Breck Farm

Taverham, Norfolk

Materials Management Plan - Minerals

Re: 1394/CW/MMPM/03-20

Date: March 2020

ASD CONSULTANTS

Breck Farm, Taverham, Norfolk

MATERIALS MANAGEMENT PLAN – MINERALS

REPORT REF: 1394/CW/MMPM/03-20
March 2020

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Prepared for: Scott Properties Ltd.
'The Client'

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APPENDIX

BIBLIOGRAPHY

Defra, 2009. *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites,* London: Defra.

DoT, 2016. *Manual of Contract Documents for Highway Works Volume 1 Specification for Highway Works,* London: DoT.

0.0 EXECUTIVE SUMMARY

0.1 Context

0.1.1 This Materials Management Plan – Minerals provides an assessment for potential, and management of, economically valuable material during the development of the site. The proposed development will comprise of various public open space areas, residential structures with associated gardens and parking.

0.2 Site Location and Description.

0.2.1 The site is located approximately 1.5km north of Taverham town centre and is bounded by Broadland Northway to the north, Fir Covert Road to the west, Reepham Road and housing to the east and existing housing to the south.

0.2.2 The development site is likely to accommodate at least 1400 houses, associated public open space, new primary school and local medical centre, with access provided by new roundabouts situated on Fir Covert Road and Reepham Road linked together by a suitable road.

0.2.3 The site consists of seven fields all of which are presently arable and investigation of former historical uses would suggest it has always been used for agricultural purposes. Some of the fields are bounded by trees and hedges.

0.2.4 The site is crossed by Marriott's Way and Breck Farm Lane.

0.2.5 Geosphere Environmental were commissioned to produce a soils report for Phase 1 of the proposed development and they identified potential sources of contamination including made ground associated with hard standings and tracks, however they found no contamination.

0.3 Ground Conditions.

0.3.1 The ground conditions were recorded as consistent across the site comprising of topsoil overlying superficial deposits of Sheringham Cliff Formation (Sand and Gravel) that is underlain by chalk.

0.3.2 No significant gas flow was detected and was considered to fall within the NHBC green category for low rise housing with underfloor voids.

0.3.3 Soakage potential did vary across the site.

0.4 Material Extraction and Use

0.4.1 The site appears to have been used for agriculture and the underlying soils are sands and gravels.

0.4.2 After consulting the geological map and Norfolk Laboratory who carried out the soils investigation for Broadland Northway this report will assume the sands and gravels extend over the whole site.

0.5 Conclusion

0.5.1 Although we do not have a report covering the whole site, the BGS intrusive soil apart from the topsoil, the sands and gravels will be suitable for use during construction.

1.0 INTRODUCTION

1.1 Background

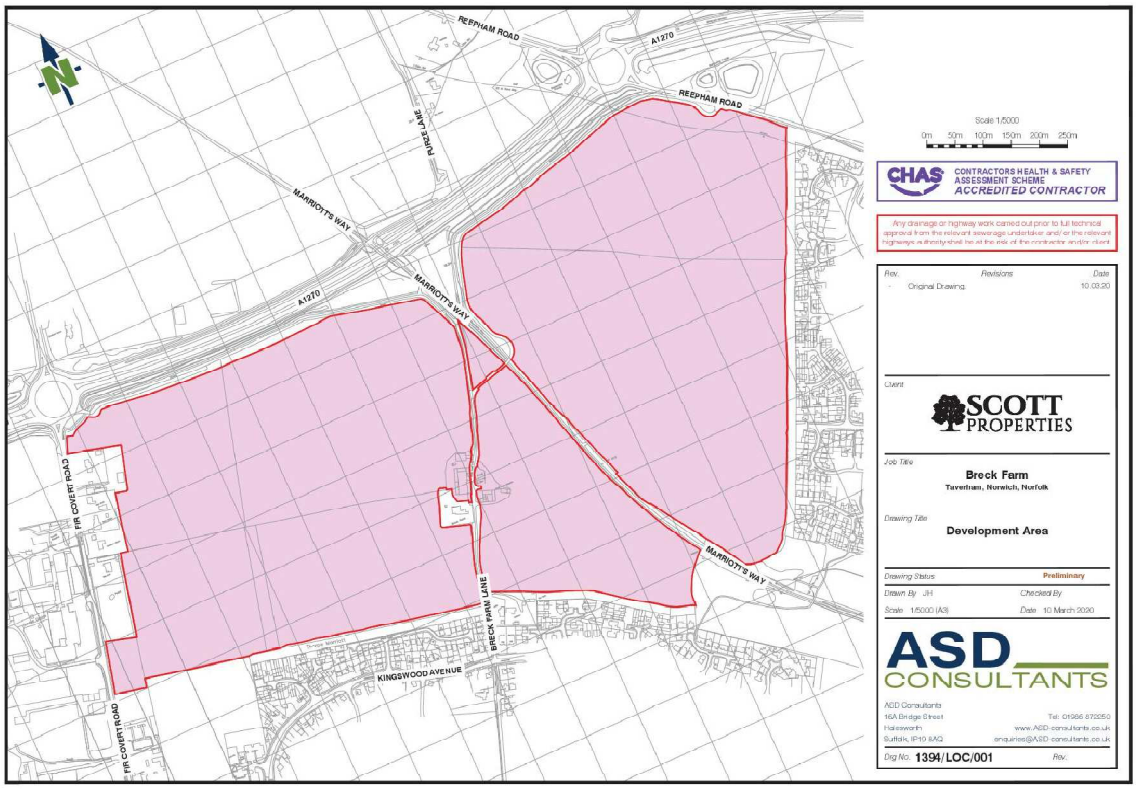
1.1.1 Scott Properties Ltd commissioned ASD Consultants, to produce a Materials Management Plan – in support of the draft allocation GNLP0337, for this proposed development area at Taverham.

1.1.2 The development site is likely to accommodate at least 1400 houses, associated public open space, new primary school and local medical centre, with access provided by new roundabouts situated on Fir Covert Road and Reepham Road linked together by a suitable road. Discussion is ongoing with Norfolk County Council.

1.1.3 The site will be developed in phases.

1.2 Site Location

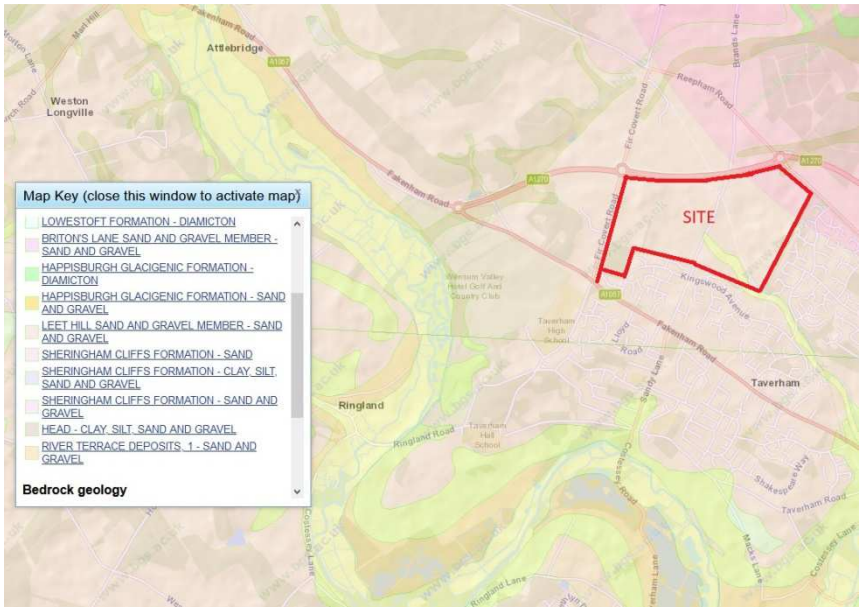
1.2.1 The site consists of seven fields all of which are presently arable and investigation of former historical uses would suggest it has always been used for agricultural purposes. Some of the fields are bounded by trees and hedges.



1.3 Geological Setting (BGS Plan Appendix C)

1.3.1 The British Geological Survey provides digital mapping, at a scale of 1:50,000. This map details the underlying geology of the site.

1.3.2 The British Geological Survey classifies the superficial stratum underlying the site as Sheringham Cliffs Formation and bedrock stratum as: Lewes Nodular, Seaford, Newhaven, Culver, and Portsdown Chalk Formation.



1.3.3 The Site Investigation confirmed the superficial stratum and details of materials found onsite. Geosphere Environmental tested twenty three window samples and seven soakage pits. The window samples were 4m deep and the soakage pits 2m.

1.3.4 Thin clay layers were encountered in some test holes.

2.0 MATERIAL ASSESSMENT

2.1 Material Extraction and Use

2.1.1 Sands and gravels are primarily composed of silica particles and thus classified as a mineral material of potential economic importance. Where this material is found in enough viable quantities it should be reused onsite all to the benefit of the site.

2.1.2 Excavated materials should be sampled and laboratory tested to obtain their grading. This grading can then be compared with those of materials suitable for use in construction and used for the appropriate purpose.

2.1.3 Provided the grading of the excavated material is suitable it may be used as a constituent for concrete, trench or general fill material.

2.1.4 During construction the contractor should extract and reuse all economically viable material rather than transport it away from site for disposal and import costly new materials.

2.2 Site Preparation/Levelling

2.2.1 Generally, where the site is stripped of topsoil it should be stockpiled for future use. Where there is evidence of contamination samples should be taken and laboratory tested before the material is added to the stockpile. The testing will inform how the material should be remediated or where it can be disposed.

2.2.2 Topsoil will consist primarily of non-mineral material with roots and vegetable matter that is not suitable for reuse in construction. The topsoil will be reused in the gardens and public open spaces. Generally, there will be a surplus of the material as much of the area will become paved.

2.2.3 Where earthworks are carried out reshaping and re-grading the site, the contractor should sample and test any suitable mineral material discovered and should form a separate stockpile for its reuse.

2.2.4 Any areas filled during reshaping will first reuse any suitable excavated material.

2.2.5 Advice should be obtained from the testing laboratory if a material is to be used for ground bearing purposes. CBR tests carried out would suggest this is so, but the material will vary. The material should be signed off by a suitably qualified and experienced geotechnical engineer.

2.3 Construction

2.3.1 A bund is to be constructed along the southern boundary of Broadland Northway and this will be made up of surplus excavated material from road and dwelling foundation construction and surplus topsoil and any unsuitable (for construction purposes) material such as clay.

2.4 Excavations for Drainage, Foundations, Services, and Infrastructure

2.4.1 Where possible the contractor will reuse suitable graded material excavated during drainage and SuDS (Sustainable Drainage Systems) construction as backfill.

2.4.2 Where possible during the excavation for foundations the contractor will: take a sample of the material excavated, have it tested, and stockpile it onsite (if suitable for reuse).

2.4.3 Testing undertaken by Geosphere Environmental on the sands and gravels concludes this has a CBR value of at least 20% and they suggest a value of 29% should be used for road pavement design.

2.4.4 A suitably qualified and experienced Structural Engineer should be employed to report and recommend the type and size of foundations to be used for each plot.

2.4.5 Excavations for services and other infrastructure will be the shallowest depth possible.

2.4.6 In the first instance service trenches (provided it is suitable) should be backfilled with the excavated material and/or material stockpiled for this purpose.

2.5 Environmental Considerations

2.5.1 This report recommends: onsite screening, sorting and preparation of materials suitable for use during construction. Reuse of materials will reduce the number of lorry trips required during construction, in turn reducing the impact on the surrounding area. It will also help conserve valuable material reserves, while reducing the amount of material transported and disposed of to a tip.

2.5.2 Where possible the contractor should use suitable uncontaminated spoil, generated from the excavations for landscaping areas.

2.5.3 Through careful consideration of the site levels it should be possible to retain most of the material on site. Increasing site levels will reduce the amount of excavated material under the roads and drainage trenches while providing extra volumes of fill under gardens and public open spaces. Play mounds and noise bunds can be made up from poorly graded or clay bound materials.

2.5.4 Contamination testing undertaken by Geosphere Environmental did not discover any contamination. This report does not consider contaminated land, except to point out that during construction the contractor should be vigilant and should any contamination be discovered, work should be stopped and a suitably qualified and experienced geotechnical engineer employed to advise on how to deal with it. The contractor should not handle or dispose of any contaminated material until it is identified.

2.5.5 The existing arable land provides limited capacity for biodiversity. The proposals will include areas of public open space and trees, which will enhance biodiversity. The landscape architect should consider the implementation of other suitable schemes. The contractor will ensure that the excavation of materials does not significantly impact the ecological value of the site and should utilise any opportunities to enhance the biodiversity.

3.0 ESTIMATES OF MINERAL EXTRACTION AND WASTE

3.1 Estimates

3.1.1 Provided no contaminated material is encountered on the site, through careful consideration of the proposed site levels it should be possible to retain all of the material. The highway bund, play mounds and public open spaces can reuse poorly graded or clay bound materials.

3.1.2 Bearing capacities of sands and gravels can be improved by utilising stabilisation techniques and this has the added benefit of reducing the road construction thickness and thus reduces the amount of imported bound material.

4.0 MATERIAL MANAGEMENT

4.1 Topsoil

4.1.1 Topsoil could be reused in some construction areas such as garden areas and public open spaces. This material should comply to the guidance set out in the British Standard specification for topsoil and requirements for use (BS3882: 2007).

4.1.2 The British Standard Specification for topsoil (BS3882: 2007) specifies the requirements for topsoil (natural or manufactured) that are moved or traded. It contains one main grade (multipurpose topsoil), which is suitable for most needs, though specific-purpose topsoil has also been identified for specialist applications. The Standard also includes a section on the use and handling of topsoil. It is not intended (or appropriate) for the grading, classification or standardisation of in situ topsoil or subsoil (Defra, 2009). A thickness of 300mm is likely to be used within these areas, which increases to 600mm should areas of contaminated land be identified. It is highly likely that surplus quantities will remain but this may be used in the noise bund.

4.1.3 If there is any unused topsoil left on site, it should be sustainably reused offsite. It shall be certified clean and records kept as to the quantity and delivery address.

4.1.4 More topsoil can be reused on site if its depth in gardens is increased from 150mm to 300mm thick and in public open spaces increased above the minimum 300mm.

4.2 Made Ground

4.2.1 The soils report identifies some made ground in the form of tracks and hard standings and the potential for contamination. Further testing would confirm if these materials are contaminated and depending on the results, these materials can either be used within the highway noise bund or disposed of to a designated tip.

4.3 Non-Mineral (excluding Made Ground)

4.3.1 Clean non-mineral material may be used onsite as a fill for landscaping or where appropriate, around engineered ground works structures exist.

4.3.2 Any non-mineral delivered offsite for reuse should be certified clean and records kept of the quantity and delivery address. Non-mineral intended for landfill should be assessed for its Waste Acceptance Criteria prior to its disposal to a suitable waste facility.

4.4 Mineral

4.4.1 Prior to use, the contractor will either test onsite using suitably qualified staff or submit samples of the material to a geotechnical laboratory and obtain a written report showing the grading and suitability for use onsite in concrete and as a road sub-base material.

4.4.2 If the mineral is considered appropriate as a sub-base material it should be laid and compacted in accordance with the Manual of Contract Documents for Highways Works, Volume 1 Specification for Highway Works, Series 600: ‘Earthworks’, February 2016 or as amended.

4.4.3 It may be that the material in its raw state is unsuitable for use as a sub-base material, but it may be suitable if it is stabilised by adding cement before laying. The testing laboratory should be able to advise on suitability and on the percentage by dry weight of cement that should be added.

5.0 CONCLUSIONS

5.1 Summary

5.1.1 Information obtained from BGS and the Site Investigation confirms the ground conditions as consistent across the site comprising of topsoil overlying superficial deposits of Sheringham Cliff Formation (Sand and Gravel) that is underlain by chalk.

5.1.2 The contractor should endeavour to reuse all the suitable topsoil and mineral material excavated onsite during construction.

5.1.3 The Site Investigation report did not identify any areas of contamination; however, this report would point out if during construction the contractor should discover a source of contamination, work should be stopped, the area fenced off and a suitably qualified and an experienced geotechnical engineer contacted to advise how to deal with it.

5.1.4 The contractor will record all mineral and non-mineral material excavated onsite for use on or offsite, together with any quantities of material brought to site.

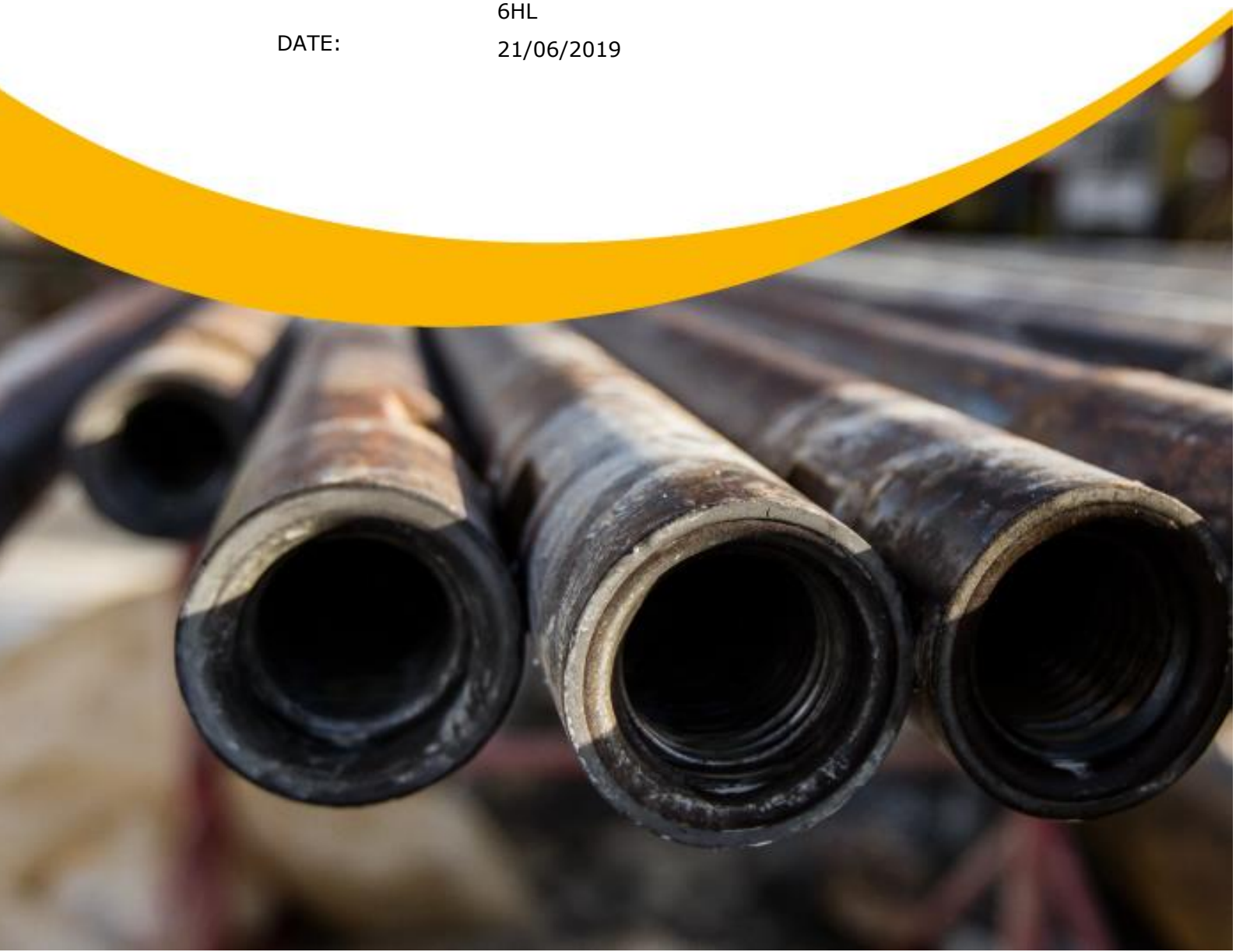
5.1.5 Once further testing of the whole development area is carried out, this report should be updated to discuss the findings.

Appendices

Appendix A

GEOSPHERE ENVIRONMENTAL

REPORT NUMBER:	3921,GI/GROUND/CS,SG,TP/21.06.19/V1
SITE:	Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL
DATE:	21/06/2019



DOCUMENT CONTROL SHEET

Report Number:	3921,GI/GROUND/CS,SG,TP/21.06.19/V1
Client:	M Scott Properties Limited
Project Name:	Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL
Project Number:	3710,GI,SK
Report Type:	Phase 2 – Ground Investigation
Status	Final
Date of Issue:	21 June 2019

Issued By:

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Limit of Reliance:

This report is based on the site findings at the time of the associated walkover/site investigation works and information provided by the client at the time of writing. Should site conditions alter or development proposals alter, a reassessment of the enclosed findings should be undertaken. Refer to Appendix 1 for full details of report limitations.

Prepared By:	Reviewed By:	Authorised By:
Carl Sullivan Assistant Geotechnical Engineer	Stephen Gilchrist Principal Geotechnical Consultant Thomas Powling Director	Paul Davies Director

REVISION RECORD

Revision:	Date:	Revision Details:	Prepared By:	Admin:

Executive Summary

Project Description		Geosphere Environmental Ltd was commissioned by M Scott Properties Limited, to undertake a Phase 2 Site Investigation at Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL. At the time this report was prepared, it was understood that the proposed development comprised of residential properties with associated soft landscaped areas including private gardens and car parking facilities.
Site Location / Description		The site was located at Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL situated approximately 1.5km to the north of the town centre of Taverham and may be located by National Grid Reference (NGR) TG 16031 15569.
Previous Investigation		The site formed part of a Phase 1 Desk Study undertaken by Geosphere Environmental Ltd, reference 3551,EC,AR,DS/DESK/LT,GF/28-11-18/V1 dated 28 November 2018. The findings of the report indicated potential sources of contamination to include Made Ground associated with hardstanding tracks onsite; a strip of which exists in the north of the site, as well as the potential for Made Ground from offsite developments located beyond the eastern site boundary. Other sources have been discounted due to their relevance to the investigation site.
Site Works		Site works were carried out between 11 February 2019 and 22 May 2019 and comprised of the formation of twenty four windowless sampling boreholes, installation of seven 50mm ground gas monitoring wells, soil infiltration testing within seven machine excavated trial pits, four dynamic probe tests, single hand dug trial pit and associated soil logging, sampling and in situ strength testing.
Ground Conditions		The ground conditions were recorded to be consistent across the site, comprising of nominal amounts of Topsoil overlying superficial deposits of Sheringham Cliff Formation (Sand and Gravel). Groundwater level was encountered within WS203a and WS205a only during the intrusive works. The groundwater strikes were consistent with the thicknesses of clay and therefore the groundwater in these locations in considered to be perched.
Gas Monitoring		The results of the ground gas monitoring show no methane generation within soils, and limited generation of carbon dioxide. No significant gas flow was detected within the wells across the site. Based upon guidance given in CIRIA C665, the site is considered to fall within the NHBC green category for low-rise housing with underfloor voids, which requires no special protection measures.
Laboratory Results		Laboratory analysis identified no concentrations of contaminants which were above guidance threshold values for a residential development with plant uptake.

Advanced Conceptual Model		Based upon the results of chemical analysis, a very low risk exists for the site and therefore the site may be developed without the need for remediation.
Geotechnical Considerations		A minimum foundation depth of 0.75 is applicable within proven granular soils, however borehole location WS204a, encountered a significant thickness of cohesive soils at approximate formation depths and therefore a minimum foundation depth of 1.0mbgl is applicable. Foundations in this area should also be designed to the requirements of NHBC guidance, given the presence of trees. Recommendations for soil infiltration and roadway design are provided within the relevant sections as these vary across the testing locations.
This Executive Summary only provides a summary of the site data and its assessment. It does not provide a definitive engineering analysis and is for guidance only. It is recommended that the reader reviews the report in its entirety and any material referenced therein.		

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TABLES

1. INTRODUCTION

Geosphere Environmental Ltd was commissioned by the Client, M Scott Properties Limited, to undertake a Phase 2 Ground Investigation for a proposed residential development at Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

It was understood that the site is to be developed into an undisclosed number of residential dwellings with associated soft landscaping and car parking.

The primary objectives of this ground investigation were to:

- Assess the ground conditions at the site;
- Assess the potential risk to human health and the environment based upon the findings of the investigation.

These were achieved by:

- Undertaking an intrusive investigation of the site, based upon the proposed development layout and the scope agreed with the client;
- Logging and sampling the soils on the site and noting any visual or olfactory evidence of contamination;
- Undertaking laboratory chemical analysis of selected soil to assess the soil quality and suitability for the garden areas and assess the likely risks to receptors;
- Installing monitoring wells for ground gas concentration measurements and groundwater level monitoring;
- Creating a Conceptual Site Model and defining suitable remedial/mitigating and verification actions where necessary.

A Proposed Development Plan, Drawing ref. 3710,GI,SK/003/Rev 0 is provided within Appendix 3.

2. SITE SETTINGS

The subject site was situated in Taverham, adjacent and to the south of the A1270 Northern Distributer Road and adjacent to the east of Fir Covert Road. The site may be located by National Grid Reference (NGR) TG 16031 15569.

At the time of this investigation, the site comprised of an irregularly shaped parcel of agricultural land used for livestock grazing purposes. The site generally sloped downwards to the north by approximately 5.0m, sited at approximately 35.0mAOD to 40.0mAOD.

The site boundary was formed to the west by a mix of wooden close-board and metal chain-link fencing approximately 2.0m in height, beyond which was residential property associated with Fir Covert Road. A small section of boundary, to the south, was formed by wooden post and metal wire fencing, beyond which was a soil bund and Fir Covert Road, respectively. The southern site boundary was formed by a line of trees, the majority of which were noted as coniferous. The eastern site boundary was open and undeveloped across agricultural land. The northern site boundary was formed by a wooden post and wire fence, beyond which was a newly planted embankment to the A1270.

Two circular depressions were noted centrally, indicated to depict former tree locations. A towable feed trailer was present towards the north of the site. A line of trees was noted centrally to the site, transecting from east to west, whilst a large number of coniferous trees were noted in the south east of the site.

A Site Location Plan and Site Plan is included within Appendix 3, as Drawing references 3710,GI,SK/001/Rev 0 and 3710,GI,SK/002/Rev 0 respectively.

Photographic records are presented in Appendix 10 of this report.

3. PREVIOUS REPORTS

A Phase 1 Desk Study was undertaken by Geosphere Environmental Ltd, reference 3551,EC,AR,DS/DESK/LT,GF/28-11-18/V1 dated 28 November 2018, which incorporated the subject site and a larger area of land to the east.

The following summary of findings for the above report has been focussed to include those aspects specific to the site area only, and has been disseminated from the above referenced report.

The geological map indicated the site to be underlain predominantly by superficial deposits of the Sheringham Cliffs Formation which comprises of sand and gravel. The superficial deposits were underlain by Chalk Bedrock Formations.

The information about the former uses of the site, indicated that the site has remained agricultural over the historical period studied.

Based upon the findings of the desk study and comparing this to the subject site layout, no significant sources of contamination were noted to exist, however the report recommended undertaking intrusive-based investigation to obtain samples from across the site to assess the general soil quality for use in the proposed residential development.

4. SITE WORKS

4.1 Methodology

This site investigation was carried out in accordance with the practices set out in BS 10175: 2011+A1:2013, (ref. **R.6**) and BS 5930: 2015 (ref. **R.7**).

Initially, the location of exploratory holes has been planned, where possible, to give as good as coverage within budgetary constraints whilst targeting any locations highlighted in the desk study and / or site walkover. Further and subsequent intrusive investigation was based upon a site investigation sketch provided by ASD Engineering, reference 1394/GEN001, dated 18 April 2019, targeting specific locations required for engineering assessment.

All exploratory hole locations have been incorporated into an exploratory hole location plan, Drawing reference 3921,GI /004/Rev 0, provided within Appendix 3.

The infiltration testing was undertaken in accordance with the requirements of BRE365:2016 (ref. **R.3**), which requires a total of three tests to be undertaken, in rapid succession, within each trial pit location over a 24 hour period.

