		0.5	Pass	Not Identified as a risk to the site in preliminary risk assessment				
Amines		Fail	Pass	Not Identified as a risk to the site in preliminary risk assessment				
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]	pH – N/A	Y	pH 8.3-11.3	pH 8.3-11.3	-

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.