4.2 Scope

Site works were carried out between 11 February and 22 May 2019 and comprised of the following:

- Excavation of twenty-four exploratory holes (WS01 – WS19 and WS201, WS202, WS203a, WS204a WS205a and WS206), using Windowless Sampling techniques, extended to depths ranging from 3.0m and 6.0mbgl;
- Installation of seven combined ground gas and groundwater monitoring wells within selected boreholes;
- Six subsequent ground gas and groundwater monitoring visits;
- Excavation of seven machine excavated trial pits (SK01 to SK06 and TP201), together with BRE365 infiltration testing, extending to depths ranging from 1.9m and 2.2mbgl;
- Undertaking of four dynamic probe tests (DP02, DP03, DP05 and DP07) adjacent to their respective Window Sampler locations, extended to a depth of 5.0mbgl;
- Excavation of a single hand dug trial pit (CBR201) to a depth of 0.7mbgl;
- Associated soil logging, sampling and in-situ testing.

4.3 Ground Conditions Encountered

The sequence of the strata encountered during the investigation generally confirms the anticipated geology as interpreted from the British Geological Survey (BGS) digital mapping, at a scale of 1:50,000.

The sequence and indicative thickness of strata are provided in Table 1 below:

Table 1 - Ground Conditions				
Strata	**Depth Encountered (mbgl)**		**Strata Thickness (m)**	**Composition**
	From	**To**		
Topsoil.	0.0	0.25 to 0.70	0.25 to 0.70	**ALL EXPLORATORY HOLES** Dark brown fine to coarse sand with varying amounts of fine subangular flint gravel.
Sand and Gravel (Sheringham Cliffs Formation).	0.25 to 0.70	3.00 to 6.00	Unproven	**ALL EXPLORATORY HOLES** Orangish brown to light brown fine to coarse sand with varying amounts of fine and medium subangular to sub- rounded flint gravel and shell fragments. **WS203A, WAS204A AND WS205A** With varying thicknesses of yellowish, orangish and greyish brown clay between 1.05m and 4.05mbgl.

4.4 Groundwater

Groundwater level was encountered within WS203a and WS205a only, during the intrusive works. The groundwater strikes were consistent with the thicknesses of clay and therefore the groundwater in these locations in considered to be perched. A summary of groundwater inflows is presented within Table 2, below:

Table 2 - Level of Groundwater Encountered			
Windowless Sampler Borehole Number	**Depth of Water (mbgl)**	**Depth to clay soils (mbgl)**	**Total water column of perched groundwater (m)**
WS203a	2.70	3.50	0.80
WS205a	2.50	2.85	0.35
	3.85	3.90	0.05

4.5 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of gross contamination was encountered during the ground investigation.

5. LABORATORY TESTING

5.1 Methodology

Representative disturbed were taken at the depths shown on the exploratory hole records and dispatched to the laboratory. The exploratory hole logs are included in Appendix 5.

Samples were collected for environmental purposes in amber glass jars and 1kg plastic tubs and kept in a cool box with cooling aid.

Geotechnical samples were recovered in plastic bulk bags and sealed to prevent moisture loss.

5.2 Environmental Testing Suite

5.2.1 Quality Control

The environmental laboratory used (Derwentside Environmental Testing Ltd) was an accredited laboratory by the United Kingdom Accreditation Service (UKAS), and at least 50% of individual parameters are from methods pending accreditation to the Environment Agency Monitoring Certification Scheme (MCERTS) for the range of analyses undertaken as part of this investigation. The MCERTS performance standard for the chemical testing of soil is an application of ISO 17025: 2005, specifically for the chemical testing of soil.

5.2.2 Environmental Testing Suite – Soils

The suite of chemical analyses has been based upon the findings of the desk study and site walkover, the conceptual model and observations onsite. The chemical analyses were carried out on seven samples of soil. The nature of the analyses is detailed below:

- Metals screen - arsenic, cadmium, chromium, lead, mercury, selenium, boron (water soluble), beryllium, copper, nickel, vanadium and zinc;
- Organic screen – extractable petroleum hydrocarbons (EPH) and polyaromatic hydrocarbons (PAH) – USEPA 16 suite; monohydric phenols;
- Inorganics screen - cyanide (total), sulphate (water soluble);
- Others - pH, organic matter, asbestos.

A copy of the laboratory test results is included in Appendix 8.

5.3 Geotechnical Testing

The geotechnical testing has been chosen based upon the soils encountered during the site investigation and was undertaken in accordance with BS 1377 at a UKAS accredited laboratory.

The following tests were undertaken:

- Determination of California Bearing Ratio (including soaked method);
- pH and soluble sulphate testing of soils and groundwater.

A copy of the laboratory test results is included in Appendix 9.

6. MONITORING

Combined ground gas and groundwater monitoring wells were installed within six of the exploratory holes. Details of their construction are provided with the exploratory hole logs within Appendix 6.

A summary of the findings has been provided in Table 3 below. The full ground gas and groundwater datasets can be found within Appendix 7.

6.1 Ground Gas

Ground gas monitoring was undertaken by a suitably qualified environmental consultant, using a GFM436 landfill gas analyser and a MultiRae Lite Photo-ionisation detector (PID). The main determinants recorded were methane (CH_4), carbon dioxide (CO_2), oxygen (O_2), VOCs as well as flow.

Ground gas monitoring was carried out in accordance with current guidance (ref. **R.14**). Six consecutive monitoring visits were undertaken over a period of time between 20 February 2019 and 22 March 2019, including falling barometric pressure conditions.

The results of ground gas monitoring are included in Appendix 7 and a summary is presented in Table 3 below:

Table 3 - Ground Gas Monitoring Results Summary

Location	Typical Concentration					Flow Rate	VOC	Atmospheric Pressure
	Methane (CH_4)	Carbon Dioxide (CO_2) [% v/v]		Oxygen (O_2) [% v/v]				
	[% v/v]	(Max.)	(Min.)	(Max.)	(Min.)	(l/hr)	(ppm)	(mb)
WS01	<0.1	0.3	0.1	20.5	20.2	-0.5	0	997 - 1030
WS06	<0.1	0.9	0.3	20.3	19.6	-0.6	0	997 - 1030
WS08	<0.1	1.0	0.6	20.2	19.4	-0.4	0	997 - 1031
WS11	<0.1	1.2	0.3	20.3	19.1	-0.6	0	997 - 1032
WS13	<0.1	2.0	0.3	20.1	17.6	-0.6	0	997 - 1032
WS17	<0.1	1.2	0.4	20.0	19.4	-0.6	0	997 - 1032

6.2 Groundwater

The measured groundwater levels were recorded using a dip meter and the results of monitoring are presented in Table 4 overleaf:

Table 4 – Groundwater Monitoring Results

Monitoring Well	Depth of Monitoring Well (mbgl)	Groundwater Encountered at (mbgl)					
		Visit 1	Visit 2	Visit 3	Visit 4	Visit 5	Visit 6
		20/02/19	24/02/19	01/03/19	08/03/19	15/03/19	21/03/19
WS01	2.94	n/m	Dry	Dry	Dry	Dry	Dry
WS06	3.05	Dry	Dry	Dry	Dry	Dry	Dry
WS08	3.81	Dry	Dry	Dry	Dry	Dry	Dry
WS11	3.96	Dry	Dry	Dry	Dry	Dry	Dry
WS13	3.06	Dry	Dry	Dry	Dry	Dry	Dry
WS17	3.05	Dry	Dry	Dry	Dry	Dry	Dry

Notes:
Dry - no groundwater encountered
n/m – not measured
0 - well filled with water

7. RISK ASSESSMENT

7.1 Risk to Human Health

7.1.1 Methodology

The current guidance requires that a conceptual model be formulated, based upon the findings of the research. The conceptual model is limited at this stage to the identification and assessment of potential 'hazards', identified or suspected from the results of the research; the potential 'receptors' that may be affected and the anticipated 'pathways' to those receptors. The findings are summarised in the following subsections.

The guidance proposes a four-stage approach for the assessment of contamination and the associated risks. The four stages are listed below:

- Hazard Identification;
- Hazard Assessment;
- Risk Estimation;
- Risk Evaluation.

7.1.2 Soil Quality Screening Values

The results of the soil analyses have been compared to soil quality screening values where deemed applicable, such as:

- The LQM/CIEH S4ULs for Human Health Risk Assessment, (ref. **R.25**);
- Defra/CL:AIRE Final C4SLs, (ref. **R.24**).

Where the concentrations reported by the laboratory analysis (and thus determined onsite) are at or below the respective screening concentrations, they are considered not to pose a risk and are removed from further consideration, unless otherwise stated in the following sections.

Based upon details of the proposed development, the screening values used in this assessment has considered residential end use with plant uptake and a Soil Organic Matter content of 1.0%.

7.2 Soil Quality

Concentrations of analytes tested within soil samples existed below residential with plant uptake screening values, a summary of which can be observed in Table 5 overleaf:

Table 5 - Summary of Soil Analyses and Comparison with Current Screening Values

Analyte	Analyte Concentration Range (mg/kg)		Screening Value (mg/kg) for Land Use	Number of Elevated Concentrations
	Minimum	Maximum	Residential Without Plant Uptake (1% SOM Assumed)	
Arsenic	4	7	37	None elevated
Boron	<1	<1	290	None elevated
Cadmium	<0.2	<0.2	17	None elevated
Chromium	5	8	910	None elevated
Copper	<4	5	2400	None elevated
Lead	4	17	82-210	None elevated
Mercury	<1	<1	1.2	None elevated
Nickel	<3	7	180	None elevated
Selenium	<3	<3	250	None elevated
Zinc	11	31	3700	None elevated
Asbestos	Asbestos is considered a risk if any positive identification is made. None reported within laboratory results.			
Total PAHs	<1.6	<1.6	Nominal value of 50mg/kg*	None elevated
Napthalene	<0.1	<0.1	2.3	None elevated
Acenapthene	<0.1	<0.1	210	None elevated
Acenapthylene	<0.1	<0.1	170	None elevated
Flourene	<0.1	<0.1	170	None elevated
Phenanthrene	<0.1	<0.1	95	None elevated
Anthracene	<0.1	<0.1	2400	None elevated
Fluoranthene	<0.1	0.12	280	None elevated
Pyrene	<0.1	<0.1	620	None elevated
Benzo [a] anthracene	<0.1	<0.1	7.2	None elevated
Chrysene	<0.1	<0.1	15	None elevated
Benzo [b] fluoranthene	<0.1	0.15	2.6	None elevated
Benzo [k] fluoranthene	<0.1	<0.1	77	None elevated
Benzo [a] pyrene	<0.1	<0.1	2.2	None elevated
Indeno [1,2,3 cd] pyrene	<0.1	<0.1	27	None elevated
Dibenz [a,h] anthracene	<0.1	<0.1	0.24	None elevated
Benzo [g,h,i] perylene	<0.1	<0.1	320	None elevated

*Where total values exceed the nominal threshold, individual congener, compound or equivalent carbon chain group screening values are assessed further where necessary.

7.2.1 Risk Mitigation

Risks to humans include construction workers, site neighbours and end users of the site. Theoretically, exposure to contaminants can take the form of direct contact with the skin, consumption of contaminants through transfer of contaminants to the food chain, or the inhalation of contaminants through wind-blown soils or vapours.

Results of chemical analysis indicated none of the samples tested to exhibit any elevated contaminants over threshold levels compared with screening values, therefore the risk is considered to be very low and may be removed from further consideration.

The investigation covered an extensive area of the site however, a risk of contamination elsewhere onsite remains. A discovery strategy should be implemented throughout the development of the site and any suspected contaminants subject to assessment by a suitably qualified and experience geo-environmental engineer. This may comprise of additional soil sampling and chemical analysis to quantify its suitability onsite and potential for remediation.

To reduce the risks of exposure and transfer of contaminants during construction, short term mitigations measures should be adhered to and, where applicable, be incorporated into the development Construction Phase Health and Safety Plan or similar document.

7.2.2 Asbestos

Results of asbestos screening did not indicate the presence of asbestos within Topsoil. However, it is recommended that localised discovery strategies are in place for asbestos, should it be discovered within soils during the construction phase. See 'Additional Information' section at the end of this report for further information.

If during the construction phase of the development any potential asbestos containing material is discovered within the soils then these should be left in situ, and temporarily fenced off, until its identification and removal/treatment had been established. Works in the immediate areas of the suspected asbestos should cease during this period, until a suitably qualified and authorised person has given permission for works to continue.

7.3 Ground Gas

The results of the soil gas monitoring have been compared with current guidance (refs. **R.14** or **R.15**).

The results show negligible methane generation within soils, and limited generation of carbon dioxide. No significant gas flow was detected within the wells across the site.

On the basis of the recorded methane concentration a gas screening value of <0.01l_{CH4}/hr has been calculated. Similarly, on the basis of the recorded carbon dioxide concentrations a gas screening value of <0.01 l_{CO2}/hr has been calculated.

Based upon guidance given in CIRIA C665, the proposed development is considered to represent a Situation B – Low rise housing with a ventilated underfloor void. Based upon the results of gas monitoring, the site falls within a Green category under the NHBC traffic light system, which requires no special gas protection measures.

7.4 Risk to Controlled Waters

Concentrations of contaminants within the soil samples tested were below the respective screening concentrations, therefore, it is considered that there is a very low to negligible risk to controlled waters, hence groundwater analysis was not undertaken during the investigation.

7.5 Risk to Plants

A review of the commonly occurring phytotoxic chemicals boron, copper, nickel and zinc, has been undertaken based upon the now superseded ICRCL guidance. Although the ICRCL trigger threshold levels have been withdrawn, there are no equivalent guidance values for phytotoxicity.

Concentrations of metals were recorded at concentrations below the thresholds considered to have phytotoxic effects.

7.6 Risk to Services - Pipes

A comparison of the laboratory results has been made against the Contaminated Land Assessment Guidance, published by Water UK (ref. **R.11**). Note, the full range of thresholds given in this guidance have not specifically been tested for.

While no specific protection is envisaged, it is advised that the UK Water Industry Research Guidance (ref. **R.11**) is adopted and consultation with the local water company is sought prior to laying any services.

7.7 Advanced Conceptual Site Model

Following the findings of the site investigation, the Preliminary Conceptual Site Model for the site has been reviewed and the conclusions are presented in Table 6 overleaf:

Table 6 – Advanced Conceptual Site Model

Sources	PATHWAYS:					RECEPTORS:						Risk Rating	Comments
	Root Uptake	Direct Contact	Ingestion	Respiration	Gas Accumulation	Plants	End Users	Structures (Concrete)	Services/Utilities	Construction Workers	Controlled Waters (GW)		
Hazardous ground gasses.	N	N	N	U	U	N	Mi	N	N	N	N	LR/NR	The site falls within a Green category under the NHBC traffic light system, which requires no special gas protection measures.

Legend: See Comparison of Consequence Against Probability within Appendix 4 for Key to Legend.	Probability:	Consequence (Severity):	Risk Rating:	
			Very High Risk	VH
	Negligible (N)	Negligible (N)	High Risk	HR
	Unlikely (U)	Mild (Mi)	Medium Risk	MR
	Likely (L)	Moderate (Mo)	Low Risk	LR
	Highly Likely (HL)	Severe (S)	Negligible Risk	NR

8. GEOTECHNICAL CONSIDERATIONS

8.1 Proposed Development

It is understood that the proposed development of the site is to comprise of a number of residential plots, including associated private gardens and vehicle parking, access roads, private driveways and infrastructure.

It has not been detailed as to the number of storeys each residential structure will comprise of, however, it has been assumed these will range from two to three-storeys.

Based upon the above, vertical loadings have been assumed to range from 70kN/m^2 and 100kN/m^2.

8.2 Summary of Ground Conditions

Ground conditions were recorded to be consistent across the site, comprising of nominal amounts of Topsoil overlying superficial deposits of Sheringham Cliffs Formation (Sand and Gravel). Bedrock Chalk was not encountered within any of the exploratory Window Sampler Boreholes during the investigation.

Groundwater seepages were encountered within exploratory holes WS203a and WS205a, at depths ranging between 2.5mbgl and 3.85mbgl, respectively. These were consistent with the presence of cohesive strata.

8.3 Foundations

8.3.1 Ground Desiccation

Where soils are identified as being non-plastic, they are generally regarded as not having volume change potential and therefore not likely to induce any ground movements associated with changing soil moisture conditions. These soils include granular soils of the Sheringham Cliffs Formation.

Based upon the details of the soils encountered, the soils were largely granular and therefore the risk of desiccation is considered to be negligible. In accordance with NHBC guidance, a minimum foundation depth of 0.75mbgl is applicable.

Thicknesses of clay were encountered within the Sheringham Cliffs Formation at a number of borehole locations (WS203a, WS204a and WS205a), which is likely to represent a localised occurrence rather than being site-wide. Nevertheless, the clay soils in this area should be regarded as high plasticity and high- volume change potential, in accordance with the NHBC guidance. Therefore, a minimum foundation depth of 1.0mbgl is applicable.

Small thicknesses of clay were encountered within WS3a and WS5a, which is not likely to affect the heave potential of the soils, however the thickness of cohesive soils proven within WS204a (1.8m) shall require foundations to be extended to depth. Furthermore, in the presence of trees, foundations should be designed to the requirements of the guidance provided within NHBC Chapter 4.2 (ref. **R.22**) for example,

based upon the guidance and the presence of adjacent trees (assumed to be Pine), to achieve a minimum foundation depth, foundations should be located at least 7.0m from the nearest tree.

Where foundations cross granular and cohesive strata a nominal amount of reinforcement should be incorporated into their design to account for differential settlement.

It is noted that the above is not applicable in the case of the adoption of a raft or piled foundation. Whilst the NHBC guidance provides outline advice for the stated foundation design, it is recommended that advice from a professional structural engineer is sought.

8.3.2 Foundation Options

The site and ground conditions are considered suitable for the adoption of a conventional spread foundation bearing within the underlying Sheringham Cliffs Formation (Sand and Gravel).

A Nett Allowable Bearing Pressure (NABP) of 130kN/m^2 would be considered appropriate within the Sheringham Cliffs Formation soils, based upon the results of in situ testing, although care should be taken in the vicinity of WS16 and WS205a, where less dense soils were proven to exist. The NABP is the allowable increase in vertical strength, above existing overburden pressure, which may be calculated on the basis of a soil density of 22kN/m^3.

At the above NABP, settlements are unlikely to exceed in the region of 25mm. Settlements in granular soils are likely to be immediate, whereas cohesive soils will exhibit a small amount of immediate settlement together with a larger amount of consolidation settlement, which will occur over a prolonged period of time. In the presence of the less dense soils around WS16 and WS205a, localised ground improvement, i.e. vibro-compaction, may be adopted for the purposes of increasing bearing capacities. It is recommended that a specialist contractor is consulted should this be required.

A minimum foundation depth of 0.75mbgl is considered appropriate based upon the following provisions:

- Where cohesive soils were proven to exist (WS203a, WS204a and WS205a), localised deepening of foundations shall be required (minimum 1.0mbgl) and will need designing in accordance with NHBC Chapter 4.2 "Building near Trees", (ref. **R.22**). A number of potentially moderate water demand trees exist adjacent to the above areas and the soils are of high-volume change potential;
- Should foundations extend beyond 2.5m due to the influence of trees, an alternative foundation solution should be adopted, i.e. piles.

Should piles be adopted, it is recommended that the design of piles be undertaken by an experienced and competent professional, who will reflect their own experience and expertise on the design of piles.

8.3.3 Tree Planting

To achieve the minimum depth for foundations, tree planting must not exist within an area smaller than 0.2 x the mature height of the tree species. Where cohesive soils are proven, this will increase to 1.0 x the mature height of the tree species.

It is recommended that any future tree planting, which may form part of the proposed development, be undertaken in accordance with the guidelines laid out in the NHBC Standard Chapter 4.2 (ref. **R.22**).

8.3.4 Excavations, Temporary Works and Groundwater Ingress

All excavations within the Sheringham Cliffs Formation must be assumed to be subject to short term instability and stabilisation methods should be adopted for all excavations within the strata.

Excavations below the water table are likely to be problematic without positive groundwater control, although groundwater was only proven within WS203a and WS205a and was considered as being perched atop partings of clay. It is likely that, should the clay be penetrated the groundwater will dissipate into the underlying granular strata. Localised small-scale dewatering in these areas may nevertheless be required.

Where personnel access is required to any excavation, its stability should be assessed by a suitably qualified and experienced responsible person. For general guidance it is recommended that where access is required to excavations greater than 1.2m depth, they should be fully supported or side slopes battered back to a safe angle of repose.

Further guidance may be obtained from CIRIA document 97, 'Trenching Practice' (ref. **R.12**).

8.4 Floor Slabs

It is considered that suspended or ground bearing floor slabs may be constructed onto the Sheringham Cliffs Formation.

If adopting ground bearing floors, formations should be adequately proof-rolled and any soft / loose or otherwise unsuitable materials excavated and replaced with a suitable engineered fill.

Differential movement between the floor slab and structural walls and across the floor slab itself, should be anticipated. It is therefore recommended that ground bearing floors are fully debonded from structural load bearing walls and suitably reinforced top and bottom to enable spanning of soft spots.

The detailing of services through or beneath ground bearing floors should incorporate flexible connections and enhanced falls where appropriate.

Further guidance is provided within NHBC Chapter 5, 'Ground floors and substructure', (ref. **R.23**).

8.5 Pavement Design

Roadway pavements are proposed for the site and they are likely to be constructed on a subgrade of Sheringham Cliffs Formation (Sand and Gravel).

Based upon the description of soils and in reference to Table 5.1 of the Highways Agency's, 'Design Manual for Roads and Bridges, Volume 7, 'Interim advice note Design Guidance for Road Pavement Foundations Draft HD 25' (ref. **R.19**), an estimated CBR of 20% should be assumed.

A total of five laboratory-based California Bearing Ratio tests were undertaken on the subgrade soils at a depth of 0.5m and 0.6m, three of which were undertaken using the soaked method, at locations considered representative of the site as a whole. The results are provided within Appendix 9 and summarised in Table 7, below:

Table 7 – CBR Compaction (%)

Test Location	Method	Laboratory CBR (%)
SK01	UNSOAKED	50 - 86
	SOAKED	30 - 36
SK06	UNSOAKED	29 - 31
	SOAKED	25
TP201	SOAKED	13 - 15

It is recommended that once the site has been graded to the appropriate pavement formation level, it is inspected and, if necessary, in situ CBR testing be conducted on the subgrade to confirm the appropriate pavement design, (i.e. to determine the subbase and capping thickness). In addition to which, the formation should be proof-rolled and any soft/loose pockets encountered should be excavated and replaced with well compacted granular fill prior to pavement construction. Requirements for the design of road pavements are given in the Highways Agency, 'Design Manual for Roads and Bridges, Volume 7. Interim advice note 'Design Guidance for Road Pavement Foundations Draft HD 25', (ref. **R.19**).

8.6 Soakaway Design

Planning policy, together with the support of The Environment Agency, recommend the maximum practical use of Sustainable Urban Drainage Systems, (SuDS), within proposals for new developments. There is a requirement that SuDS be installed, where appropriate, in order to limit the amount of surface runoff entering drainage systems and to return surface water into the ground to follow its natural drainage path.

Further guidance, including details of SUDS methods, is provided within CIRIA Report C753 'The SuDS Manual', 2015 (ref. **R.16**). CIRIA 687 entitled 'Planning for SUDS – Making it Happen', published in 2010 (ref. **R.17**), states that the Flood and Water Management Act 2010 aims to encourage Local Authorities to be responsible for the approval and eventual adoption of SuDS, although adoption of roadways which

include permeable paving is often rejected.

Soakaway testing was undertaken in seven locations at the site and was undertaken in accordance with the guidance provided within BRE Digest 365 'Soakaway Design', 2016 (ref. **R.3**). A summary of the infiltration rates is presented in Table 8 below, and provided in full within Appendix 6:

Table 8 – Infiltration Testing Results (m/s)

Location	Test 1	Test 2	Test 3
SK1	2.54×10^{-5}	2.08×10^{-5}	1.82×10^{-5}
SK2	2.56×10^{-6}	2.43×10^{-6}	1.64×10^{-6}
SK3	9.01×10^{-5}	9.38×10^{-5}	6.01×10^{-5}
SK4	6.11×10^{-5}	4.49×10^{-5}	1.24×10^{-5}
SK5	5.41×10^{-6}	1.87×10^{-6}	3.94×10^{-6}
SK6	1.85×10^{-5}	1.70×10^{-5}	1.89×10^{-5}
TP201	6.44×10^{-5}	3.36×10^{-5}	4.36×10^{-5}

Based upon the results of the infiltration testing, it is recommended that any infiltration infrastructure is designed to the most conservative rate proven around the associated test location.

It is recommended that liaison with the relevant regulatory bodies and third parties (i.e. the LPA, The Environment Agency, Anglian Water) is undertaken at an early stage to ensure any surface water drainage proposals are approved.

8.7 Buried Concrete

The results of chemical tests indicate a sulphate concentration in the soils of between <10mg/l and 260mg/l as a 2:1 water/soil extract with pH values in the range of 5.3 and 7.2.

In consideration of the current usage of the site, it is recommended that 'greenfield conditions' be assumed for the purposes of assessing the aggressive chemical environment for concrete classification (ACEC class). The strata encountered is considered to be largely permeable, therefore the classifications relating to 'mobile groundwater' have been applied in this instance.

Based upon the above a Design Sulphate, (DS), class of DS-1 is considered applicable across much of the site. An accompanying ACEC classification of AC-1 is also considered applicable, based upon the pH values of the majority of samples.

Further guidance relating to the above classifications is provided within BRE Special Digest 1, (ref. **R.2**).

9. CONCLUSIONS AND RECOMMENDATIONS

Geosphere Environmental Ltd was commissioned by M Scott Properties Limited, to undertake a Phase 2 Site Investigation at Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

At the time this report was prepared, it was understood that the proposed development comprised of residential properties with associated soft landscaped areas including private gardens and car parking facilities.

The site formed part of a Phase 1 Desk Study undertaken by Geosphere Environmental Ltd, reference 3551,EC,AR,DS/DESK/LT,GF/28-11-18/V1 dated 28 November 2018. The findings of the report indicated potential sources of contamination to include Made Ground associated with hardstanding tracks onsite; a strip of which exists in the north of the site, as well as the potential for Made Ground from offsite developments located beyond the eastern site boundary. Other sources have been discounted, due to their irrelevance to the investigation site.

Site works were carried out between 11 February 2019 and 22 May 2019 and comprised of the formation of twenty four windowless sampling boreholes, installation of seven 50mm ground gas monitoring wells, soil infiltration testing within seven machine excavated trial pits, four dynamic probe tests, single hand- dug trial pit and associated soil logging, sampling and in situ strength testing.

The ground conditions were recorded to be consistent across the site, comprising of nominal amounts of Topsoil overlying superficial deposits of Sheringham Cliffs Formation (Sand and Gravel). Groundwater level was encountered within WS203a and WS205a only, during the intrusive works. The groundwater strikes were consistent with the thicknesses of clay and therefore the groundwater in these locations in considered to be perched.

Based upon guidance given in CIRIA C665, the site is considered to fall within the NHBC green category for low-rise housing with underfloor voids, which requires no special protection measures.

Laboratory analysis identified no concentrations of contaminants which were above guidance threshold values for a residential development with plant uptake. Based upon the results of chemical analysis, a very low risk exists for the site and therefore the site may be developed without the need for remediation.

A minimum foundation depth of 0.75 is applicable within proven granular soils, however borehole location WS204a, encountered a significant thickness of cohesive soils at approximate formation depths and therefore a minimum foundation depth of 1.0mbgl is applicable. Foundations in this area should also be designed to the requirements of NHBC guidance, given the presence of trees.

Recommendations for soil infiltration and roadway design are provided within the relevant sections as these vary across the testing locations.

APPENDICES

Appendix 1 – Report Limitations and Conditions

General Limitations and Exceptions

This report was prepared solely for our Client for the stated purposes only and is not intended to be relied on by any other party or for any other use. No extended duty of care to any third party is implied or offered.

Geosphere Environmental Ltd does not purport to provide specialist legal advice.

The Executive Summary, Conclusions and Recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon until considered in the context of the whole report.

Interpretations and recommendations contained in the report represent our professional opinions, which were arrived at in accordance with currently accepted industry practices at the time of reporting and based upon current legislation in force at that time.

Environmental and Geotechnical Reporting (including Phase 1, Phase 2 and Site Walkovers) Limitations and Exceptions

The comments given in this report and the options expressed herein, are based upon the readily available information collated for the report and an assessment based upon the current guidance which for Phase 1 / Phase 2 report is primarily the Contaminated Land Research (CLR) Report and notable, CLR report 3, 'Documentary research on industrial sites'.

The report has been prepared in relation to the proposed end use and should another end use be intended, reassessment may be required.

No warranty is given as to the possibility of future changes in the condition of the site.

The opinions expressed cannot be absolute due to the limitation of time and resources imposed by the agreed brief.

With regards to any aspect of land contamination referred to, this is limited to those aspects specifically stated and necessarily qualified. No liability shall be accepted for other aspects which may be the result of gradual or sudden pollution incidents, past or present land uses and the potential for associated contamination migration.

Any Desk Study Report / data has been produced largely from the information purchased from The Landmark Information Group. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. The information purchased has been assumed to be correct and free from errors. However, there is the possibility that some data may be missing from the report including (but not limited to) unrecorded land uses both onsite and offsite or unrecorded pollution events. No attempt has been made to verify the information.

The accuracy of any map extracts cannot be guaranteed. It is possible that different conditions existed onsite, between and subsequent to the various map surveys provided.

Any site walkover undertaken is a snapshot of the site recording the visually evident conditions at the time of the walkover in the areas readily accessible. It is possible that after the walkover, the site was altered (for example by fly-tipping or groundworks) or before the walkover, the site conditions changed removing evidence of potentially contaminative features (such as oil tanks removed).

Any intrusive works only cover a tiny proportion of the site. Where exploratory holes are positioned by Geosphere Environmental Limited, they are located to give as good a coverage of the site as possible and to target features / proposed land use where applicable whilst allowing for areas that cannot be accessed, Client requested locations and other site / time / budget constraints. Whilst assumptions may have been drawn between exploratory holes on the ground conditions and / or extent or otherwise of any contamination, this is for guidance only and no liability can be accepted on its accuracy.

Foundation design is outside of the remit of Geosphere Environmental Limited unless specifically stated and it is recommended that the services of foundation design specialists are sought as required. Any foundation appraisal contained within the report is limited to foundation optioneering.

Any conceptual site model is based upon the information available at the time of conducting this assessment and is an interpretive assessment of the conditions at the site. Redevelopment and / or further investigation of the site may reveal additional information and therefore alter the conceptual site model and the report conclusions.

Any infiltration testing results are considered to be representative of the ground conditions at the locations tested and at the time of testing. As well as lateral variation in ground conditions, seasonal changes in ground water level may affect the results.

Any post-fieldwork monitoring (including ground gas / groundwater) is a snapshot of the conditions at the time of monitoring.

Appendix 2 – References

R.1. CLR 11, 'Model Procedures for the Management of Contaminated Land: Risk Assessment Procedure', DoE 2004.

R.2. BRE Special Digest 1, 'Concrete in Aggressive Ground, 2005.

R.3. BRE Digest 365, 'Soakaway Design', 2016.

R.4. The Environmental Protection Act, Part IIA, Section 78, 1990.

R.5. Environment Act 1995, Section 57, DoE 1995.

R.6. British Standards Institute: BS 10175 'Investigation of Potentially Contaminated Sites', Code of Practice, BSI 2011+A2:2017.

R.7. British Standards Institute: BS 5930 'Code of Practice for Ground Investigations', 2015.

R.8. Asbestos: The Survey Guide, HSG 264, 2nd Edition, 2012.

R.9. CL:AIRE 'Guidance on Comparing Soil Contamination Data with a Critical Concentration', The Chartered Institute of Environmental Health, May 2008.

R.10. EIC/AGS/CL:AIRE. Soil Generic Assessment Criteria for Human Health Risk Assessment. Contaminated Land: Applications in Real Environments, London, UK, January 2010.

R.11. Contaminated Land Assessment Guidance Protocols, Published by agreement between Water UK and the Home Builders Federation, Published by Water UK, January 2014.

R.12. UKWIR 'Guidance for the Selection of Water Supply Pipes to be Used in Brownfield Sites, August 2010.

R.13. CIRIA Report 97 (Second Edition) 'Trenching Practice', 2001.

R.14. CIRIA Reports 149 to 152, 'Methane and Associated Hazards to Construction', 1995.

R.15. CIRIA Report C665, 'Assessing Risks Posed by Hazardous Ground Gases to Buildings', 2007.

R.16. CIRIA Report C753, 'The SuDS Manual', 2015.

R.17. CIRIA Report C687, 'Planning for SuDS – Making it Happen, 2010.

R.18. Environment Agency. Performance Standard for Laboratories Undertaking Chemical Testing on Soil, Version 4, March 2012.

R.19. Highways Agency, 'Design Manual for Roads and Bridges, Volume 7. Pavement Design and Maintenance: Foundations HD 25/94.

R.20. Interim Advice Note 73/06, Revision 1, Design Guidance for Road Pavement Foundations, 2009.

R.21. Road Foundation Design for Major UK Highways, Version 1.0, Transport Research Laboratories, 2006.

R.22. National House-Building Council, Standards, Chapter 4.2, 2018 'Building Near Trees'.

R.23. National House-Building Council, Standards, Chapter 5, 2018 'Ground Floors and Substructures'.

R.24. SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, Final Project Report (Revision 2), Contaminated Land: Applications in Real Environments (CL:AIRE) September 2014. Appendix H – Lead.

R.25. Land Quality Press, The LQM/CIEH S4ULs for Human Health Risk Assessment, 2015.

R.26. The Environment Agency, Technical Guidance WM3, 'Waste Classification: Guidance on the Classification and Assessment of Waste' 1st Edition, May 2015 (V1.1 – May 2018).

R.27. National Roads Authority, Manual of Contract Documents for Highway Works, Volume 1, Specification for Highways Works, Series 600, 'Earthworks', Amendment February 2016.

R.28. British Standards Institute, BS 8485, 'Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings', 2015.

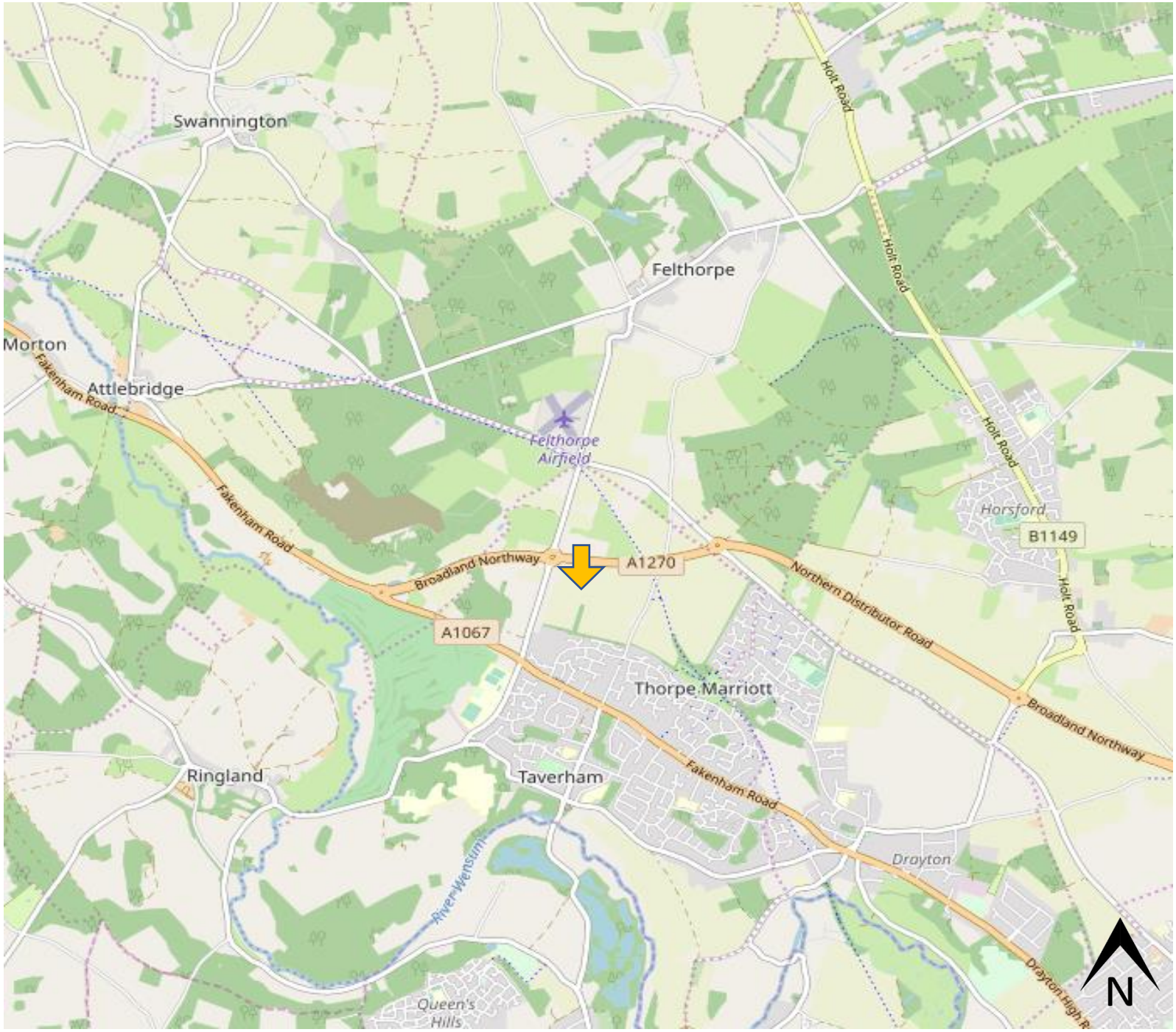
Appendix 3 – Drawings

Site Location Plan – Drawing ref. 3921,GI,SK/001/Rev 0

Site Plan – Drawing ref. 3921,GI,SK/002/Rev 0

Proposed Development Plan – Drawing ref. 3921,GI,SK/003/Rev 0

Exploratory Hole Location Plan – Drawing ref. 3921,GI,SK/004/Rev 0



GEOSPHERE ENVIRONMENTAL

LEGEND

Site Location

SOURCE

© OpenStreetMap contributors

PROJECT

Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

TITLE

Site Location Plan

DRAWING NUMBER

3710,GI,SK/001/Rev 0

SCALE	DATE
As marked	01/02/2019
DRAWN BY	**CHECKED BY**
CS	SG

GEOSPHERE ENVIRONMENTAL

LEGEND

Site boundary

SOURCE

Brown & Co

PROJECT

Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

TITLE

Site Plan

DRAWING NUMBER

3921,GI/002/Rev0

SCALE	DATE
As marked	01/02/2019
DRAWN BY	**CHECKED BY**
CS	SG

GEOSPHERE ENVIRONMENTAL

LEGEND

SOURCE

Brown and Co

PROJECT

Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

TITLE

Proposed Development Plan

DRAWING NUMBER

3921,GI/003/Rev0

SCALE	DATE
As marked	01/02/2019
DRAWN BY	**CHECKED BY**
CS	SG

N

GEOSPHERE ENVIRONMENTAL

LEGEND

- Site boundary
- WS01 — Window Sample
- WS01 — Monitoring Well
- SK01 — Soakage Pit
- CBR201 — Hand Dug Pit

SOURCE

© OpenStreetMap contributors

PROJECT

Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

TITLE

Exploratory Hole Location Plan

DRAWING NUMBER

3921,GI/004/Rev0

SCALE	DATE
As marked	10/06/2019
DRAWN BY	**CHECKED BY**
CS	SG

N

Appendix 4 – Comparison of Consequences Against Probability

		Consequence (Severity of Linkage)			
		Severe (S)	Moderate (Mo)	Mild (Mi)	Negligible (N)
Probability (Likelihood of linkage from)	Highly Likely (HL)	Very High Risk (VH)	High Risk (HR)	Moderate Risk (MR)	Moderate/Low Risk (MR-LR)
	Likely (L)	High Risk (HR)	Moderate Risk (MR)	Moderate/Low Risk (MR-LR)	Low Risk (LR)
	Unlikely (U)	Moderate Risk (MR)	Moderate/Low Risk (MR-LR)	Low Risk (LR)	Negligible Risk (NR)
	Negligible (N)	Moderate/Low Risk (MR-LR)	Low Risk (LR)	Negligible Risk (NR)	Negligible Risk (NR)

This table is to provide reference information in conjunction with the GEL Conceptual Model attached within the Hazard Risk Assessment section of this report, Table 1 – Conceptual Model.

Very High Risk (VH)

- There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is happening currently.
- Urgent investigation and remediation are likely to be required and advised.

High Risk (HR)

- Harm is likely to arise to a designated receptor from an identified hazard.
- Urgent investigation is required and remedial works are likely necessary in both the short to long term.

Moderate Risk (MR)

- It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.
- Investigation is required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.

Low Risk (LR)

- It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild. Limited investigation recommended.

Negligible Risk (NR)

- There is a minimal possibility that harm could arise to a receptor. In the event of such harm being realised it is high likely to not be severe. Investigation not deemed necessary.

Appendix 5 – Exploratory Hole Logs

Windowless Sample Hole Logs
(WS1 to WS19 / WS201, WS202, WS203a, WS204a, WS205a and WS206)

Soakage Test Pit Logs
(SK1 to SK6 and TP201)

Dynamic Probe Logs
(DP2, DP3, DP5 and DP7)

Hand dug Trial Pit Logs
(CBR201)

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS01**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown slightly gravelly fine to coarse SAND)			0.00													
				Medium dense orangish brown slightly gravelly fine to coarse SAND. Gravel is fine subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.30		0.20-0.30	ES	1									Borehole remained dry and stable upon completion
									1.10-1.20	C ES	2	2 4 3 4 5 7	19							
				Medium dense light brown fine and medium SAND. (SHERINGHAM CLIFFS FORMATION)			1.80			C		3 4 4 5 5 5	19							
										C		5 6 6 7 7 7	27							
							4.00			C		2 3 3 5 6 7	21							Borehole completed at 4.0m

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal / Response zone / Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS01 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS04**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 3.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown slightly gravelly fine to coarse SAND. Gravel of fine subangular flint)			0.00		0.10-0.20	ES	1									Borehole remained dry and stable upon completion
				Dense orangish brown gravelly fine to coarse SAND. Gravel is fine subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.40		0.60-0.80	ES	2									
									1	C		4 5 7 11 12 13	43							
				Medium dense becoming dense light brown fine to coarse SAND. (SHERINGHAM CLIFFS FORMATION)			2.00		2	C		4 4 7 7 7 7	28							
							3.00		3	C		7 8 9 1 12 12	34							Borehole completed at 3.0m
									4											
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS04 | SHEET 1 OF 1 | PROJECT No 3921,GI

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS06
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 3.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown gravelly fine to coarse SAND. Gravel is fine and medium subangular flint)			0.00													Borehole remained dry and stable upon completion
				Medium dense orangish brown gravelly fine to coarse SAND. Gravel is fine subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.35		0.20-0.30	ES	1									
									1			3 3 4 5 5 5	19							
				Medium dense light brown fine to coarse SAND. (SHERINGHAM CLIFFS FORMATION)			1.30		2			3 4 4 5 6 7	22							
							3.00		3			4 6 7 8 7 9	31							Borehole completed at 3.0m
									4											
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
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HOLE No. WS06 | SHEET 1 OF 1 | PROJECT No. 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS08
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown slightly gravelly fine to coarse SAND. Gravel is fine and medium flint)			0.00		0											Borehole remained dry and stable upon completion
				Medium dense orangish brown gravelly fine to coarse SAND. Gravel is fine and medium subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.45		0.50-0.60	ES	1									
				Medium dense light brown fine and medium SAND. (SHERINGHAM CLIFFS FORMATION)			1.20		1			2 3 3 4 3 4	14							
				Loose becoming medium dense light brown gravelly fine to coarse SAND. Gravel is fine subangular and subrounded flint. (SHERINGHAM CLIFFS FORMATION)			2.10		1.70-1.80	ES	2									
									2			3 2 3 3 3 4	13							
									3			2 1 2 2 2 2	8							
							4.00		4			5 6 4 8 8 8	28							Borehole completed at 4.0m
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal / Response zone / Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS08 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS09**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown fine and medium SAND)			0.00		0											Borehole remained dry and stable upon completion
				Dense greyish brown slightly gravelly fine to coarse SAND. Gravel is fine subrounded flint. (SHERINGHAM CLIFFS FORMATION)			0.30													
				0.90 Becomes orangish brown					1			4 7 8 8 8 8	32							
				Firm orange brown sandy CLAY. (SHERINGHAM CLIFFS FORMATION)			1.80		1.80-2.00	D	1									
				Medium dense orangish brown gravelly fine to coarse SAND. Gravel is fine subangular flint and shell fragments. (SHERINGHAM CLIFFS FORMATION)			2.00		2			3 3 4 6 6 6	22							
									3			4 3 4 3 4 4	15							
							4.00		4			3 3 3 3 4 4	14							Borehole completed at 4.0m
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS09 | SHEET 1 OF 1 | PROJECT No 3921,GI

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS10**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown slightly gravelly fine to coarse SAND. Gravel is fine and medium subangular flint)			0.00		0.10-0.20	ES	1									Borehole remained dry and stable upon completion
				Brownish grey becoming orange brown slightly gravelly fine and medium SAND. Gravel is fine subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.35		1			3 3 5 6 6 5	22							
				2.00 Becomes fine to coarse SAND.					2			3 5 5 4 5 6	20							
				2.60 Becomes fine and medium SAND.					3			4 4 4 4 4 5	17							
							4.00		4			2 2 2 2 3 4	11							Borehole completed at 4.0m
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal / Response zone / Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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Unit 11 Brightwell Barns
Ipswich

HOLE No. WS10 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS11**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 3.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown fine and medium SAND)			0.00		0											Borehole remained dry and stable upon completion
				Medium dense becoming dense brownish grey slightly gravelly fine to coarse SAND. Gravel is fine and medium subrounded flint. (SHERINGHAM CLIFFS FORMATION)			0.35		0.60-0.70	ES	1									
				1.50 Becomes orange brown					1			2 3 4 4 4 3	15							
									2			3 4 4 6 6 6	22							
							3.00		3			5 9 9 10 10 12	41							Borehole completed at 3.0m
									4											
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS11 | SHEET 1 OF 1 | PROJECT No. 3921,GI

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS12
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown gravelly fine to coarse SAND. Gravel is fine and medium subangular flint)			0.00		0											Borehole remained dry and stable upon completion
									0.20-0.50	ES	1									
				Medium dense orangish brown fine to coarse SAND and GRAVEL. Gravel is fine and medium subangular flint and shell fragments. (SHERINGHAM CLIFFS FORMATION)			0.70		1			3 4 3 3 3 4	13							
				Medium dense orangish brown fine and medium SAND. (SHERINGHAM CLIFFS FORMATION)			1.20		1.50-1.60	ES	2									
				2.10 Becomes light brown.					2			3 3 4 5 5 5	19							
									3			4 4 4 5 6 6	21							
							4.00		4			4 4 4 6 6 7	23							Borehole completed at 4.0m
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS12 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS13**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown fine to coarse SAND)			0.00		0											Borehole remained dry and stable upon completion
				Medium dense orangish brown slightly gravelly fine to coarse SAND. Gravel is fine and medium subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.45		1			4 5 6 6 5 6	23							
									2			4 3 3 3 4 4	14							
				Medium dense orangish brown fine to coarse SAND and GRAVEL. Gravel is fine subangular flint and shells. (SHERINGHAM CLIFFS FORMATION)			2.50												
				Medium dense light brown fine to coarse SAND. (SHERINGHAM CLIFFS FORMATION)			3.10		3			4 4 4 4 5 5	18							
							4.00		4			5 5 5 7 7 9	28							Borehole completed at 4.0m
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS13 | SHEET 1 OF 1 | PROJECT No. 3921,GI

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS14**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 3.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown slightly gravelly SAND)			0.00		0.10-0.20	ES	1									Borehole remained dry and stable upon completion
				Medium dense becoming loose orangish brown gravelly fine to coarse SAND. Gravel is fine and medium subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.50					3 3 3 3 6 6	18							
												2 3 2 3 3 2	10							
							3.00					3 4 2 3 2 2	9							Borehole completed at 3.0m

*WATER: Standing water level; Water strikes

PIEZOMETER: Upper seal; Response zone; Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows: SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N: N = SPT N value (blows after seating); N*120 = Total blows/penetration including seating
<425: Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS14 | SHEET 1 OF 1 | PROJECT No. 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS15**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown slightly gravelly fine and medium SAND)			0.00		0											
				Medium dense becoming dense orangish brown fine to coarse SAND and GRAVEL. Gravel is fine and medium subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.50		0.10-0.20	ES	1									Borehole remained dry and stable upon completion
				1.00 Becomes fine subangular flint.					1			4 8 5 5 6 7	23							
									1.50-1.60	ES	2									
									2			3 5 5 5 6 6	22							
				3.20 Becomes light brown.					3			5 4 5 5 5 6	21							
							4.00		4			5 4 7 11 10 12	40							Borehole completed at 4.0m
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal / Response zone / Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS15 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS16**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown slightly gravelly fine to coarse SAND)			0.00		0											
				Medium dense becoming loose orangish brown slightly gravelly fine to coarse SAND. Gravel is fine subangular flint. (SHERINGHAM CLIFFS FORMATION)			0.55		1			4 5 7 7 6 7	27							Borehole remained dry and stable upon completion
									2			3 2 2 2 3 2	9							
									3			1 2 1 2 1 2	6							
							4.00		4			2 1 1 1 1 2	5							Borehole completed at 4.0m
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal / Response zone / Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS16 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS17**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown fine and medium SAND)			0.00		0											Borehole remained dry and stable upon completion
				Medium dense orangish brown slightly gravelly fine to coarse SAND. Gravel is fine subangular to subrounded flint. (SHERINGHAM CLIFFS FORMATION)			0.50		1			3 4 5 5 6 7	23							
									2			4 4 5 5 4 5	19							
				Medium dense becoming dense light brown fine to coarse SAND. (SHERINGHAM CLIFFS FORMATION)			2.40		3			3 4 4 4 4 5	17							
							4.00		4			7 9 8 10 10 10	38							Borehole completed at 4.0m
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS17 | SHEET 1 OF 1 | PROJECT No. 3921,GI

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS18**
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 3.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	ρ Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown fine and medium SAND)			0.00													Borehole remained dry and stable upon completion
				Medium dense orangish brown fine and medium SAND. (SHERINGHAM CLIFFS FORMATION)			0.45		0.20-0.30	ES	1									
												3 4 6 7 8 9	30							
												5 5 6 5 6 7	24							
				Medium dense light brown fine and medium SAND. (SHERINGHAM CLIFFS FORMATION)			2.30													
							3.00					3 3 5 4 5 6	20							Borehole completed at 3.0m

*WATER: Standing water level; Water strikes. PIEZOMETER: Upper seal; Response zone; Lower seal.

SAMPLE AND TEST KEY: D Small disturbed sample; B Bulk disturbed sample; U Undisturbed sample; P Piston sample; J Disturbed jar sample; ES Environmental soil sample; W Water Sample; S Standard penetration test; C Cone penetration test; K Permeability test.

Blows: SPT blows for each 75mm increment (35) Undisturbed sample blow count. SPT N: N = SPT N value (blows after seating); N*120 = Total blows/penetration including seating. <425: Sample % passing 425 micron sieve.

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS18 | SHEET 1 OF 1 | PROJECT No 3921,GI

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS19
LOGGED BY: CS FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 3.0 m	Grid Reference: DATES 12/02/2019 - 12/02/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brown fine and medium SAND)			0.00		0											Borehole remained dry and stable upon completion
				Medium dense orangish brown fine and medium SAND. (SHERINGHAM CLIFFS FORMATION)			0.30		1			4 5 6 5 6 5	22							
				Medium dense light brown fine and medium SAND. (SHERINGHAM CLIFFS FORMATION)			2.20		2			3 3 2 6 4 5	17							
							3.00		3			2 5 4 4 4 4	16							Borehole completed at 3.0m
									4											
									5											

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS19 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	**PROJECT: Land off Fir Covert Road**	**GROUND LEVEL m**	**HOLE No. WS201**
LOGGED BY: SG FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE: 24/05/2019	EXCAVATION METHOD: Windowless sampler Uncased to 6.0 m	Grid Reference: DATES 15/05/2019 - 15/05/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brownish grey organic silty fine SAND with frequent fine roots and rare coarse roots)			0.00		0											Borehole remained dry and stable upon completion
				Dark reddish brown silty fine SAND (SHERINGHAM CLIFFS FORMATION)			0.25		0.15	J	1									
									0.35	J	2									
				0.90 Becoming dark orangish brown mottled with depth					0.90	D	1	3 5 5 6 6 6	23							
									1.50	D	2									
									2			3 3 4 4 5 6	19							
				2.50 With occasional rounded gravel of flint and pale yellowish brown fine to coarse sand					2.50	D	3									
								63	3			5 8 11 14 17 8	63*							
				3.40 Becoming a slightly saturated medium to coarse SAND with rare cobbles of flint and fine gravel of quartzite					3.50	D	4									
									4			5 6 6 8 10 11	35							
									4.60	D	5									
									5			6 7 7 9 9 11	36							
				5.55 Becoming pale grey with depth					5.70	D	6									
							6.00		6			8 8 8 10 12 11	41							Borehole completed at 6.0m

*WATER ▼ Standing water level ▽ Water strikes PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS201 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS202
LOGGED BY: SG FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE: 24/05/2019	EXCAVATION METHOD: Windowless sampler Uncased to 6.0 m	Grid Reference: DATES 15/05/2019 - 15/05/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brownish grey slightly desiccated organic silty fine SAND with frequent fine roots and rare coarse roots)			0.00		0.10	J	1									Borehole remained dry and stable upon completion
				Dark orangish brown fine SAND (SHERINGHAM CLIFFS FORMATION)			0.35		0.40	J	2									
				1.10 Becoming yellowish brown mottled with depth					0.90	D	1	4 4 6 6 6 6	24							
				2.10 Becoming medium to coarse SAND with pale yellowish brown mottling and rare gravel of angular rinded flint with depth					1.85	D	2	3 3 3 5 4 6	18							
									2.30	D	3									
				3.10 Becoming slightly saturated								4 5 4 6 6 5	21							
									3.60	D	4									
				4.50 Becoming pale yellow brown with depth								3 3 4 3 4 3	14							
									4.50	D	5									
				5.40 - 5.60 Black with iron cemented siltstone gravel								3 2 2 3 2 3	10							
									5.45	D	6									
							6.00					3 3 2 3 3 4	12							Borehole completed at 6.0m

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal / Response zone / Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS202 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS203a
LOGGED BY: SG FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE: 24/05/2019	EXCAVATION METHOD: Windowless sampler 115mm cased from 0.0 to 3.0m	Grid Reference: DATES 22/05/2019 - 22/05/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brownish grey slightly desiccated organic silty fine SAND with frequent fine roots and rare coarse roots)			0.00		0											
				Dark yellowish brown silty fine SAND with rare fine roots (SHERINGHAM CLIFFS FORMATION)			0.40													
									0.85-1.00	D	1	2 2 3 2 3 3	11							
				1.50 Slightly saturated with occasional speckling with depth																
				2.00 Becoming saturated and slightly clayey with depth					1.85-2.00	D	2	2 2 2 2 4 4	12							
		2.70		2.70 Becoming very saturated with depth					2.85-3.00	D	3	1 1 2 1 1 5	9							Seepage inflow of water at 2.7m
				Dark yellowish brown CLAY (SHERINGHAM CLIFFS FORMATION)			3.50													
				Dark yellowish brown silty fine SAND with rare fine roots (SHERINGHAM CLIFFS FORMATION)			3.60		3.75-4.00	D	4									Partial collapse to 3.62m upon completion. Further collapse to 3.2m upon removal of casing
				3.60 Becoming a medium SAND with occasional coarse sand and rare gravel of coarse rinded flint								4 5 5 4 4 5	18						
				4.50 Becoming light yellowish brown and gravel no longer present with depth								4 4 5 6 7 7	25							
							4.95													Borehole completed at 4.95m

*WATER ▼ Standing water level ▽ Water strikes PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS203a | SHEET 1 OF 1 | PROJECT No. 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS204a
LOGGED BY: SG FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE: 24/05/2019	EXCAVATION METHOD: Windowless sampler 115mm cased from 0.0 to 4.0m	Grid Reference: DATES 22/05/2019 - 22/05/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brownish grey slightly desiccated organic silty fine SAND with frequent fine roots and rare coarse roots)			0.00		0												Borehole remained dry and stable upon completion
				Yellowish brown silty fine SAND with rare gravel of coarse rinded flint (SHERINGHAM CLIFFS FORMATION)			0.35														
				Dark orangish brown slightly sandy CLAY. Sand is fine (SHERINGHAM CLIFFS FORMATION)			1.05		0.85-1.00 1	D	1	1 1 3 4 4 4	15							
				Dark orangish brown slightly clayey fine SAND (SHERINGHAM CLIFFS FORMATION)			1.65													
				Pale greyish brown closely fissured CLAY with rare decayed fine roots and rare orange brown streaks (SHERINGHAM CLIFFS FORMATION) 2.15 - 2.20 With a pocket of silty fine sand			1.85		1.85-2.00 2	D	2	4 4 5 4 4 4	17							
				Pale greyish brown/dark orangish brown mottled fine and medium SAND with occasional coarse sand and rare gravel of rounded chalk and flint (SHERINGHAM CLIFFS FORMATION) 2.85 Becoming dark orange brown laminated at base 3.00 Mottling no longer present 3.20 Gravel no longer present			2.85		2.85-3.00 3	D	3	4 6 4 5 5 5	19							
				4.00 Becoming dark yellowish brown 4.20 Rare shell fragments present with depth					3.85-4.00 4	D	4	4 5 5 6 7 7	25							
				4.70 Occasional black speckling present with depth					4.85-5.00 5	D	5	4 6 5 6 7 8	26							
				5.00 Rare gravel of coarse angular rinded flint and quartz present with depth								4 4 6 7 6 8	27							
							6.05		6											Borehole completed at 6.05m

*WATER ▼ Standing water level ▽ Water strikes PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS204a | SHEET 1 OF 1 | PROJECT No 3921,GI

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS205a
LOGGED BY: SG FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE: 24/05/2019	EXCAVATION METHOD: Windowless sampler 115mm cased from 0.0 to 3.0m	Grid Reference: DATES 22/05/2019 - 22/05/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brownish grey slightly desiccated organic silty fine SAND with frequent fine roots and rare coarse roots)			0.00		0											
				Dark yellowish brown silty fine SAND (SHERINGHAM CLIFFS FORMATION) 0.70 Becoming light yellowish brown with rare gravel of coarse angular rinded flint 1.00 Becoming dark yellowish brown/light yellowish brown mottled with depth			0.40		0.85-1.00 1	D	1	1 1 2 2 2 3	9							
				2.00 Becoming saturated with depth					1.85-2.00 2	D	2	2 2 3 4 4 6	17							
	2.50			2.45 Becoming dark orange/reddish brown																Partial collapse to 2.4m upon completion Seepage inflow of water at 2.5m
				Dark orangish brown CLAY with pale grey partings and black specklings (SHERINGHAM CLIFFS FORMATION) 2.85 - 2.95 With a parting of dark orangish brown clay with pale grey partings and black speckling			2.85 2.95		2.85-3.00 3	D	3	4 4 4 5 5 4	18							
	3.85			Dark yellow brown silty fine SAND with interbedded clay parting and dark orangish brown parting of fine sand (SHERINGHAM CLIFFS FORMATION) 3.20 Interbedded clay parting 3.30 - 3.35 With a dark orangish brown parting of fine sand			3.90		3.85-4.00 4	D	4	5 6 5 7 7 9	28							Seepage inflow of water at 3.85m
				Dark yellow brown CLAY (SHERINGHAM CLIFFS FORMATION) 3.90 Interbedded clay parting			4.05													
				Dark yellow brown silty medium and coarse SAND with rare shell fragments (SHERINGHAM CLIFFS FORMATION) 4.05 Interbedded clay parting. Becoming a medium sand with occasional coarse sand and rare shell fragments with depth 5.20 Rare black speckling present with depth					4.85-5.00 5	D	5	6 6 5 6 6 7	24							
												5 6 5 6 7 8	26							
							6.05		6											Borehole completed at 6.05m

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
- D Small disturbed sample
- B Bulk disturbed sample
- U Undisturbed sample
- P Piston sample
- J Disturbed jar sample
- ES Environmental soil sample
- W Water Sample
- S Standard penetration test
- C Cone penetration test
- K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count

SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating

<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental
Unit 11 Brightwell Barns
Ipswich

HOLE No. WS205a | SHEET 1 OF 1 | PROJECT No. 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

CLIENT: M Scott Properties Ltd	PROJECT: Land off Fir Covert Road	GROUND LEVEL m	HOLE No. WS206
LOGGED BY: SG FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA CHECKED BY: SG DATE: 24/05/2019	EXCAVATION METHOD: Windowless sampler 115mm cased from 0.0 to 5.0m	Grid Reference: DATES 22/05/2019 - 22/05/2019	SHEET 1 OF 1 PROJECT NO. 3921,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata: Leg	Strata: Reduced Level	Strata: Depth	Graphical Representation: SPT 'N' Value (0 10 20 30 40)	Sampling/In-Situ Testing: Depths	Type	No.	Blows	SPT N	Laboratory Testing: <425 %	WC %	PL %	LL %	r Mg/m³	Cu kN/m²	Additional Tests and Notes
				TOPSOIL (Dark brownish grey slightly desiccated organic silty fine SAND with frequent fine roots and rare coarse roots)			0.00		0											Borehole remained dry and stable upon completion
				Yellowish brown silty fine SAND with gravel of fine flint (SHERINGHAM CLIFFS FORMATION) 0.75 - 0.85 With a parting of fine to coarse rinded flint 0.85 Becoming dark orangish brown with rare reddish brown mottling			0.40		0.85-1.00 1	D	1	3 4 5 6 6 7	24							
				2.40 With frequent medium sand and becoming slightly saturated 2.60 With rare coarse sand					1.85-2.00 2	D	2	3 3 3 4 3 5	15							
				3.10 - 3.45 Becoming a fine to coarse sand					2.85-3.00 3	D	3	4 4 6 5 5 6	22							
				3.95 Becoming dark yellow brown					3.85-4.00 4	D	4	4 5 5 4 5 6	20							
				4.90 With rare gravel of coarse rinded flint 5.00 Becoming dark reddish brown mottled with occasional black speckling 5.10 No longer mottled					4.85-5.00 5	D	5	5 5 5 5 6 7	23							
							6.00		5.85-6.00 6	D	6	7 7 7 7 8 9	31							Borehole completed at 6.0m

*WATER ▼ Standing water level ▽ Water strikes

PIEZOMETER Upper seal, Response zone, Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample
S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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HOLE No. WS206 | SHEET 1 OF 1 | PROJECT No 3921,GI

GEL AGS BH BETA 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3 1.GDT 10/6/19

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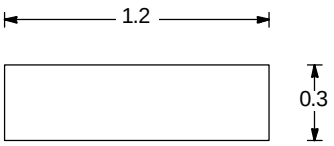
TRIAL PIT LOG

Project	Client	TRIAL PIT No
Land off Fir Covert Road	M Scott Properties Ltd	**SK1**

Job No	Date	Ground Level (m)	Coordinates ()
3921,GI	11-02-19 11-02-19		,

Fieldwork By	Logged By	Sheet
DRILLT	CS	1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.40	TOPSOIL (Brown slightly gravelly fine to coarse SAND. Gravel is fine sunangular flint)				
0.40-2.00	Yellowish brown gravelly fine to coarse SAND. Gravel of fine to coarse sunangular to subrounded flint. (SHERINGHAM CLIFFS FORMATION)				Trial pit completed at 2.0m



Shoring/Support:
Stability:

All dimensions in metres Scale 1:20.8333333333333	Method Trial Pit/trench	Plant Used 2.7T Mechanical Excavator	Checked By SG

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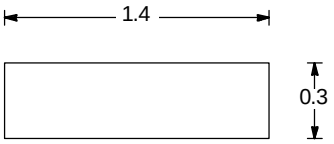
TRIAL PIT LOG

Project	Client	TRIAL PIT No
Land off Fir Covert Road	M Scott Properties Ltd	**SK2**

Job No	Date	Ground Level (m)	Coordinates ()
3921,GI	11-02-19 11-02-19		,

Fieldwork By	Logged By	Sheet
DRILLT	CS	1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark brown fine to coarse SAND)				
0.35-2.00	Orangish brown slightly gravelly fine to coarse SAND. Gravel is fine subangualr flint. (SHERINGHAM CLIFFS FORMATION)				
	1.30 Gravel becomes fine to medium.				
					Trial pit completed at 2.0m



Shoring/Support:
Stability:

All dimensions in metres Scale 1:20.8333333333333	Method Trial Pit/trench	Plant Used 2.7T Mechanical Excavator	Checked By SG

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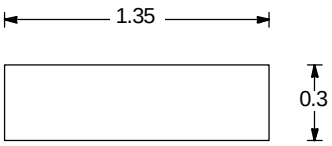
TRIAL PIT LOG

Project	Client	TRIAL PIT No
Land off Fir Covert Road	M Scott Properties Ltd	**SK3**

Job No	Date	Ground Level (m)	Coordinates ()
3921,GI	11-02-19 11-02-19		,

Fieldwork By	Logged By	Sheet
DRILLT	CS	1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.40	TOPSOIL (Brown slightly gravelly fine to coarse SAND. Gravel of fine subangular flint)				
0.40-2.00	Orangish brown slightly gravelly fine to coarse SAND. Gravel is fine subangular flint. (SHERINGHAM CLIFFS FORMATION)				Trial pit completed at 2.0m



Shoring/Support:
Stability:

All dimensions in metres Scale 1:20.8333333333333	Method Trial Pit/trench	Plant Used 2.7T Mechanical Excavator	Checked By SG

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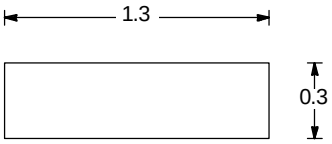
TRIAL PIT LOG

Project	Client	TRIAL PIT No
Land off Fir Covert Road	M Scott Properties Ltd	**SK4**

Job No	Date	Ground Level (m)	Coordinates ()
3921,GI	11-02-19 11-02-19		,

Fieldwork By	Logged By	Sheet
DRILLT	CS	1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark brown fine to coarse SAND)				
0.35-2.00	Orangish brown slightly gravely fine to coase SAND. Gravel of fine subangular to subrounded shell fragements with fine and medium subangular flint. (SHERINGHAM CLIFFS FORMATION)				Trial pit completed at 2.0m



Shoring/Support:
Stability:

All dimensions in metres Scale 1:20.8333333333333	Method Trial Pit/trench	Plant Used 2.7T Mechanical Excavator	Checked By SG

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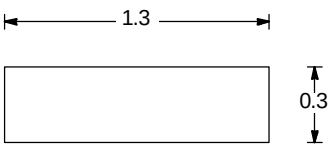
TRIAL PIT LOG

Project	Client	TRIAL PIT No
Land off Fir Covert Road	M Scott Properties Ltd	**SK5**

Job No	Date	Ground Level (m)	Coordinates ()
3921,GI	11-02-19 11-02-19		,

Fieldwork By	Logged By	Sheet
DRILLT	CS	1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.40	TOPSOIL (Dark brown slightyl gravelly fine to coarse SAND. Gravel is fine and medium subrounded flint)				
0.40-2.00	Orangish brown gravelly fine to coarse SAND. Gravel is fine and medium subangular flint. (SHERINGHAM CLIFFS FORMATION)				Trial pit completed at 2.0m



Shoring/Support:
Stability:

All dimensions in metres Scale 1:20.8333333333333	Method Trial Pit/trench	Plant Used 2.7T Mechanical Excavator	Checked By SG

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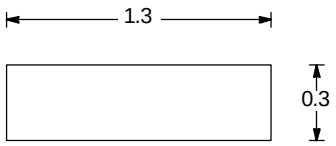
TRIAL PIT LOG

Project	Client	TRIAL PIT No
Land off Fir Covert Road	M Scott Properties Ltd	**SK6**

Job No	Date	Ground Level (m)	Coordinates ()
3921,GI	11-02-19 11-02-19		,

Fieldwork By	Logged By	Sheet
DRILLT	CS	1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.40	TOPSOIL (Dark brown slightly gravelly fine to coarse SAND. Gravel of fine subangular to subounded flint)				
0.40-2.00	Orangish brown slightly gravelly fine to coarse SAND. Gravel is fine and medium subangular to subrounded flint. (SHERINGHAM CLIFFS FORMATION)				Trial pit completed at 2.0m



Shoring/Support:
Stability:

All dimensions in metres Scale 1:20.8333333333333	Method Trial Pit/trench	Plant Used 2.7T Mechanical Excavator	Checked By SG

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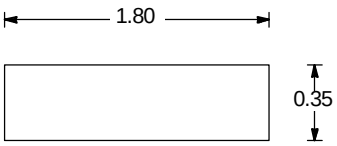
TRIAL PIT LOG

Project	Client	TRIAL PIT No
Land off Fir Covert Road	M Scott Properties Ltd	**TP201**

Job No	Date	Ground Level (m)	Coordinates ()
3921,GI	15-05-19 15-05-19		,

Fieldwork By	Logged By	Sheet
GEL	SG	1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark grey slightly clayey fine SAND with frequent fine roots and occasional medium roots and subangular gravel of chert)				
0.35-2.20	Pale yellowish brown/orangish brown slightly silty fine SAND with frequent medium sand (SHERINGHAM CLIFFS FORMATION)				Trial pit completed at 2.2m. Infiltration testing undertaken



Shoring/Support: None
Stability: Stable

All dimensions in metres Scale 1:20.8333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By SG

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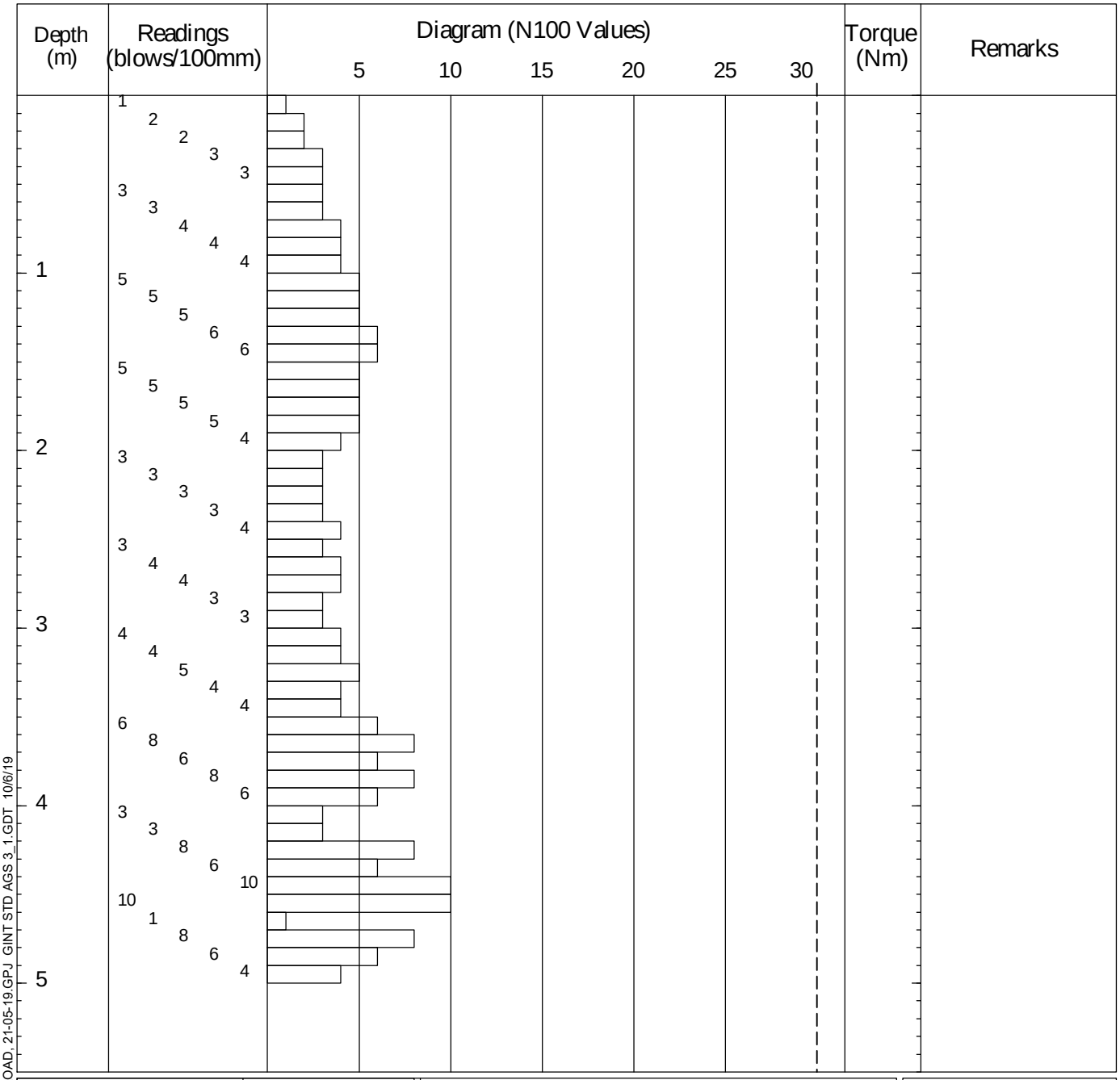
DYNAMIC PROBE LOG

Project				PROBE No
Land off Fir Covert Road				**DP02**
Job No	Date	Ground Level (m)	Coordinates:	
3921,GI	12-02-19 12-02-19			
Contractor				Sheet
				1 of 1



Hammer Wt (kg)	63.5
Hammer Drop (mm)	750
Cone Dia (mm)	50.5
Cone Type	DPSH
Damper	

GENERAL REMARKS

All dimensions in metres Scale 1:34.375	Client M Scott Properties Ltd	Method/ Plant Used Dynamic Probe sampling	Logged By CS

AGS3 DYNAMIC PROBE 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3_1.GDT 10/6/19

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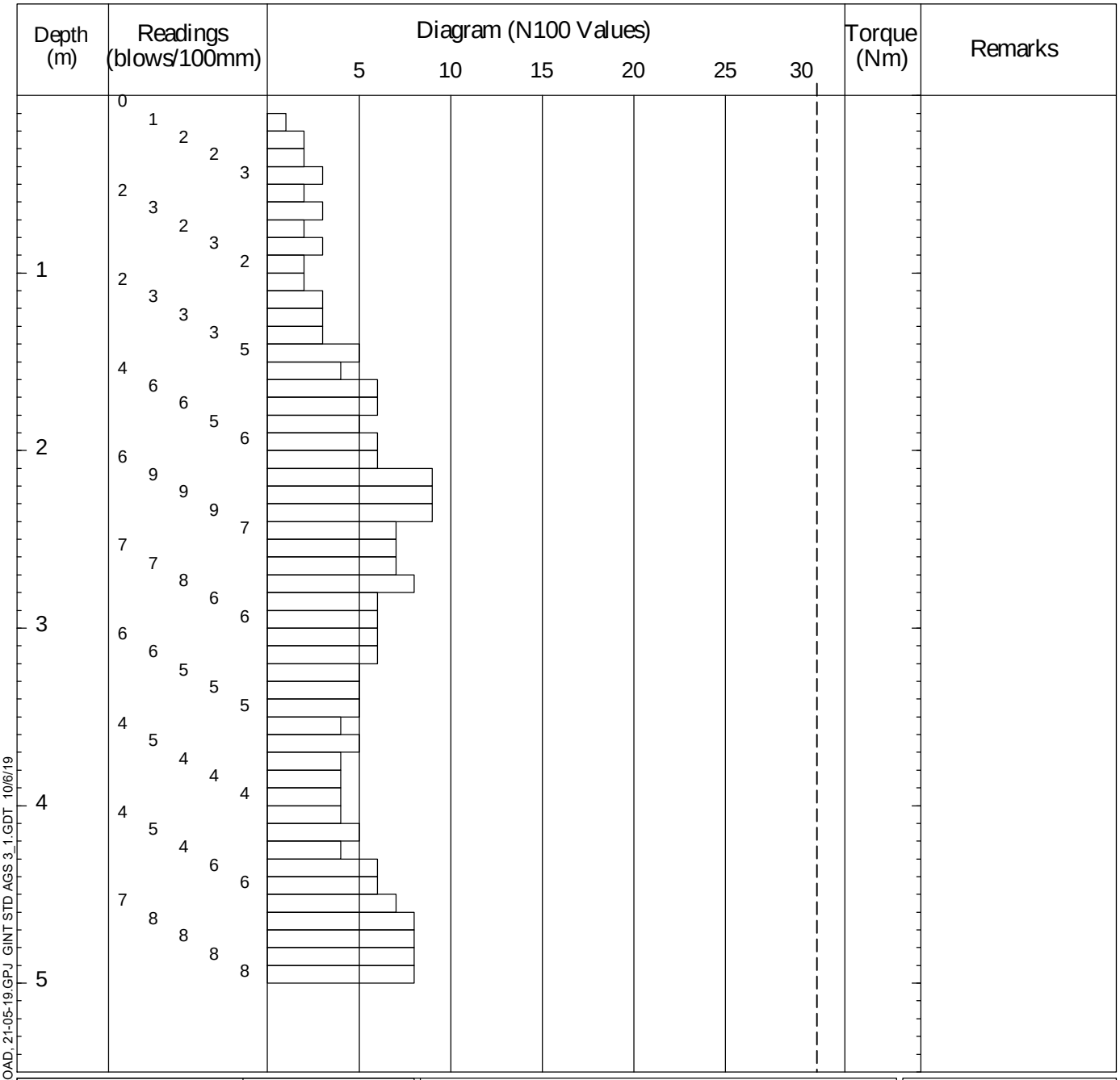
DYNAMIC PROBE LOG

Project				PROBE No
Land off Fir Covert Road				**DP03**
Job No	Date	Ground Level (m)	Coordinates:	
3921,GI	12-02-19 12-02-19			
Contractor				Sheet
				1 of 1



Hammer Wt (kg)	63.5
Hammer Drop (mm)	750
Cone Dia (mm)	50.5
Cone Type	DPSH
Damper	

GENERAL REMARKS

All dimensions in metres Scale 1:34.375	Client M Scott Properties Ltd	Method/ Plant Used Dynamic Probe sampling	Logged By CS

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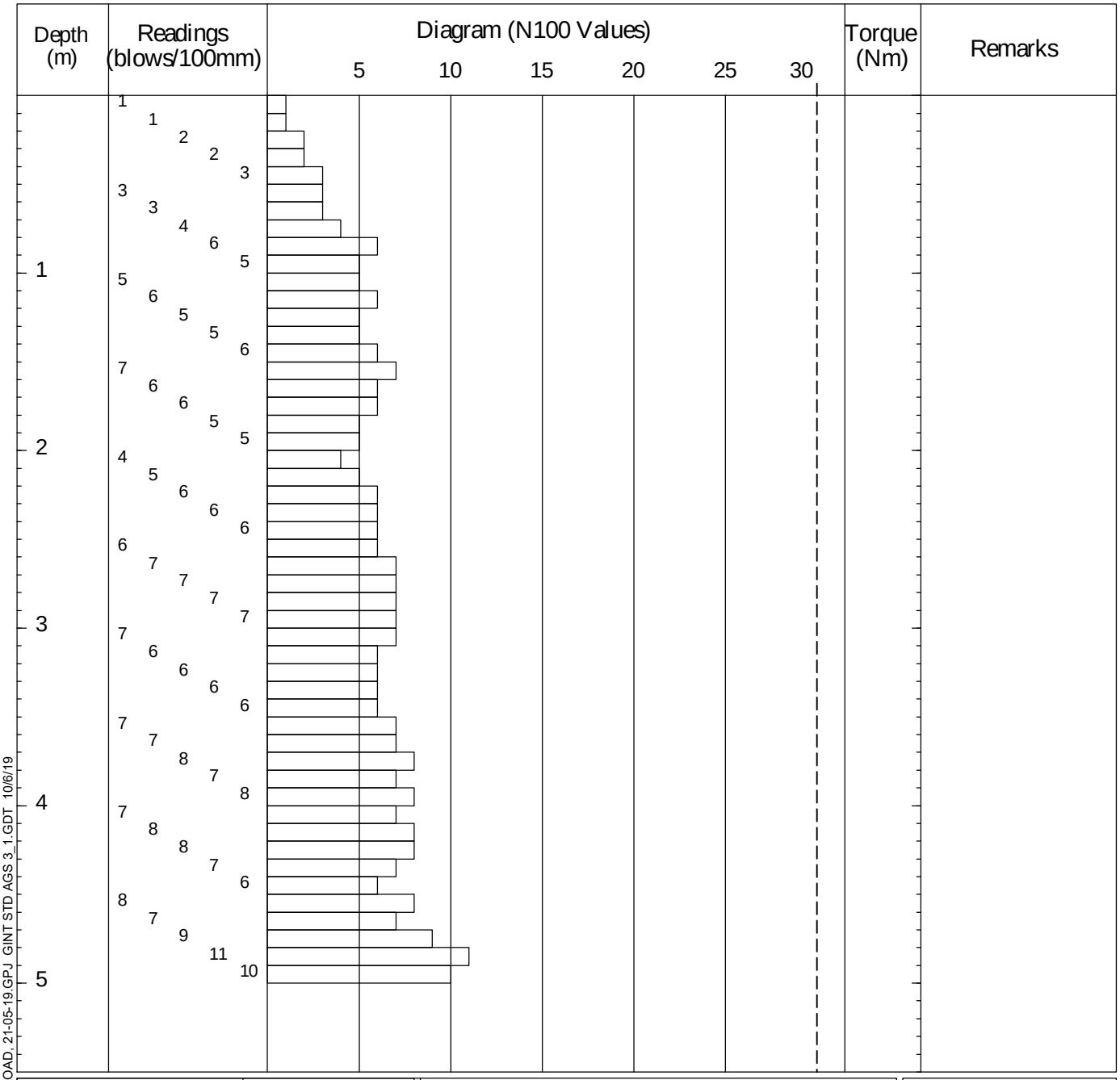
DYNAMIC PROBE LOG

Project				PROBE No
Land off Fir Covert Road				**DP05**
Job No	Date	Ground Level (m)	Coordinates:	
3921,GI	12-02-19 12-02-19			
Contractor				Sheet
				1 of 1



Hammer Wt (kg)	63.5
Hammer Drop (mm)	750
Cone Dia (mm)	50.5
Cone Type	DPSH
Damper	

GENERAL REMARKS

All dimensions in metres Scale 1:34.375	Client M Scott Properties Ltd	Method/ Plant Used Dynamic Probe sampling	Logged By CS

AGS3 DYNAMIC PROBE 3921,GI FIR COVERT ROAD, 21-05-19.GPJ GINT STD AGS 3_1.GDT 10/6/19

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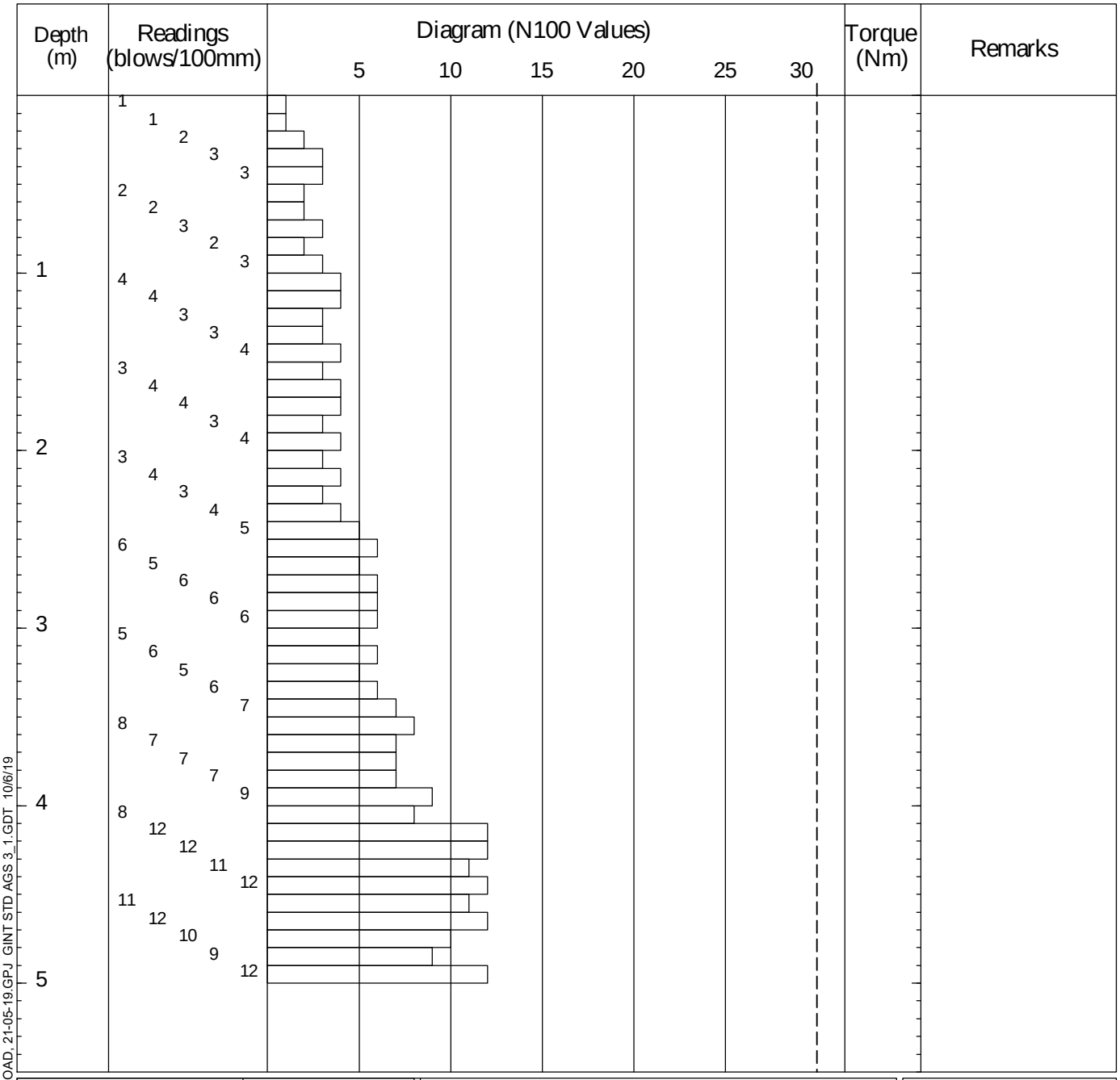
DYNAMIC PROBE LOG

Project				PROBE No
Land off Fir Covert Road				**DP07**
Job No	Date	Ground Level (m)	Coordinates:	
3921,GI	12-02-19 12-02-19			
Contractor				Sheet
				1 of 1



Hammer Wt (kg)	63.5
Hammer Drop (mm)	750
Cone Dia (mm)	50.5
Cone Type	DPSH
Damper	

GENERAL REMARKS

All dimensions in metres Scale 1:34.375	Client M Scott Properties Ltd	Method/ Plant Used Dynamic Probe sampling	Logged By CS

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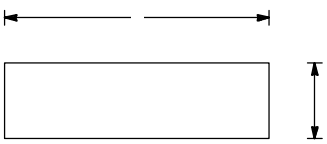
TRIAL PIT LOG

Project	Client	TRIAL PIT No
Land off Fir Covert Road	M Scott Properties Ltd	**CBR201**

Job No	Date	Ground Level (m)	Coordinates ()
3921,GI	15-05-19 15-05-19		,

Fieldwork By	Logged By	Sheet
GEL	SG	1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark brownish grey organic silty fine SAND with frequent fine roots and rare coarse roots)				
0.35-0.70	Dark orangish brown silty fine SAND (SHERINGHAM CLIFFS FORMATION)		0.50	1B	Trial pit completed at 0.7m.



Shoring/Support: None
Stability: Stable

All dimensions in metres Scale 1:8.33333333333333	Method Trial Pit/trench	Plant Used HAND	Checked By SG

Appendix 6 – Infiltration Test Results

Infiltration Test Results
(SK1 to SK6 and TP201)

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0.0	1.35
0.5	1.37
1.0	1.41
2.0	1.45
3.0	1.49
4.0	1.53
5.0	1.56
6.0	1.60
7.0	1.63
8.0	1.65
9.0	1.67
10.0	1.69
11.0	1.71
12.0	1.72
14.0	1.77
15.0	1.78
16.0	1.79
17.0	1.80
18.0	1.81
19.0	1.82
20.0	1.83
21.0	1.84

Pit Size [m]		
Length	**Width**	**Depth**
1.20	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.838
h_{25}	[m]	1.513
h_{75}-h_{25}	[m]	0.325
time		
t_{75}	[s]	1260.00
t_{25}	[s]	225.00
t_{75} - t_{25}	[s]	1035.00
effective volume		
v_{75-25}	[m^3]	0.035
effective area		
ap_{50}	[m^2]	1.335
soil infiltration rate		
f	[m/s]	2.54E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

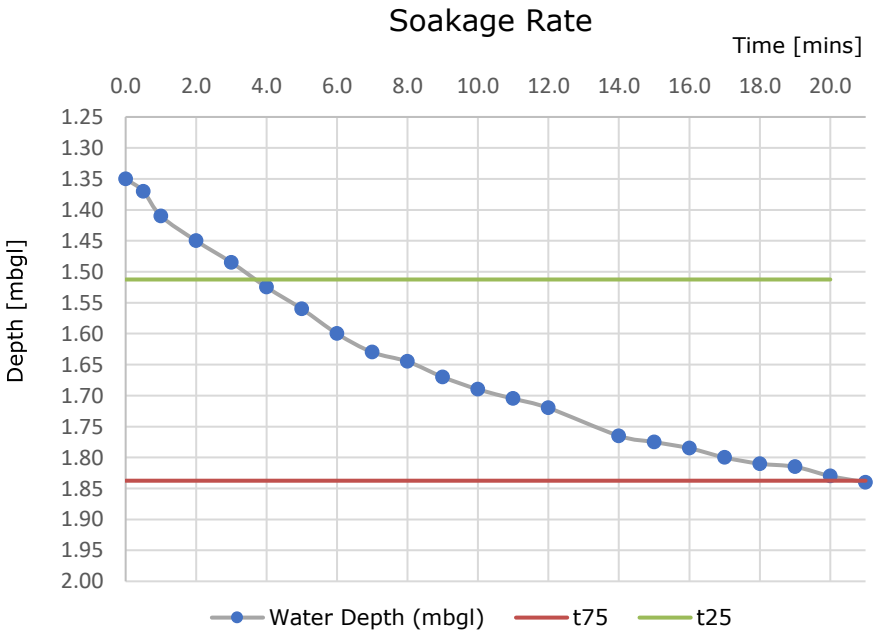
Trial Pit SK1

Run 1 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0.0	1.30
1.0	1.34
2.0	1.39
3.0	1.43
4.0	1.46
5.0	1.48
10.0	1.60
15.0	1.70
20.0	1.76
25.0	1.82
27.0	1.84

Pit Size [m]		
Length	**Width**	**Depth**
1.20	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.824
h_{25}	[m]	1.471
h_{75}-h_{25}	[m]	0.353
time		
t_{75}	[s]	1560.00
t_{25}	[s]	270.00
t_{75} - t_{25}	[s]	1290.00
effective volume		
$v_{75\text{-}25}$	[m^3]	0.038
effective area		
ap_{50}	[m^2]	1.418
soil infiltration rate		
f	[m/s]	2.08E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

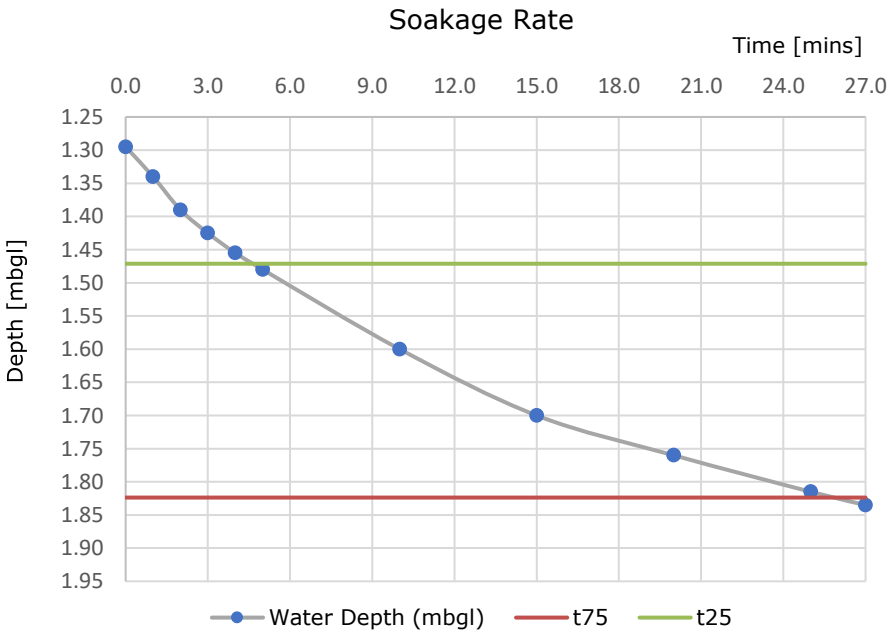
Trial Pit SK1

Run 2 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0.0	1.30
0.5	1.32
1.0	1.35
2.0	1.38
3.0	1.41
4.0	1.44
5.0	1.47
15.0	1.66
20.0	1.73
25.0	1.79
30.0	1.83

Pit Size [m]		
Length	**Width**	**Depth**
1.20	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.825
h_{25}	[m]	1.475
h_{75}-h_{25}	[m]	0.350
time		
t_{75}	[s]	1800.00
t_{25}	[s]	330.00
t_{75} - t_{25}	[s]	1470.00
effective volume		
v_{75-25}	[m^3]	0.038
effective area		
ap_{50}	[m^2]	1.410
soil infiltration rate		
f	[m/s]	1.82E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

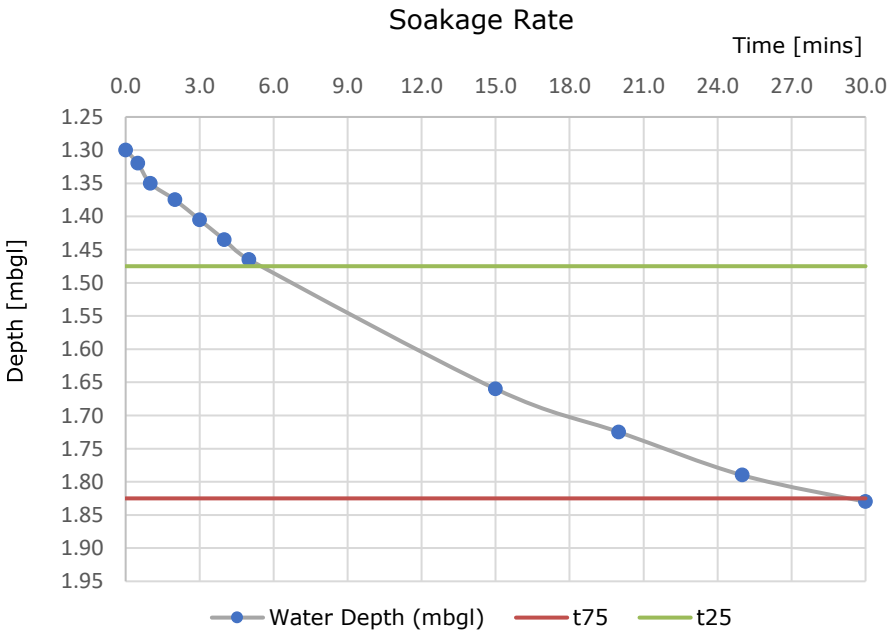
Trial Pit SK1

Run 3 of 3

Test Date 13/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.00
1	1.05
2	1.10
3	1.13
4	1.15
5	1.17
10	1.24
20	1.33
30	1.38
45	1.44
60	1.49
120	1.65
180	1.73
240	1.80

Pit Size [m]		
Length	**Width**	**Depth**
1.40	0.30	2.02

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.765
h_{25}	[m]	1.255
h_{75}-h_{25}	[m]	0.510
time		
t_{75}	[s]	12360.00
t_{25}	[s]	720.00
t_{75} - t_{25}	[s]	11640.00
effective volume		
v_{75-25}	[m^3]	0.064
effective area		
ap_{50}	[m^2]	2.154
soil infiltration rate		
f	[m/s]	2.56E-06

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with gravel to 0.4m bgl.

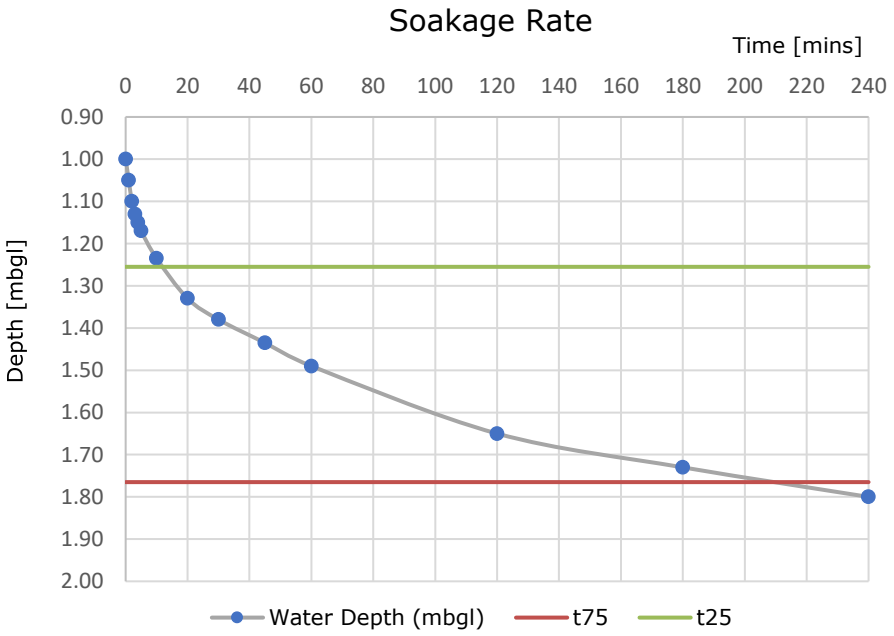
Trial Pit SK2

Run 1 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.19
1	1.22
2	1.25
3	1.27
4	1.29
5	1.29
10	1.34
15	1.36
20	1.38
45	1.45
65	1.50
120	1.59
180	1.74
210	1.79
222	1.810

Pit Size [m]		
Length	**Width**	**Depth**
1.40	0.30	2.02

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.813
h_{25}	[m]	1.398
h_{75}-h_{25}	[m]	0.415
time		
t_{75}	[s]	13320.00
t_{25}	[s]	1560.00
t_{75} - t_{25}	[s]	11760.00
effective volume		
v_{75-25}	[m^3]	0.052
effective area		
ap_{50}	[m^2]	1.831
soil infiltration rate		
f	[m/s]	2.43E-06

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with gravel to 0.4m bgl.

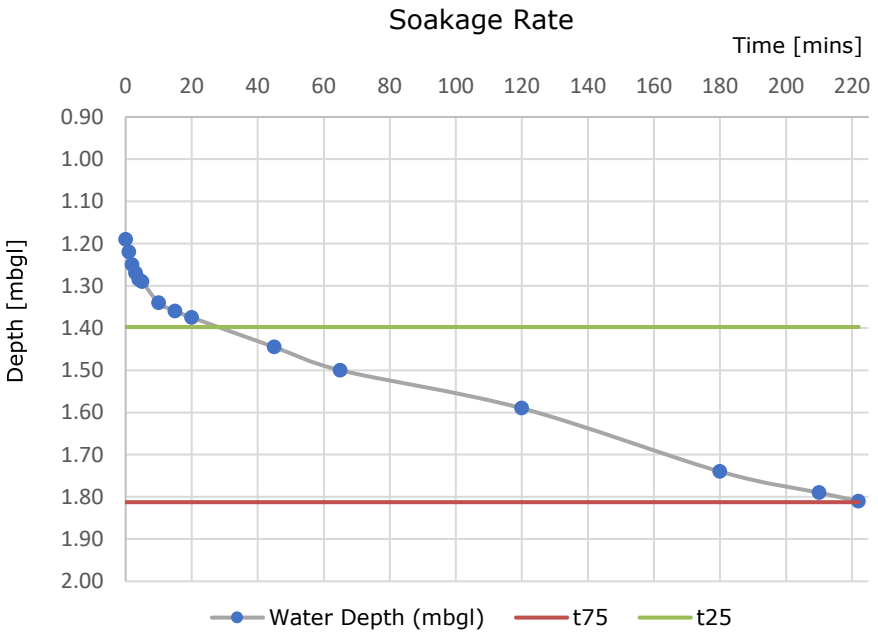
Trial Pit SK2

Run 2 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.00
1	1.06
2	1.10
3	1.12
4	1.14
5	1.17
10	1.25
15	1.29
55	1.41
102	1.50
150	1.56
300	1.74
325	1.77

Pit Size [m]		
Length	**Width**	**Depth**
1.40	0.30	2.02

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.765
h_{25}	[m]	1.255
h_{75}-h_{25}	[m]	0.510
time		
t_{75}	[s]	18900.00
t_{25}	[s]	660.00
t_{75} - t_{25}	[s]	18240.00
effective volume		
v_{75-25}	[m^3]	0.064
effective area		
ap_{50}	[m^2]	2.154
soil infiltration rate		
f	[m/s]	1.64E-06

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with gravel to 0.4m bgl.

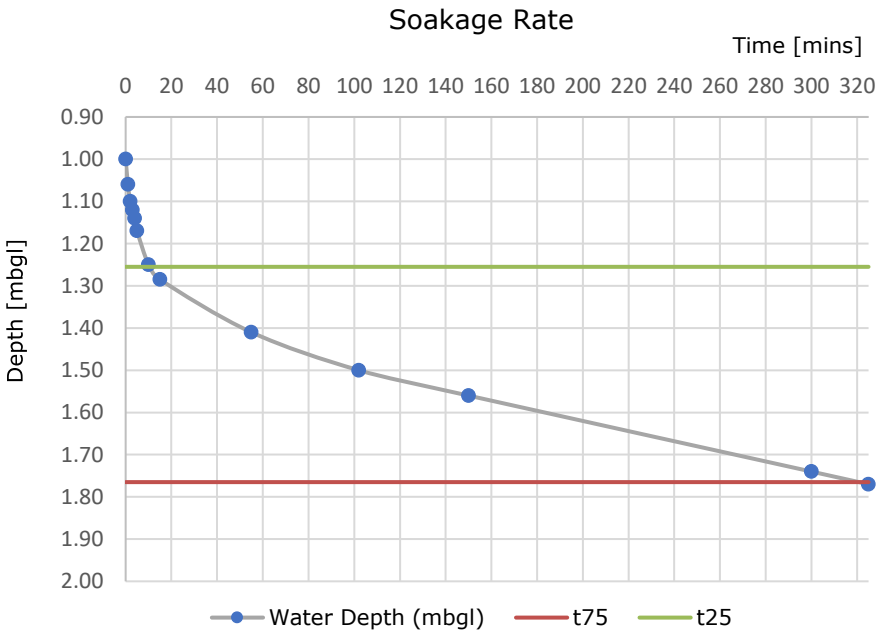
Trial Pit SK2

Run 3 of 3

Test Date 13/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.14
0.5	1.24
1	1.34
2	1.43
3	1.54
4	1.63
5	1.70
6	1.77
7	1.84
8	1.88

Pit Size [m]		
Length	**Width**	**Depth**
1.35	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.785
h_{25}	[m]	1.355
h_{75}-h_{25}	[m]	0.430
time		
t_{75}	[s]	378.00
t_{25}	[s]	60.00
t_{75} - t_{25}	[s]	318.00
effective volume		
v_{75-25}	[m^3]	0.052
effective area		
ap_{50}	[m^2]	1.824
soil infiltration rate		
f	[m/s]	9.01E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

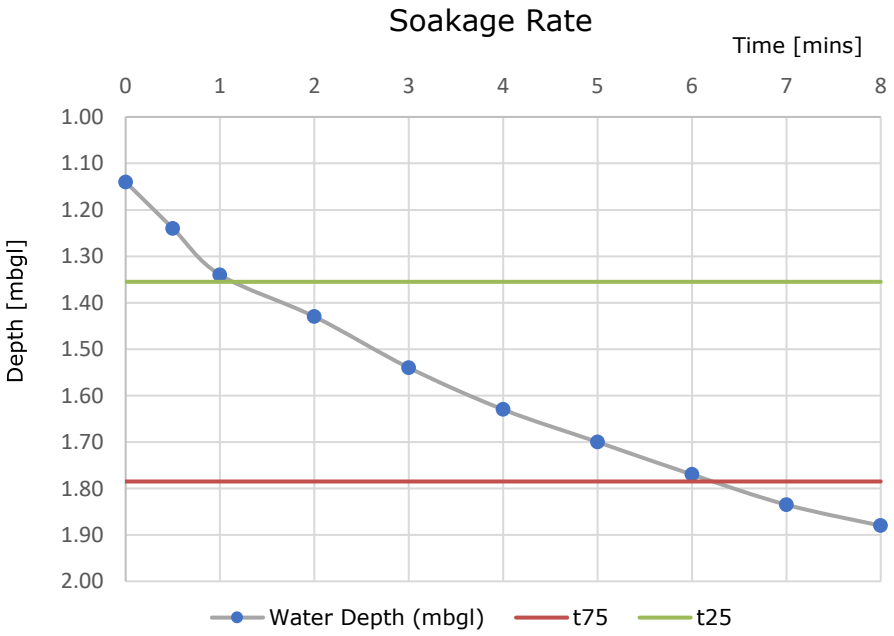
Trial Pit SK3

Run 1 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.05
0.5	1.09
1	1.16
2	1.22
3	1.32
4	1.47
5	1.56
6	1.63
7	1.70
8	1.76
10	1.86

Pit Size [m]		
Length	**Width**	**Depth**
1.35	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.763
h_{25}	[m]	1.288
h_{75}-h_{25}	[m]	0.475
time		
t_{75}	[s]	480.00
t_{25}	[s]	168.00
t_{75} - t_{25}	[s]	312.00
effective volume		
v_{75-25}	[m^3]	0.058
effective area		
ap_{50}	[m^2]	1.973
soil infiltration rate		
f	[m/s]	9.38E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

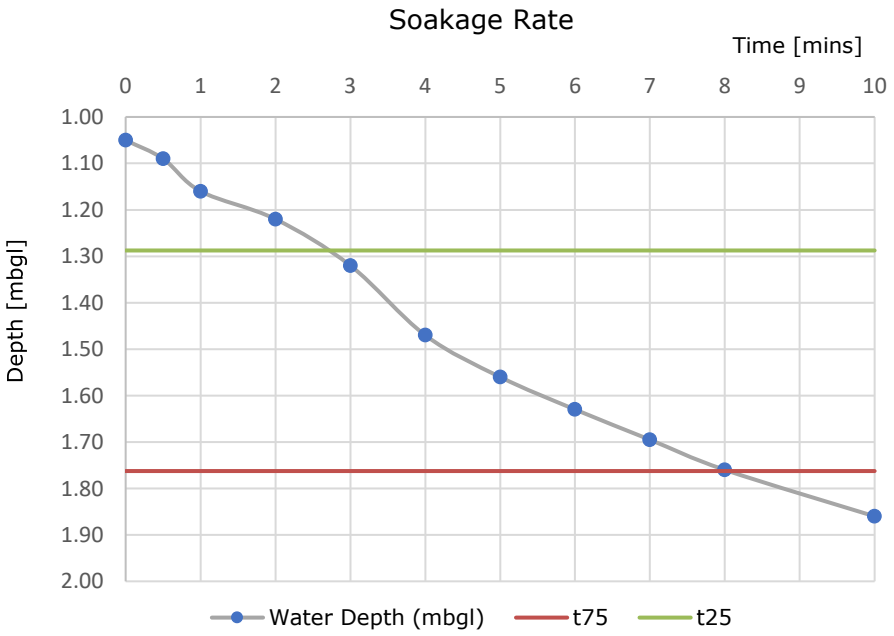
Trial Pit SK3

Run 2 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.11
0.5	1.18
1	1.23
2	1.31
3	1.38
4	1.46
5	1.52
6	1.57
7	1.62
8	1.67
9	1.72
10	1.76
11	1.80
12	1.85

Pit Size [m]		
Length	**Width**	**Depth**
1.35	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.778
h_{25}	[m]	1.333
h_{75}-h_{25}	[m]	0.445
time		
t_{75}	[s]	624.00
t_{25}	[s]	144.00
t_{75} - t_{25}	[s]	480.00
effective volume		
v_{75-25}	[m^3]	0.054
effective area		
ap_{50}	[m^2]	1.874
soil infiltration rate		
f	[m/s]	6.01E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

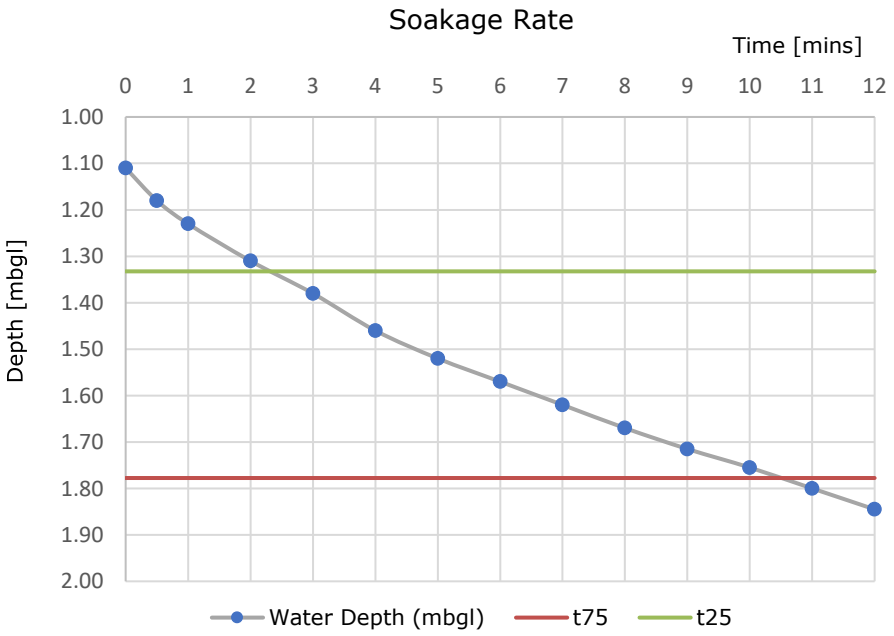
Trial Pit SK3

Run 3 of 3

Test Date 13/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.19
0.5	1.26
1	1.31
2	1.42
3	1.50
4	1.55
5	1.61
6	1.65
7	1.69
8	1.72
9	1.76
10	1.79
11	1.82

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	1.97

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.775
h_{25}	[m]	1.385
h_{75}-h_{25}	[m]	0.390
time		
t_{75}	[s]	558.00
t_{25}	[s]	102.00
t_{75} - t_{25}	[s]	456.00
effective volume		
v_{75-25}	[m^3]	0.046
effective area		
ap_{50}	[m^2]	1.638
soil infiltration rate		
f	[m/s]	6.11E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

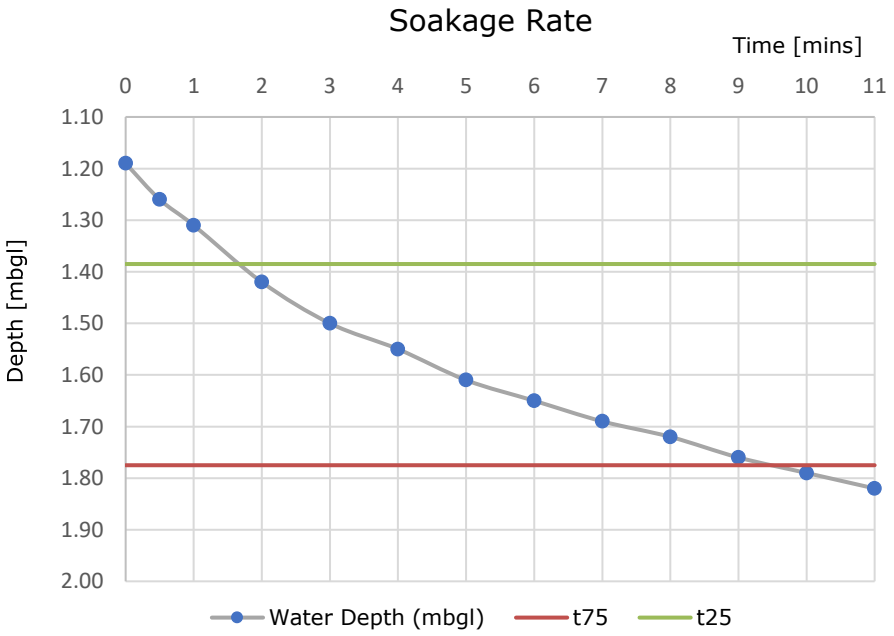
Trial Pit SK4

Run 1 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.14
0.5	1.18
1	1.22
2	1.31
3	1.37
4	1.42
5	1.48
6	1.53
7	1.57
8	1.60
9	1.64
10	1.67
11	1.70
12	1.73
13	1.76

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	1.97

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.763
h_{25}	[m]	1.348
h_{75}-h_{25}	[m]	0.415
time		
t_{75}	[s]	780.00
t_{25}	[s]	150.00
t_{75} - t_{25}	[s]	630.00
effective volume		
v_{75-25}	[m^3]	0.049
effective area		
ap_{50}	[m^2]	1.718
soil infiltration rate		
f	[m/s]	4.49E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

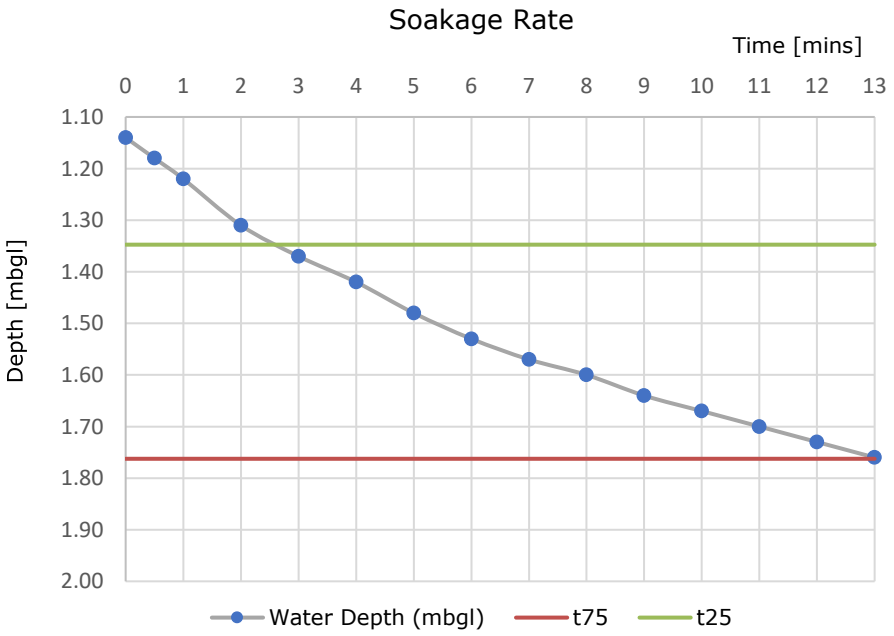
Trial Pit SK4

Run 2 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.12
0.5	1.16
1	1.20
2	1.27
3	1.33
4	1.39
5	1.43
6	1.48
7	1.53
8	1.57
9	1.60
10	1.64
11	1.67
12	1.70
13	1.73
14	1.75
15	1.77

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	1.97

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.758
h_{25}	[m]	1.333
h_{75}-h_{25}	[m]	0.425
time		
t_{75}	[s]	870.00
t_{25}	[s]	180.00
t_{75} - t_{25}	[s]	690.00
effective volume		
v_{75-25}	[m^3]	0.050
effective area		
ap_{50}	[m^2]	1.750
soil infiltration rate		
f	[m/s]	1.24E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

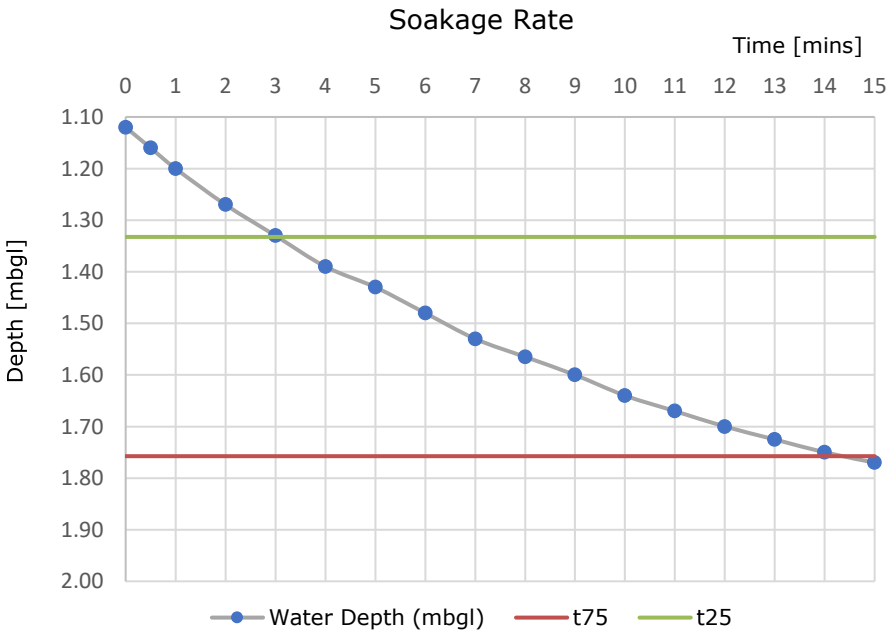
Trial Pit SK4

Run 3 of 3

Test Date 13/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.08
1	1.13
2	1.16
3	1.19
4	1.20
5	1.21
13	1.30
20	1.37
25	1.41
30	1.44
45	1.52
60	1.60
75	1.67
90	1.73
95	1.74
100	1.76
103	1.77

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.770
h_{25}	[m]	1.310
h_{75}-h_{25}	[m]	0.460
time		
t_{75}	[s]	6120.00
t_{25}	[s]	780.00
t_{75} - t_{25}	[s]	5340.00
effective volume		
v_{75-25}	[m^3]	0.054
effective area		
ap_{50}	[m^2]	1.862
soil infiltration rate		
f	[m/s]	5.41E-06

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

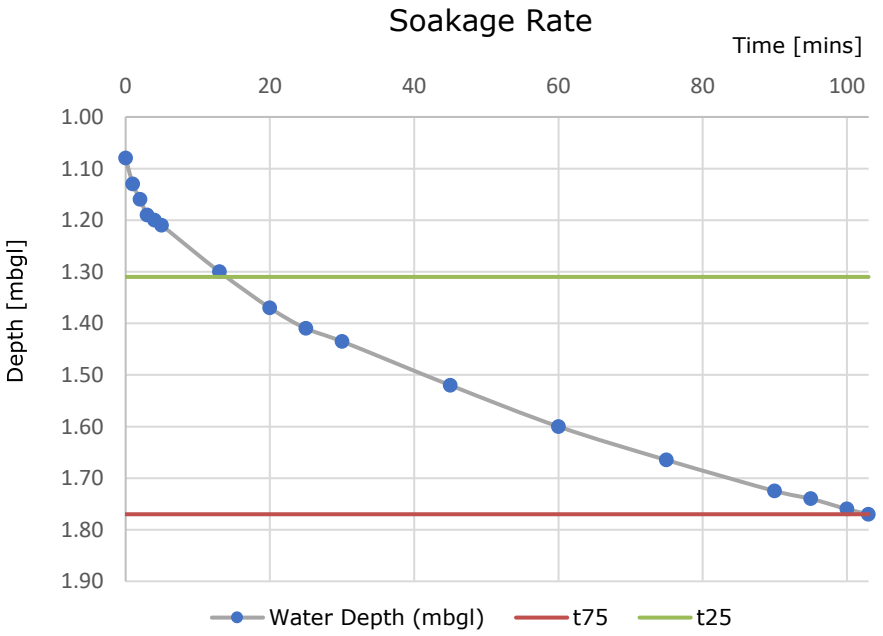
Trial Pit SK5

Run 1 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.12
1	1.14
2	1.16
3	1.17
4	1.18
5	1.19
10	1.24
25	1.33
35	1.39
60	1.49
120	1.59
180	1.70
240	1.75
300	1.78

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.780
h_{25}	[m]	1.340
h_{75}-h_{25}	[m]	0.440
time		
t_{75}	[s]	16860.00
t_{25}	[s]	1560.00
t_{75} - t_{25}	[s]	15300.00
effective volume		
v_{75-25}	[m^3]	0.051
effective area		
ap_{50}	[m^2]	1.798
soil infiltration rate		
f	[m/s]	1.87E-06

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

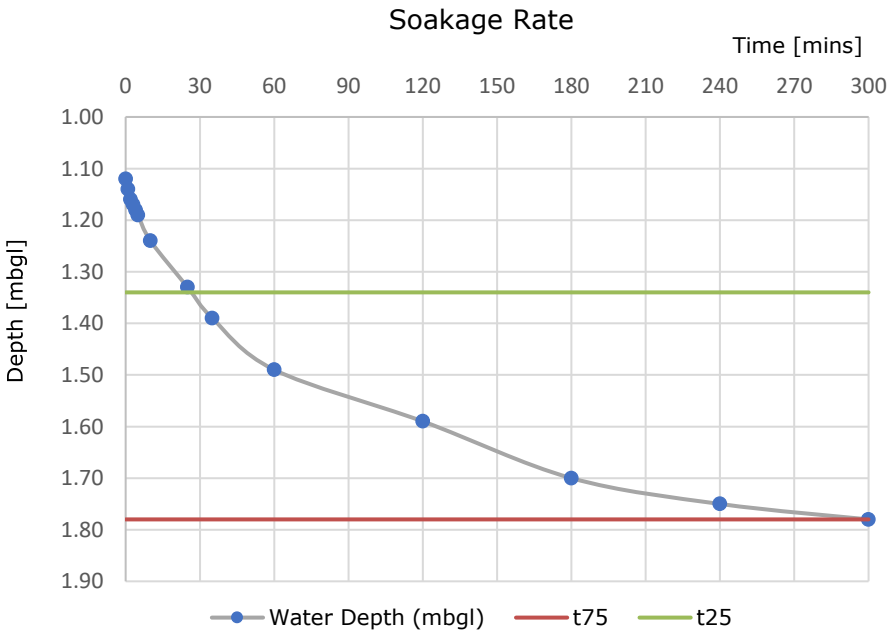
Trial Pit SK5

Run 2 of 3

Test Date 13/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.02
1	1.05
2	1.07
3	1.09
4	1.10
5	1.12
10	1.19
15	1.24
20	1.28
30	1.34
50	1.44
60	1.49
80	1.55
120	1.66
135	1.70
165	1.77

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.755
h_{25}	[m]	1.265
h_{75}-h_{25}	[m]	0.490
time		
t_{75}	[s]	9420.00
t_{25}	[s]	1020.00
t_{75} - t_{25}	[s]	8400.00
effective volume		
v_{75-25}	[m^3]	0.057
effective area		
ap_{50}	[m^2]	1.958
soil infiltration rate		
f	[m/s]	3.49E-06

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

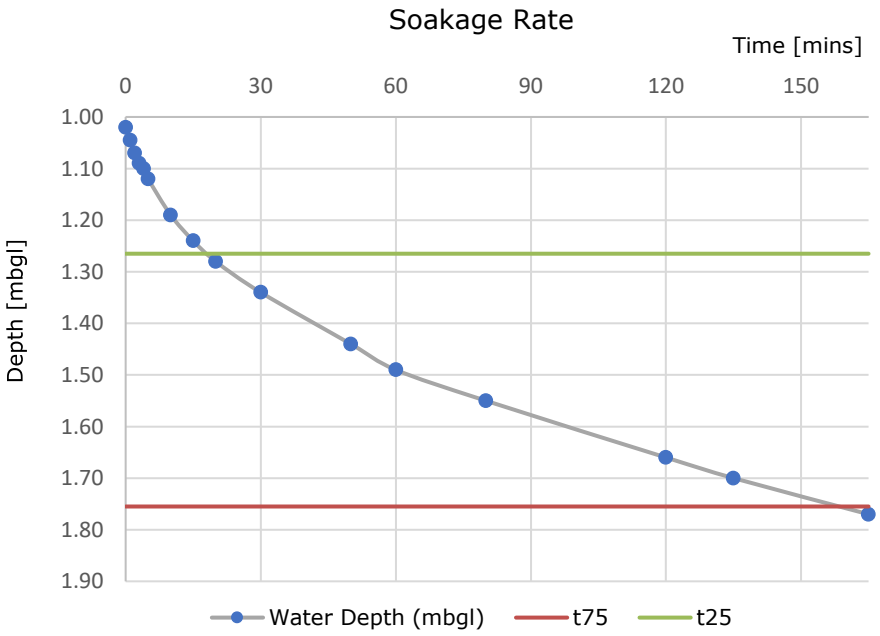
Trial Pit SK5

Run 3 of 3

Test Date 13/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.29
1	1.37
2	1.44
3	1.48
4	1.52
5	1.54
6	1.57
7	1.59
8	1.60
9	1.62
10	1.64
11	1.65
15	1.70
20	1.75
25	1.80
30	1.85

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.823
h_{25}	[m]	1.468
h_{75}-h_{25}	[m]	0.355
time		
t_{75}	[s]	1620.00
t_{25}	[s]	150.00
t_{75} - t_{25}	[s]	1470.00
effective volume		
v_{75-25}	[m^3]	0.042
effective area		
ap_{50}	[m^2]	1.526
soil infiltration rate		
f	[m/s]	1.85E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

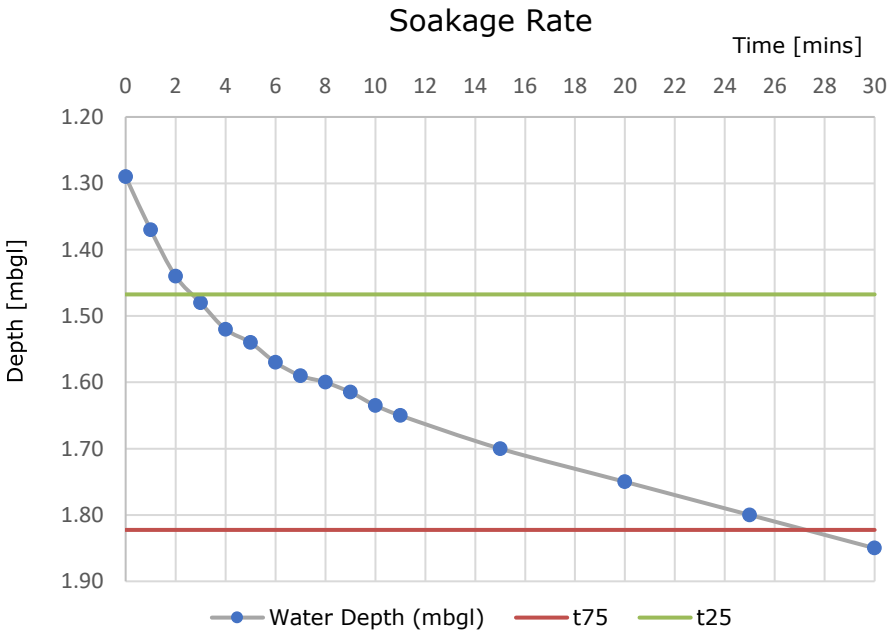
Trial Pit SK6

Run 1 of 3

Test Date 11/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.26
1	1.31
2	1.36
3	1.40
4	1.43
5	1.45
6	1.48
7	1.51
8	1.53
9	1.55
10	1.57
15	1.65
20	1.70
25	1.75
30	1.80
35	1.84

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.815
h_{25}	[m]	1.445
h_{75}-h_{25}	[m]	0.370
time		
t_{75}	[s]	1920.00
t_{25}	[s]	300.00
t_{75} - t_{25}	[s]	1620.00
effective volume		
v_{75-25}	[m^3]	0.043
effective area		
ap_{50}	[m^2]	1.574
soil infiltration rate		
f	[m/s]	1.70E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

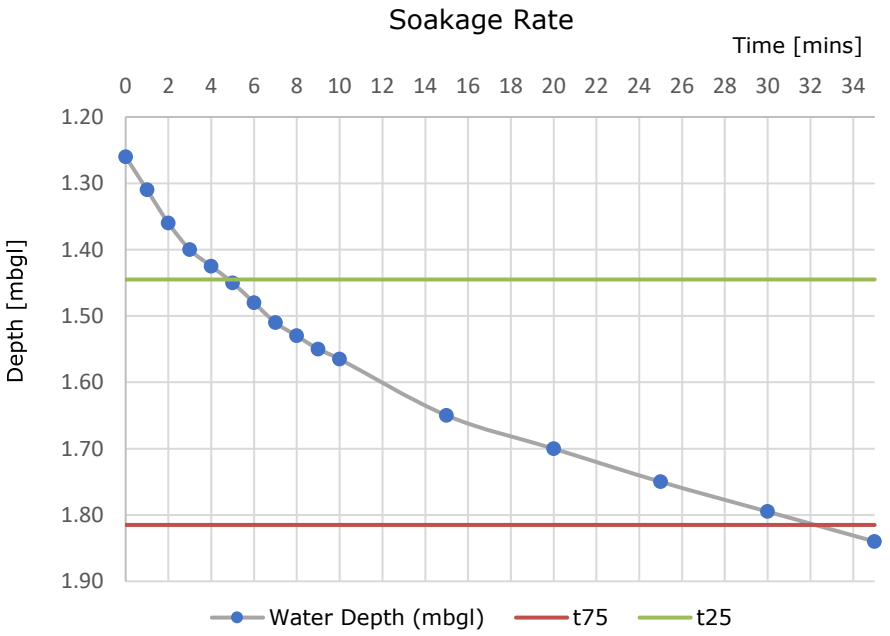
Trial Pit SK6

Run 2 of 3

Test Date 11/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land Off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Time [min]	Depth to Water [mbgl]
0	1.15
1	1.25
2	1.31
3	1.36
4	1.41
5	1.43
6	1.46
7	1.48
8	1.51
9	1.54
10	1.55
15	1.66
20	1.70
25	1.76
30	1.80

Pit Size [m]		
Length	**Width**	**Depth**
1.30	0.30	2.00

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.788
h_{25}	[m]	1.363
h_{75}-h_{25}	[m]	0.425
time		
t_{75}	[s]	1680.00
t_{25}	[s]	180.00
t_{75} - t_{25}	[s]	1500.00
effective volume		
v_{75-25}	[m^3]	0.050
effective area		
ap_{50}	[m^2]	1.750
soil infiltration rate		
f	[m/s]	1.89E-05

Effective volume adjausted by a factor of 0.3 to account for gravel backfill.

Backfilled with 20mm gravel to 0.4m bgl.

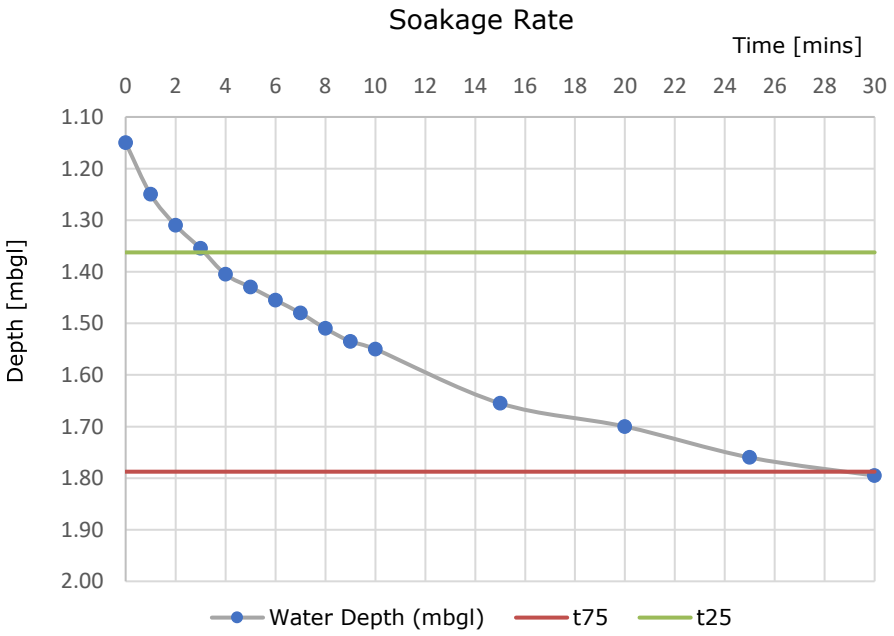
Trial Pit SK6

Run 3 of 3

Test Date 12/02/2019

Groundwater Encountered: N/A

Remarks:



Calculated by JD

Checked by: SG

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land at Fir Covert Road, Taverham

Time [min]	Depth to Water [mbgl]
0	1.21
2	1.24
3	1.27
4	1.29
5	1.31
10	1.37
15	1.41
20	1.45
30	1.49
40	1.53

Pit Size [m]		
Length	**Width**	**Depth**
1.80	0.35	1.56

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.473
h_{25}	[m]	1.298
h_{75}-h_{25}	[m]	0.175
time		
t_{75}	[s]	1500.00
t_{25}	[s]	261.00
t_{75} - t_{25}	[s]	1239.00
effective volume		
v_{75-25}	[m^3]	0.110
effective area		
ap_{50}	[m^2]	1.383
soil infiltration rate		
f	[m/s]	6.44E-05

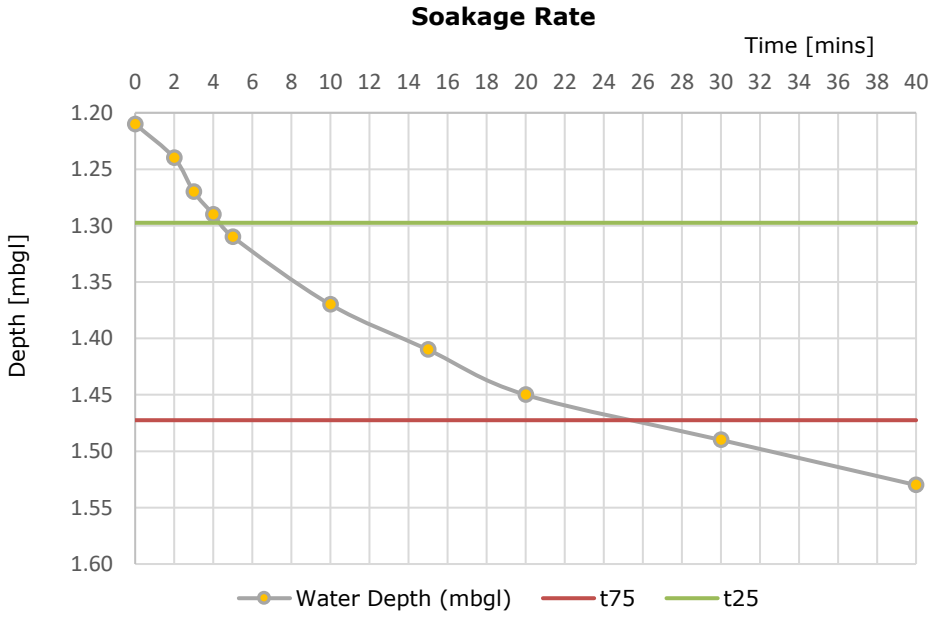
Trial Pit TP201

Run 1 of 3

Test Date 15/05/2019

Groundwater Encountered: N/A

Remarks:



Calculated by SG

Checked by: TP

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land at Fir Covert Road, Taverham

Time [min]	Depth to Water [mbgl]
0	1.03
2	1.06
3	1.08
4	1.12
5	1.14
10	1.15
15	1.20
20	1.25
30	1.32
40	1.40
50	1.42
65	1.44

Pit Size [m]		
Length	**Width**	**Depth**
1.80	0.35	1.56

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.428
h_{25}	[m]	1.163
h_{75}-h_{25}	[m]	0.265
time		
t_{75}	[s]	3510.00
t_{25}	[s]	702.00
t_{75} - t_{25}	[s]	2808.00
effective volume		
v_{75-25}	[m^3]	0.167
effective area		
ap_{50}	[m^2]	1.770
soil infiltration rate		
f	[m/s]	3.36E-05

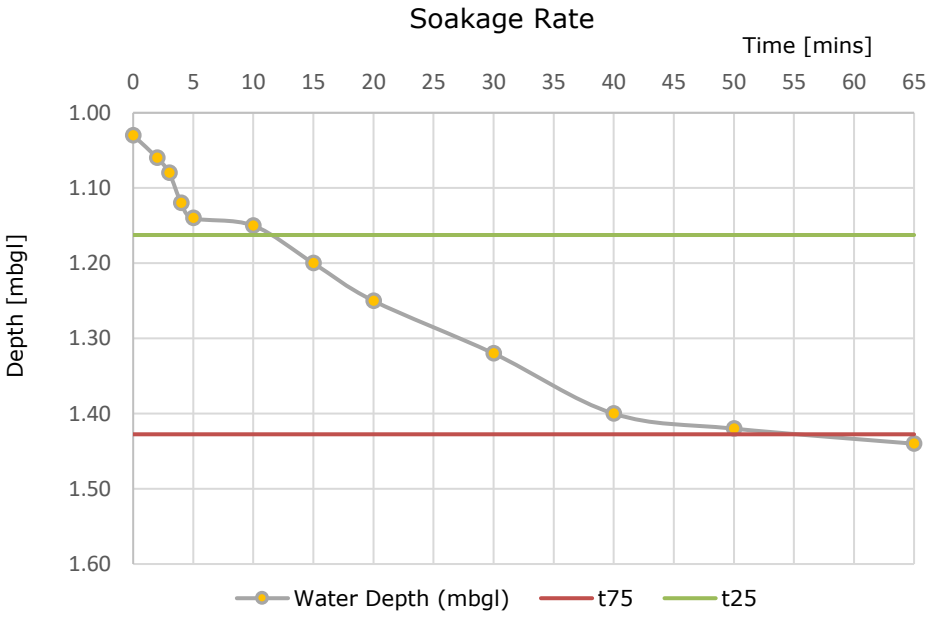
Trial Pit TP201

Run 2 of 3

Test Date 15/05/2019

Groundwater Encountered: N/A

Remarks:



Calculated by SG

Checked by: TP

TRIAL PIT INFILTRATION TEST - BRE DIGEST 365

Project Number: 3921,GI

Date: 21/06/2019

Project Name: Land at Fir Covert Road, Taverham

Time [min]	Depth to Water [mbgl]
0	1.10
1	1.13
2	1.15
3	1.16
4	1.18
5	1.20
10	1.25
15	1.32
20	1.35
30	1.42
40	1.46
45	1.48

Pit Size [m]		
Length	**Width**	**Depth**
2.20	0.35	1.60

Infiltration Rate Calculations		
Parameter	**Unit**	**Result**
height		
h_{75}	[m]	1.475
h_{25}	[m]	1.225
h_{75}-h_{25}	[m]	0.250
time		
t_{75}	[s]	2610.00
t_{25}	[s]	450.00
t_{75} - t_{25}	[s]	2160.00
effective volume		
v_{75-25}	[m^3]	0.193
effective area		
ap_{50}	[m^2]	2.045
soil infiltration rate		
f	[m/s]	4.36E-05

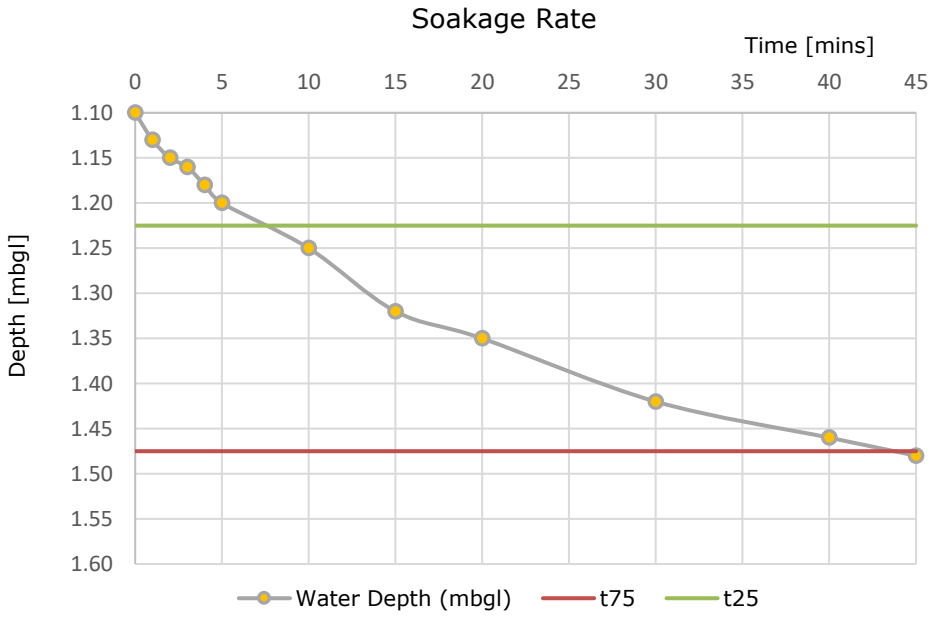
Trial Pit TP201

Run 3 of 3

Test Date 15/06/2019

Groundwater Encountered: N/A

Remarks:



Calculated by SG

Checked by: TP

Appendix 7 – Gas and Groundwater Monitoring Data

Ground Gas and Groundwater Monitoring
(WS01, WS06, WS08, WS11, WS13, WS17)

GROUND GAS AND GROUNDWATER MONITORING DATA

GEOSPHERE ENVIRONMENTAL

Project Number: 3710,SK

Project Name: Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Date: 21/06/2019

Exploratory Hole Location WS01 **Date of Installation** 12/02/2019

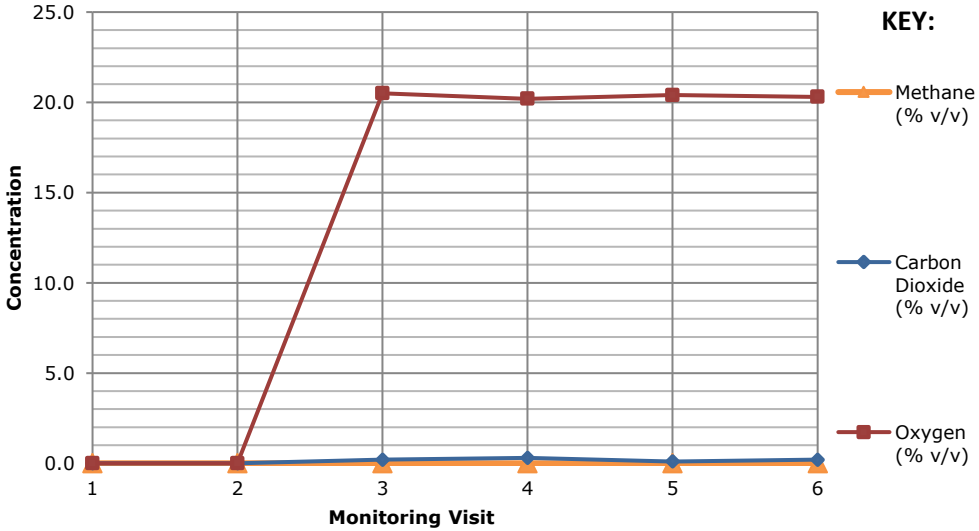
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	20/02/2019	1015	nm	nm	nm	nm	nm	nm	nm	nm	Dry	0.79	Cold, Overcast, Wet, Calm	Well vandalised
2nd visit	24/02/2019	1030	<0.1	<2	nm	nm	nm	nm	nm	nm	Dry	2.94	Warm, Sunny, Dry, Calm	Installation of protective top-hat cover, replacement of bung and
3rd visit	01/03/2019	1013	<0.1	<2	0.2	20.5	-0.3	0	0	0	Dry	2.94	Cool, Overcast, Damp, Breezy	
4th visit	08/03/2019	1005	<0.1	<2	0.3	20.2	-0.5	0	0	0	Dry	2.94	Cold, sunny, damp, breezy	
5th visit	15/03/2019	997	<0.1	<2	0.1	20.4	-0.1	0	0	0	Dry	2.94	Cool, sunny, dry, very windy	
6th visit	21/03/2019	1027	<0.1	<2	0.2	20.3	-0.4	0	0	0	Dry	2.94	Cool, cloudy, dry, calm	

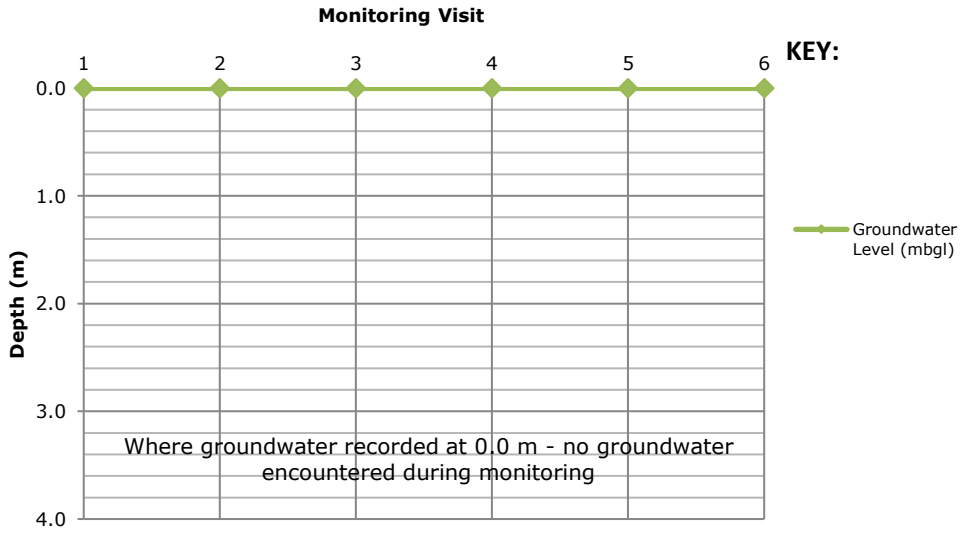
Instruments Used: GFM436 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable

nm Not measured





GROUND GAS AND GROUNDWATER MONITORING DATA

Project Number: 3710,SK

Project Name: Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Date: 21/06/2019

Exploratory Hole Location WS06 **Date of Installation** 12/02/2019

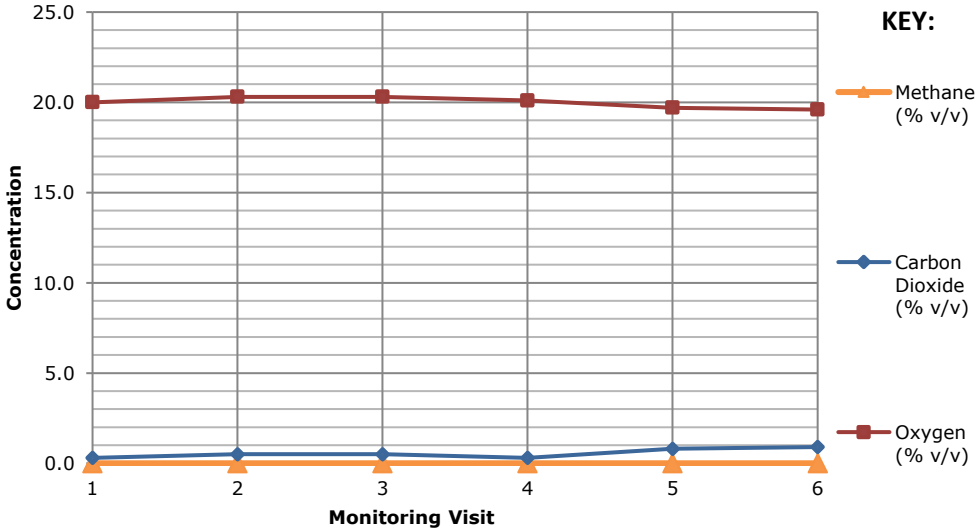
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	20/02/2019	1015	<0.1	<2	0.3	20.0	0.0	0	0	0	Dry	2.93	Cool, Overcast, Dry, Windy	
2nd visit	24/02/2019	1030	<0.1	<2	0.5	20.3	-0.1	0	0	0	Dry	3.05	Warm, Sunny, Dry, Calm	
3rd visit	01/03/2019	1013	<0.1	<2	0.5	20.3	-0.1	0	0	0	Dry	3.05	Cool, Overcast, Damp, Breezy	
4th visit	08/03/2019	1005	<0.1	<2	0.3	20.1	-0.6	0	0	0	Dry	3.05	Cold, sunny, damp, breezy	
5th visit	15/03/2019	997	<0.1	<2	0.8	19.7	-0.3	0	0	0	Dry	3.05	Cool, sunny, dry, very windy	
6th visit	21/03/2019	1027	<0.1	<2	0.9	19.6	-0.4	0	0	0	Dry	3.05	Cool, cloudy, dry, calm	

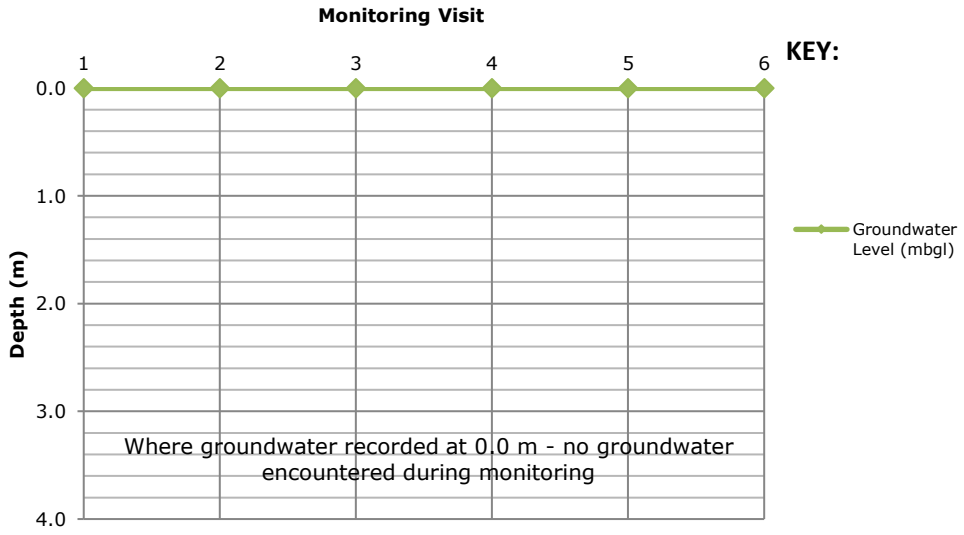
Instruments Used: GFM436 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable

nm Not measured





GROUND GAS AND GROUNDWATER MONITORING DATA

Project Number: 3710,SK

Project Name: Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Date: 21/06/2019

Exploratory Hole Location WS08 **Date of Installation** 12/02/2019

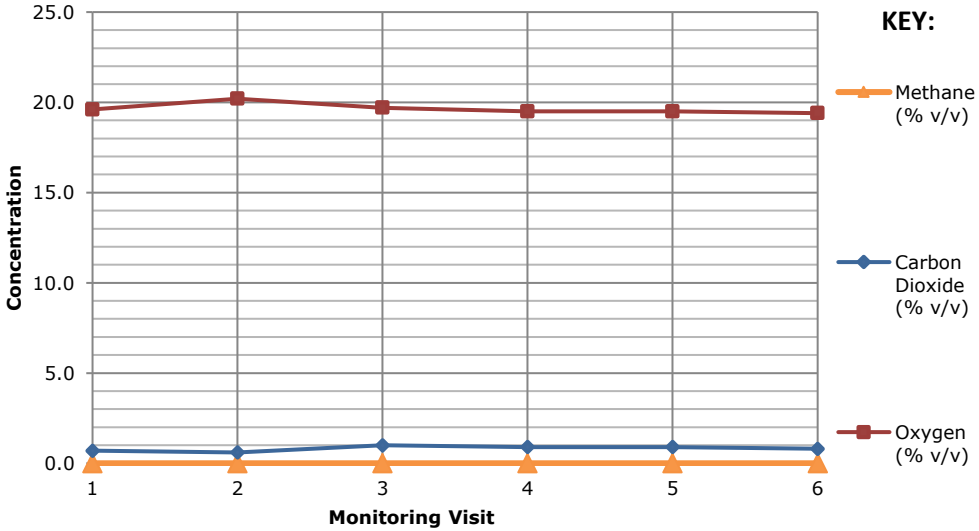
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	20/02/2019	1015	<0.1	<2	0.7	19.6	0.0	0	0	0	Dry	3.81	Cold, Overcast, Wet, Calm	
2nd visit	24/02/2019	1031	<0.1	<2	0.6	20.2	-0.1	0	0	0	Dry	3.81	Warm, Sunny, Dry, Calm	
3rd visit	01/03/2019	1013	<0.1	<2	1.0	19.7	-0.1	0	0	0	Dry	3.81	Cool, Overcast, Damp, Breezy	
4th visit	08/03/2019	1005	<0.1	<2	0.9	19.5	-0.3	0	0	0	Dry	3.81	Cold, sunny, damp, breezy	
5th visit	15/03/2019	997	<0.1	<2	0.9	19.5	-0.1	0	0	0	Dry	3.81	Cool, sunny, dry, very windy	
6th visit	21/03/2019	1027	<0.1	<2	0.8	19.4	-0.4	0	0	0	Dry	3.81	Cool, cloudy, dry, calm	

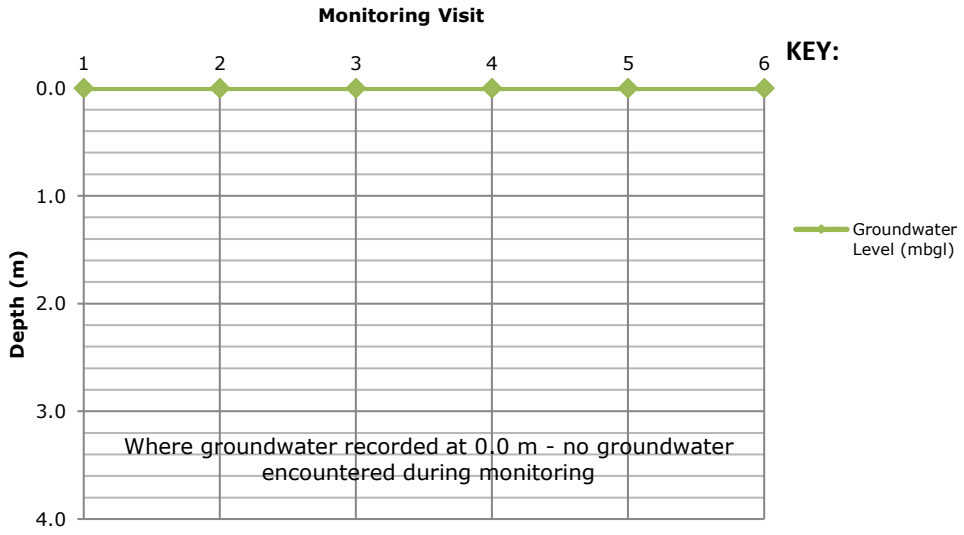
Instruments Used: GFM436 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable

nm Not measured





GROUND GAS AND GROUNDWATER MONITORING DATA

Project Number: 3710,SK

Project Name: Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Date: 21/06/2019

Exploratory Hole Location WS11 **Date of Installation** 13/02/2019

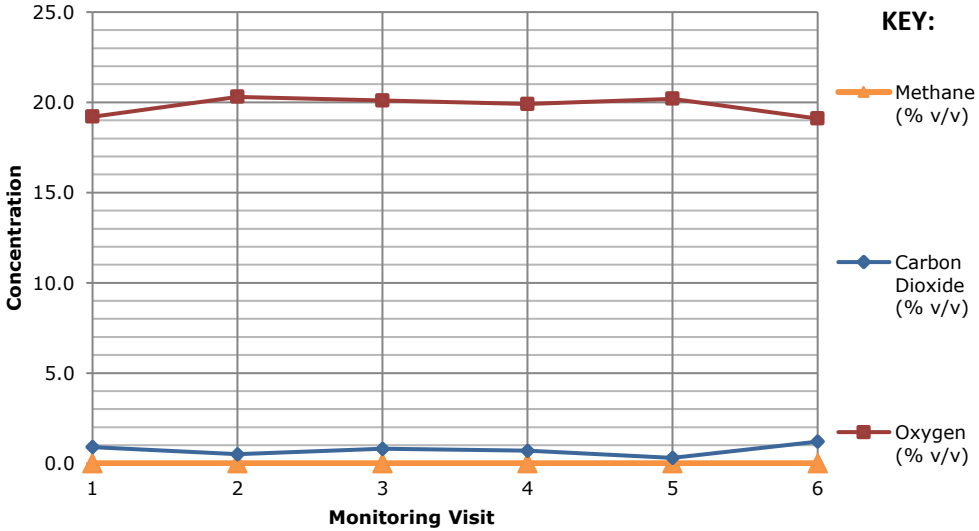
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	20/02/2019	1015	<0.1	<2	0.9	19.2	0.0	0	0	0	Dry	3.88	Cool, Overcast, Dry, Windy	
2nd visit	24/02/2019	1032	<0.1	<2	0.5	20.3	-0.3	0	0	0	Dry	3.96	Warm, Sunny, Dry, Calm	
3rd visit	01/03/2019	1014	<0.1	<2	0.8	20.1	-0.3	0	0	0	Dry	3.96	Cool, Overcast, Damp, Breezy	
4th visit	08/03/2019	1006	<0.1	<2	0.7	19.9	-0.6	0	0	0	Dry	3.96	Cold, sunny, damp, breezy	
5th visit	15/03/2019	997	<0.1	<2	0.3	20.2	-0.1	0	0	0	Dry	3.96	Cool, sunny, dry, very windy	
6th visit	21/03/2019	1027	<0.1	<2	1.2	19.1	-0.3	0	0	0	Dry	3.96	Cool, cloudy, dry, calm	

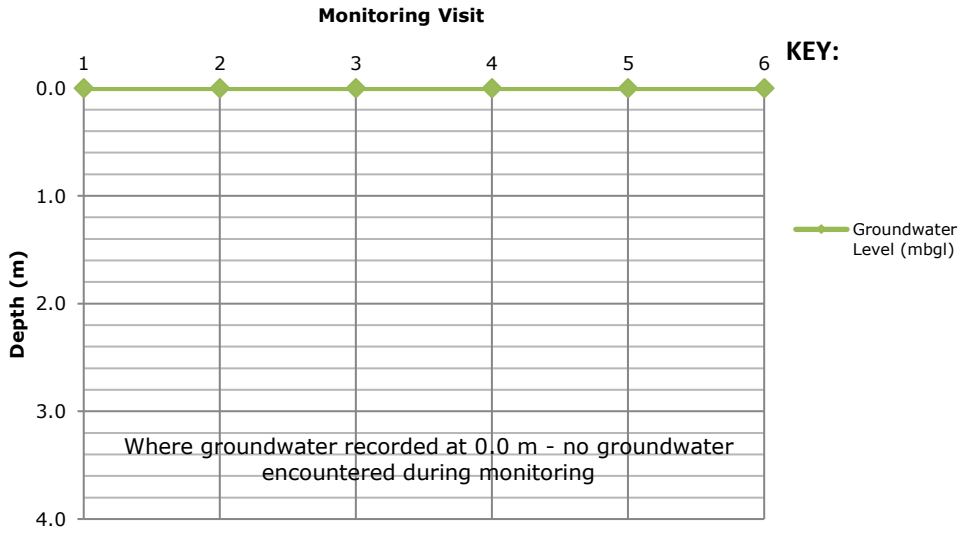
Instruments Used: GFM436 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable

nm Not measured





GROUND GAS AND GROUNDWATER MONITORING DATA

Project Number: 3710,SK

Project Name: Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Date: 21/06/2019

Exploratory Hole Location WS13 **Date of Installation** 13/02/2019

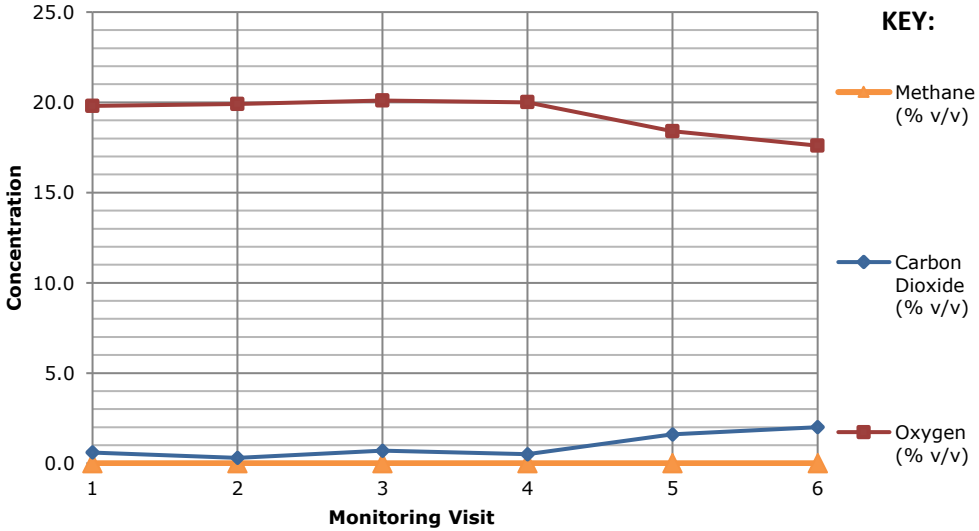
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	20/02/2019	1015	<0.1	<2	0.6	19.8	0.0	0	0	0	Dry	3.02	Cool, Overcast, Dry, Windy	
2nd visit	24/02/2019	1032	<0.1	<2	0.3	19.9	-0.1	0	0	0	Dry	3.06	Warm, Sunny, Drty, Calm	
3rd visit	01/03/2019	1013	<0.1	<2	0.7	20.1	-0.4	0	0	0	Dry	3.05	Cool, Overcast, Damp, Breezy	
4th visit	08/03/2019	1004	<0.1	<2	0.5	20.0	-0.4	0	0	0	Dry	3.05	Cold, sunny, damp, breezy	
5th visit	15/03/2019	997	<0.1	<2	1.6	18.4	-0.4	0	0	0	Dry	3.05	Cool, sunny, dry, very windy	
6th visit	21/03/2019	1027	<0.1	<2	2.0	17.6	-0.6	0	0	0	Dry	3.05	Cool, cloudy, dry, calm	

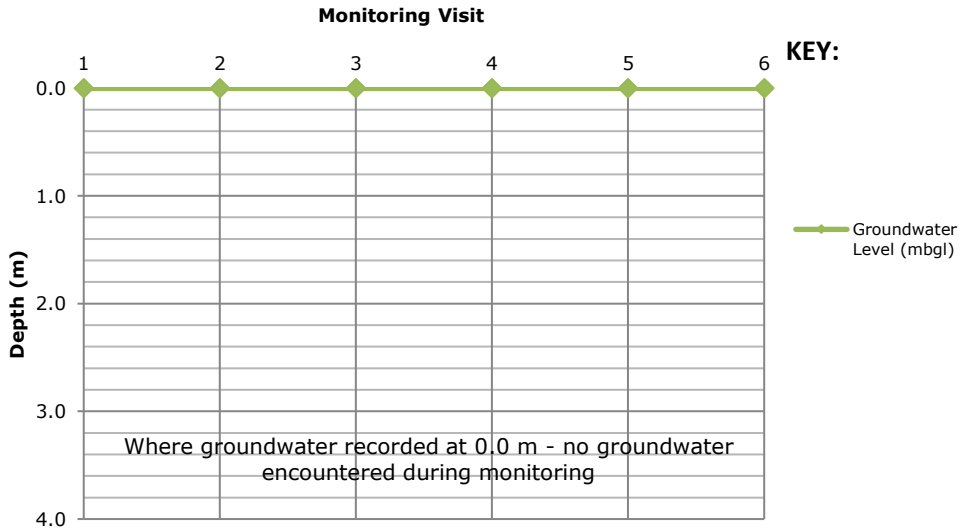
Instruments Used: GFM436 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable

nm Not measured





GROUND GAS AND GROUNDWATER MONITORING DATA

Project Number: 3710,SK

Project Name: Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL.

Date: 21/06/2019

Exploratory Hole Location WS17 **Date of Installation** 13/02/2019

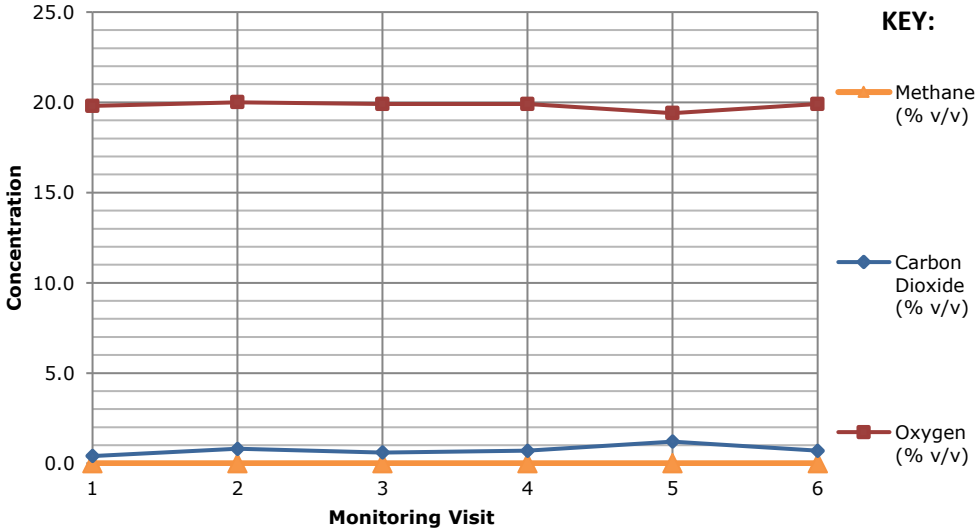
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v)	Methane Content (% LEL)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	20/02/2019	1015	<0.1	<2	0.4	19.8	0.0	0	0	0	Dry	2.93	Cool, Overcast, Dry, Windy	
2nd visit	24/02/2019	1032	<0.1	<2	0.8	20.0	-0.3	0	0	0	Dry	3.04	Warm, Sunny, Dry, Calm	
3rd visit	01/03/2019	1013	<0.1	<2	0.6	19.9	-0.3	0	0	0	Dry	3.05	Cool, Overcast, Damp, Breezy	
4th visit	08/03/2019	1006	<0.1	<2	0.7	19.9	-0.6	0	0	0	Dry	3.04	Cold, sunny, damp, breezy	
5th visit	15/03/2019	997	<0.1	<2	1.2	19.4	0.1	0	0	0	Dry	3.04	Cool, sunny, dry, very windy	
6th visit	21/03/2019	1027	<0.1	<2	0.7	19.9	-0.3	0	0	0	Dry	3.04	Cool, cloudy, dry, calm	

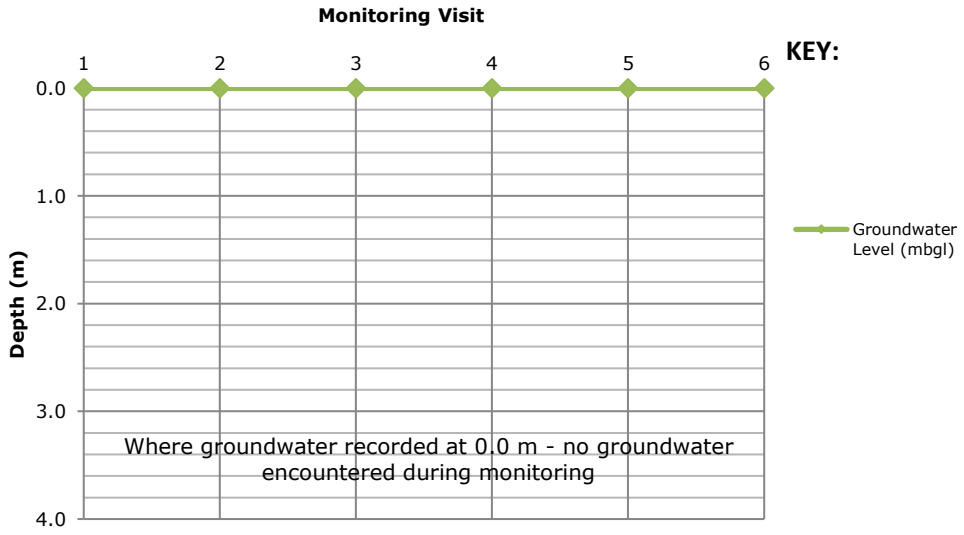
Instruments Used: GFM436 gas analyser / PID MultiRAE lite

REMARKS:

NOTE: **n/a** Not applicable

nm Not measured





Appendix 8 – Environmental Laboratory Test Results

19-02308.2

19-02415.2

19-06966.1

Carl Sullivan
Geosphere Environmental Ltd
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 19-02308

Site Reference:	Taverham (NR8 6HL)
Project / Job Ref:	3921,GI
Order No:	3921,GI
Sample Receipt Date:	15/02/2019
Sample Scheduled Date:	19/02/2019
Report Issue Number:	2
Reporting Date:	17/06/2019

Authorised by:

Dave Ashworth
Deputy Quality Manager

This report supersedes 19-02308, issue no.1.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate						
DETS Report No: 19-02308	**Date Sampled**	12/02/19	12/02/19	12/02/19	12/02/19	12/02/19
Geosphere Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Taverham (NR8 6HL)	**TP / BH No**	WS01	WS01	WS04	WS06	WS11
Project / Job Ref: 3921,GI	**Additional Refs**	ES1	ES2	ES1	ES1	ES1
Order No: 3921,GI	**Depth (m)**	0.20 - 0.30	1.10 - 1.20	0.10 - 0.20	0.20 - 0.30	0.20 - 0.50
Reporting Date: 17/06/2019	**DETS Sample No**	390906	390907	390908	390909	390911

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected			Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.4	7.3		6.4	6.4
Total Cyanide	mg/kg	< 2	NONE	< 2			< 2	< 2
Complex Cyanide	mg/kg	< 2	NONE	< 2			< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2			< 2	< 2
Total Sulphate as SO_4	mg/kg	< 200	NONE		< 200			
Total Sulphate as SO_4	%	< 0.02	NONE		< 0.02			
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	20		15	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	0.02		0.02	< 0.01
Organic Matter	%	< 0.1	MCERTS	1.1			1.6	1.4
Arsenic (As)	mg/kg	< 2	MCERTS	6		6	6	6
Barium (Ba)	mg/kg	< 5	NONE	9			10	16
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5			< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1		< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2		< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	7		8	7	7
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	4		< 4	< 4	< 4
Lead (Pb)	mg/kg	< 3	MCERTS	10		11	10	12
Mercury (Hg)	mg/kg	< 1	NONE	< 1		< 1	< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1			< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	7		5	5	5
Selenium (Se)	mg/kg	< 3	NONE	< 3		< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	22			21	18
Zinc (Zn)	mg/kg	< 3	MCERTS	31		23	28	22
EPH (C10 - C40)	mg/kg	< 6	MCERTS	23			19	10

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 19-02308	**Date Sampled**	12/02/19	12/02/19	12/02/19	12/02/19	
Geosphere Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Taverham (NR8 6HL)	**TP / BH No**	WS13	WS14	WS14	WS17	
Project / Job Ref: 3921,GI	**Additional Refs**	ES1	ES1	ES2	ES1	
Order No: 3921,GI	**Depth (m)**	0.10 - 0.20	0.10 - 0.20	1.50 - 1.60	0.20 - 0.30	
Reporting Date: 17/06/2019	**DETS Sample No**	390912	390913	390914	390915	

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected			Not Detected	
pH	pH Units	N/a	MCERTS	6.2		6.5	6.5	
Total Cyanide	mg/kg	< 2	NONE	< 2			< 2	
Complex Cyanide	mg/kg	< 2	NONE	< 2			< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2			< 2	
Total Sulphate as SO_4	mg/kg	< 200	NONE			< 200		
Total Sulphate as SO_4	%	< 0.02	NONE			< 0.02		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10		< 10	< 10	
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01		< 0.01	< 0.01	
Organic Matter	%	< 0.1	MCERTS	1.4			1.3	
Arsenic (As)	mg/kg	< 2	MCERTS	5	7		5	
Barium (Ba)	mg/kg	< 5	NONE	18			16	
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5			< 0.5	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1		< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2		< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	7	8		8	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	< 4	< 4		< 4	
Lead (Pb)	mg/kg	< 3	MCERTS	13	13		12	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1		< 1	
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1			< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	5	5		5	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3		< 3	
Vanadium (V)	mg/kg	< 2	NONE	17			18	
Zinc (Zn)	mg/kg	< 3	MCERTS	24	28		23	
EPH (C10 - C40)	mg/kg	< 6	MCERTS	10			< 6	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 19-02308	**Date Sampled**	12/02/19	12/02/19	12/02/19	12/02/19	12/02/19
Geosphere Environmental Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Taverham (NR8 6HL)	**TP / BH No**	WS01	WS06	WS11	WS13	WS17
Project / Job Ref: 3921,GI	**Additional Refs**	ES1	ES1	ES1	ES1	ES1
Order No: 3921,GI	**Depth (m)**	0.20 - 0.30	0.20 - 0.30	0.20 - 0.50	0.10 - 0.20	0.20 - 0.30
Reporting Date: 17/06/2019	**DETS Sample No**	390906	390909	390911	390912	390915

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.12	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.15	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{o}C

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-02308	
Geosphere Environmental Ltd	
Site Reference: Taverham (NR8 6HL)	
Project / Job Ref: 3921,GI	
Order No: 3921,GI	
Reporting Date: 17/06/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
390906	WS01	ES1	0.20 - 0.30	7.8	Brown sand with vegetation
390907	WS01	ES2	1.10 - 1.20	7.7	Orange sand
390908	WS04	ES1	0.10 - 0.20	6.8	Brown sand with vegetation
390909	WS06	ES1	0.20 - 0.30	7.6	Brown sand with stones and vegetation
390911	WS11	ES1	0.20 - 0.50	6.7	Brown sand with vegetation
390912	WS13	ES1	0.10 - 0.20	8.5	Brown sand with vegetation
390913	WS14	ES1	0.10 - 0.20	10.7	Brown sand with vegetation
390914	WS14	ES2	1.50 - 1.60	7.3	Orange sand
390915	WS17	ES1	0.20 - 0.30	9.6	Brown sand with vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-02308
Geosphere Environmental Ltd
Site Reference: Taverham (NR8 6HL)
Project / Job Ref: 3921,GI
Order No: 3921,GI
Reporting Date: 17/06/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
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DETS Report No: 19-02415

Site Reference:	Taverham (NR8 6HL)
Project / Job Ref:	3921,GI
Order No:	3921,GI
Sample Receipt Date:	20/02/2019
Sample Scheduled Date:	20/02/2019
Report Issue Number:	2
Reporting Date:	17/06/2019

Authorised by:

Dave Ashworth
Deputy Quality Manager

This report supersedes 19-02415, issue no.1.

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Soil Analysis Certificate						
DETS Report No: 19-02415	**Date Sampled**	18/02/19				
Geosphere Environmental Ltd	**Time Sampled**	None Supplied				
Site Reference: Taverham (NR8 6HL)	**TP / BH No**	WS07				
Project / Job Ref: 3921,GI	**Additional Refs**	None Supplied				
Order No: 3921,GI	**Depth (m)**	1.70 - 1.80				
Reporting Date: 17/06/2019	**DETS Sample No**	391305				

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.9				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-02415	
Geosphere Environmental Ltd	
Site Reference: Taverham (NR8 6HL)	
Project / Job Ref: 3921,GI	
Order No: 3921,GI	
Reporting Date: 17/06/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
391305	WS07	None Supplied	1.70 - 1.80	8.3	Orange sand

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-02415
Geosphere Environmental Ltd
Site Reference: Taverham (NR8 6HL)
Project / Job Ref: 3921,GI
Order No: 3921,GI
Reporting Date: 17/06/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

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DETS Report No: 19-06966

Site Reference:	Fir Covert Road, Taverham, Norwich
Project / Job Ref:	3921,GI
Order No:	3921,GI
Sample Receipt Date:	17/05/2019
Sample Scheduled Date:	17/05/2019
Report Issue Number:	1
Reporting Date:	24/05/2019

Authorised by:

Dave Ashworth
Deputy Quality Manager

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Soil Analysis Certificate						
DETS Report No: 19-06966	Date Sampled	15/05/19	15/05/19	15/05/19		
Geosphere Environmental Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Fir Covert Road, Taverham, Norwich	TP / BH No	WS201	WS203	WS205		
Project / Job Ref: 3921,GI	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 3921,GI	Depth (m)	0.15	0.10	0.10		
Reporting Date: 24/05/2019	DETS Sample No	409047	409048	409049		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected				
pH	pH Units	N/a	MCERTS	6.6	6.7	6.7		
Total Cyanide	mg/kg	< 2	NONE	< 2				
Complex Cyanide	mg/kg	< 2	NONE	< 2				
Free Cyanide	mg/kg	< 2	NONE	< 2				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01				
Organic Matter	%	< 0.1	MCERTS	3.6	1	1.9		
Arsenic (As)	mg/kg	< 2	MCERTS	5	4	7		
Barium (Ba)	mg/kg	< 5	NONE	9	10	8		
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	< 0.5	< 0.5		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	5	5	7		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	< 4	< 4	5		
Lead (Pb)	mg/kg	< 3	MCERTS	17	4	8		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	< 3	< 3	5		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	15	13	19		
Zinc (Zn)	mg/kg	< 3	MCERTS	20	11	30		
EPH (C10 - C40)	mg/kg	< 6	MCERTS	28				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 19-06966	Date Sampled	15/05/19					
Geosphere Environmental Ltd	Time Sampled	None Supplied					
Site Reference: Fir Covert Road, Taverham, Norwich	TP / BH No	WS201					
Project / Job Ref: 3921,GI	Additional Refs	None Supplied					
Order No: 3921,GI	Depth (m)	0.15					
Reporting Date: 24/05/2019	DETS Sample No	409047					

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1				
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1				
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1				
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1				
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1				
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1				
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-06966	
Geosphere Environmental Ltd	
Site Reference: Fir Covert Road, Taverham, Norwich	
Project / Job Ref: 3921,GI	
Order No: 3921,GI	
Reporting Date: 24/05/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
409047	WS201	None Supplied	0.15	9.5	Brown loamy sand with vegetation
409048	WS203	None Supplied	0.10	6.2	Brown loamy sand with vegetation
409049	WS205	None Supplied	0.10	6.6	Brown loamy sand with vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-06966
Geosphere Environmental Ltd
Site Reference: Fir Covert Road, Taverham, Norwich
Project / Job Ref: 3921,GI
Order No: 3921,GI
Reporting Date: 24/05/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

Appendix 9 – Geotechnical Laboratory Test Results

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

0998

Contract	**Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL**
Serial No.	**34711**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

Approved Signatories:

- ☐ **J.C. Garner B.Eng (Hons) FGS** — Technical Director
- ☐ **S.P. Townend FGS** — Quality Manager
- ☐ **W. Johnstone** — Materials Lab Manager
- ☐ **D. Sabnis** — Operations Manager

Date Received: 25/02/2019

Samples Tested Between: 25/02/2019 **and** 11/06/2019

Remarks:

For the attention of Mr C Sullivan
Your Reference No: 3921,GI

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2. (a) UKAS - United Kingdom Accreditation Service
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

0998

Contract	**Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL**		
Serial No.	**34711**	**Target Date**	11/03/2019
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	CBR Test inc. 2.5kg Recompaction																		Sample Remarks
SK01	B	1	0.50	1																		
SK06	B	1	0.50	1																		
Totals				**2**																		**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

UKAS TESTING 0998

Contract	**Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL**
Serial No.	**34711**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
SK01	0.50 - 0.60	B	1	Orangish brown gravelly fine to coarse SAND. Gravel is brown, black and white fine to coarse angular to subangular flint.	

Specimen Preparation

Condition	Remoulded
Details	Recompacted with specified standard effort using 2.5kg rammer

Material Retained on 20mm Sieve Removed		8.7	%
Initial Specimen Details:	Bulk Density	2.03	Mg/m³
	Dry Density	1.92	Mg/m³

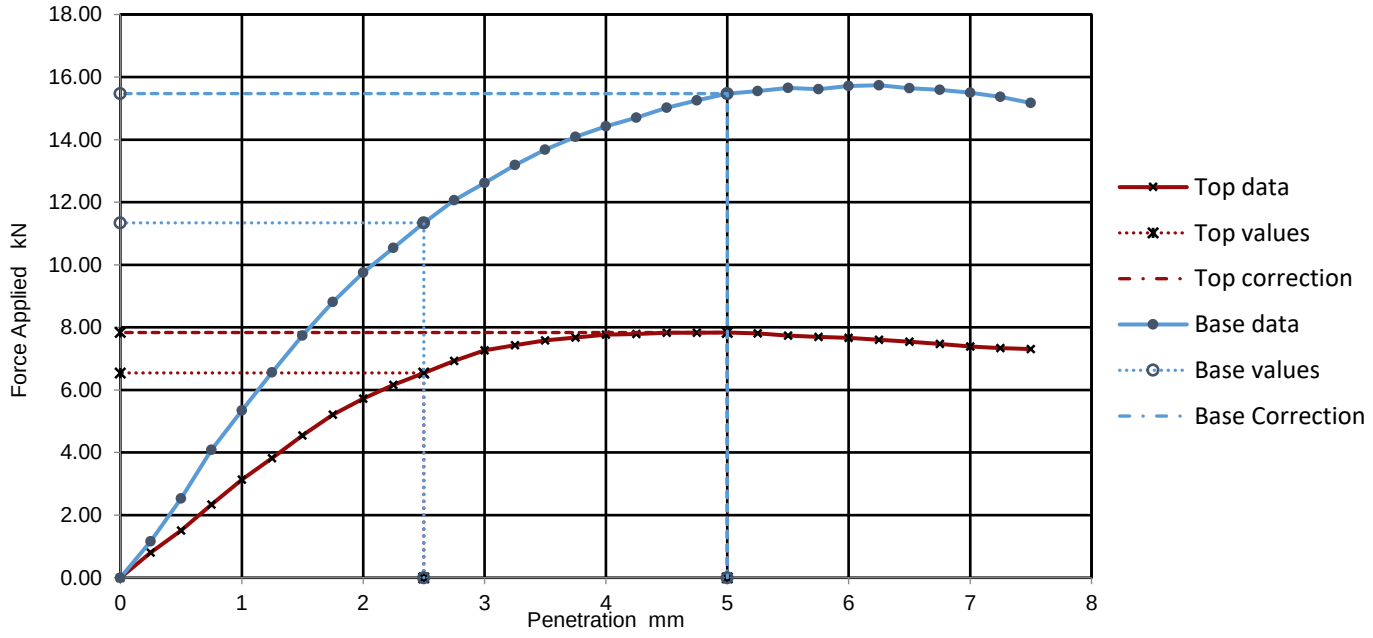
Soaking Details	Not Soaked	
Period of Soaking		days
Time to Surface		days
Amount of Swell Recorded		mm
Initial Water Content		%

Surcharge Applied	15	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	50	39	50		5.6
BASE	No	86	77	86		5.8

Force v Penetration Plots



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.4.4
Method of Test:	BS1377: Part 4: 1990: 7
Type of Sample Key	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter
Comments:	*Only reported if the results from each end of the sample are within ±10% of the mean value. Note:- CBR Results are water content dependent - an increase in water content will result in a decrease of CBR value.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

0998

Contract	**Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL**
Serial No.	**34711**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
SK06	0.50 - 0.60	B	1	Orangish brown gravelly fine to coarse SAND. Gravel is brown, black and white fine and medium angular to subangular flint.	

Specimen Preparation

Condition	Remoulded
Details	Recompacted with specified standard effort using 2.5kg rammer

Material Retained on 20mm Sieve Removed		0.0	%
Initial Specimen Details:	Bulk Density	1.84	Mg/m³
	Dry Density	1.74	Mg/m³

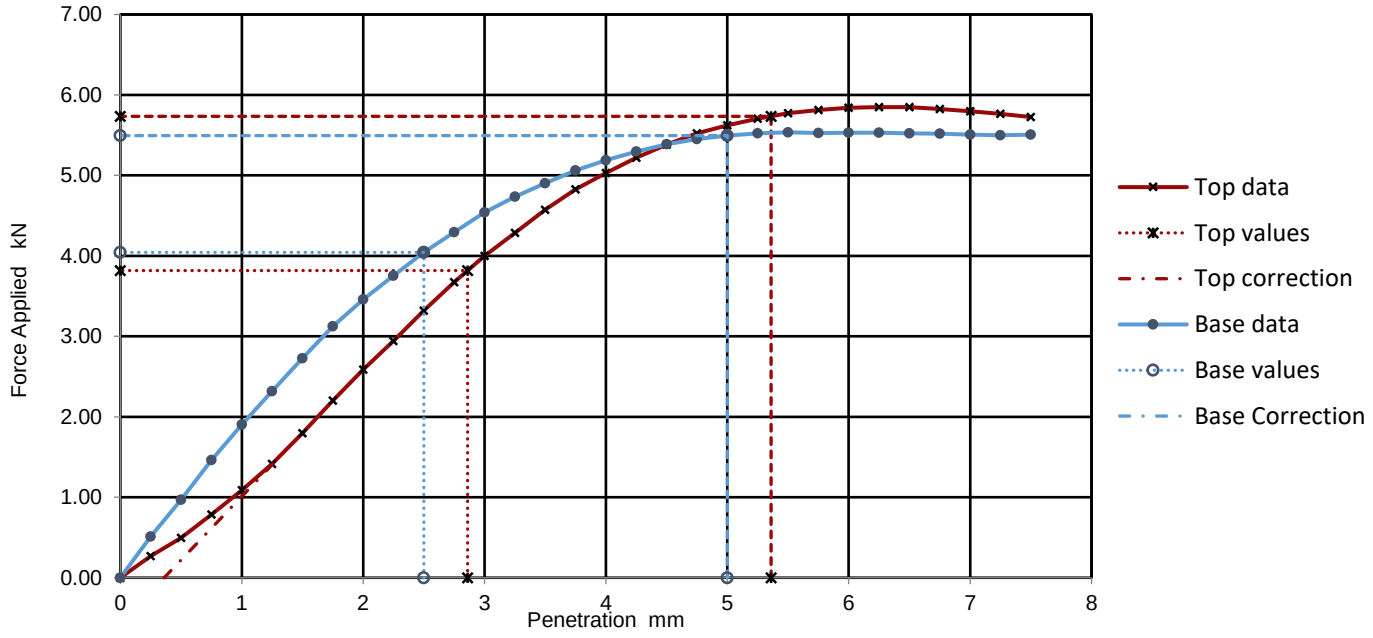
Soaking Details	Not Soaked	
Period of Soaking		days
Time to Surface		days
Amount of Swell Recorded		mm
Initial Water Content		%

Surcharge Applied	15	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	Yes	29	29	29	30	5.7
BASE	No	31	27	31		5.7

Force v Penetration Plots



Method of Preparation: BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.4.4

Method of Test: BS1377: Part 4: 1990: 7

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter

Comments: *Only reported if the results from each end of the sample are within ±10% of the mean value.
Note:- CBR Results are water content dependent - an increase in water content will result in a decrease of CBR value.

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

0998

Contract	**Taverham**
Serial No.	**34711-2**

Client:

Geosphere Environmental Ltd

Head Office
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Geosphere Environmental Ltd

Samples Labelled:

Taverham

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** — Technical Director
- ☐ **S.P. Townend FGS** — Quality Manager
- ☐ **W. Johnstone** — Materials Lab Manager
- ☐ **D. Sabnis** — Operations Manager

Date Received: 13/05/2019

Samples Tested Between: 13/05/2019 **and** 11/06/2019

Remarks:

For the attention of Stephen Gilchrist
Your Reference No: 3921,GI

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2. (a) UKAS - United Kingdom Accreditation Service
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

UKAS TESTING

0998

Contract	**Taverham**		
Serial No.	**34711-2**	**Target Date**	03/06/2019
Scheduled By	Geosphere Environmental Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	California Bearing Ratio Test	Sulphate Content/pH Value																	Sample Remarks
SK1	B	1	0.50	1																		
SK6	B	1	0.50	1																		
TP201	B	1	0.50	1																		
WS201	B	1	0.90		1																	
WS201	D	2	1.50		1																	
WS205	D	1	0.90		1																	
WS205	D	2	1.85		1																	
Totals				**3**	**4**																	**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

0998

Contract	**Taverham**
Serial No.	**34711-2**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
SK1	0.50 - 0.60	B	1	Yellowish brown very gravelly fine to coarse SAND. Gravel is brown, black and white fine to coarse angular to subangular chert.	

Specimen Preparation

Condition	Remoulded
Details	Recompacted with specified standard effort using 2.5kg rammer

Material Retained on 20mm Sieve Removed		4.1	%
Initial Specimen Details:	Bulk Density	2.01	Mg/m³
	Dry Density	1.89	Mg/m³

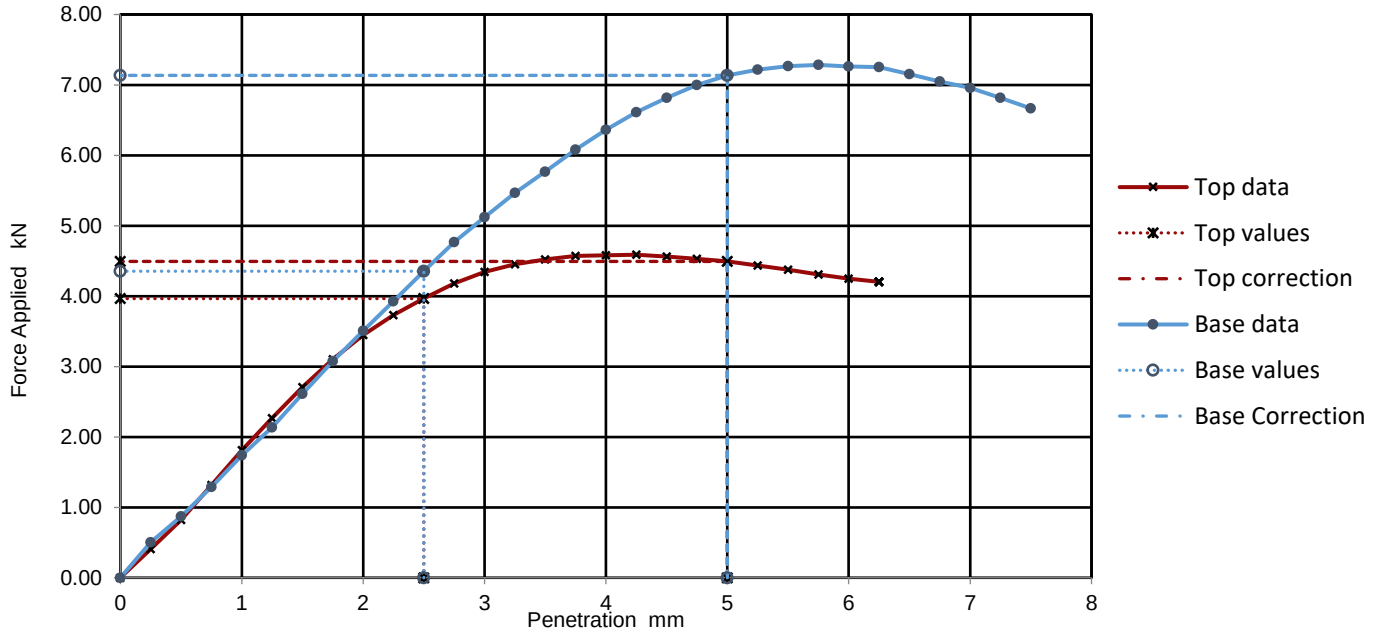
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	1	days
Amount of Swell Recorded		mm
Initial Water Content	6.5	%

Surcharge Applied	15	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	30	22	30	33	11.9
BASE	No	33	36	36		12.4

Force v Penetration Plots



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.4.4, 7.3
Method of Test:	BS1377: Part 4: 1990: 7
Type of Sample Key	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter
Comments:	*Only reported if the results from each end of the sample are within ±10% of the mean value. Note:- CBR Results are water content dependent - an increase in water content will result in a decrease of CBR value.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

UKAS TESTING 0998

Contract	**Taverham**
Serial No.	**34711-2**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
SK6	0.50 - 0.60	B	1	Yellowish brown gravelly fine to coarse SAND with rare soft clayey lumps. Gravel is brown, black and white fine to coarse angular to subangular chert.	

Specimen Preparation

Condition	Remoulded
Details	Recompacted with specified standard effort using 2.5kg rammer

Material Retained on 20mm Sieve Removed		0.5	%
Initial Specimen Details:	Bulk Density	1.96	Mg/m³
	Dry Density	1.84	Mg/m³

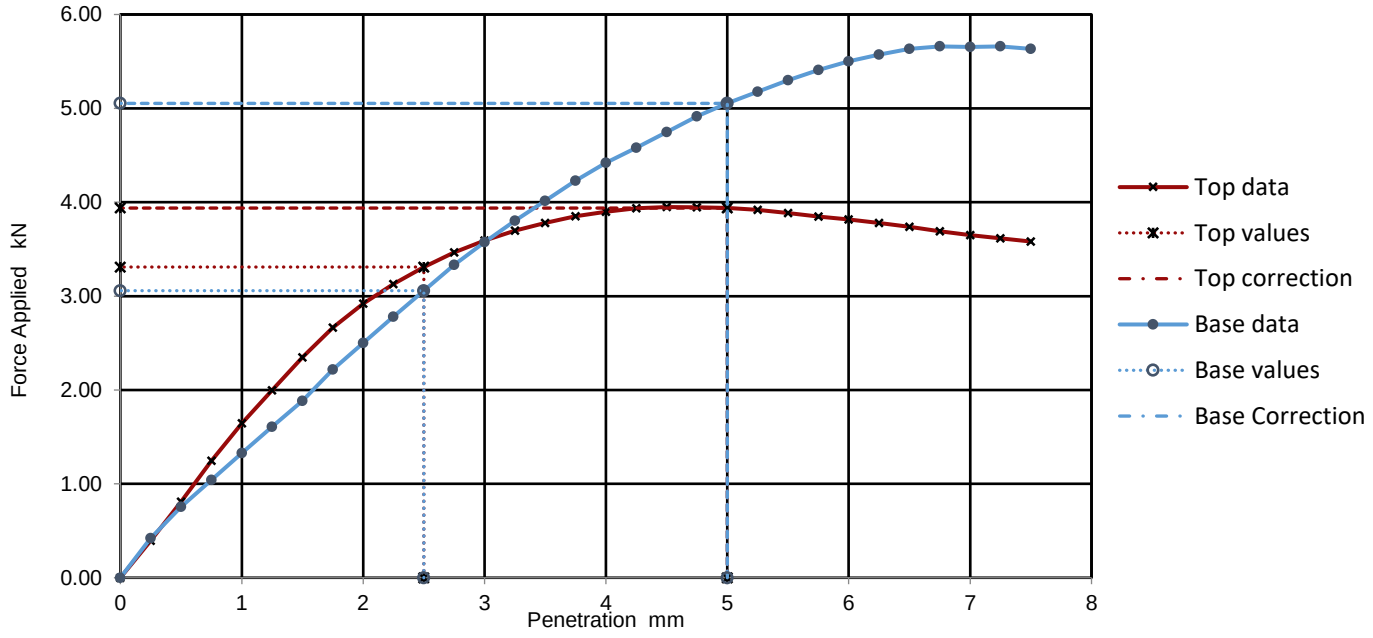
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	1	days
Amount of Swell Recorded		mm
Initial Water Content	6.7	%

Surcharge Applied	15	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	25	20	25	25	13.6
BASE	No	23	25	25		14.3

Force v Penetration Plots



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.4.4, 7.3
Method of Test:	BS1377: Part 4: 1990: 7
Type of Sample Key	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter
Comments:	*Only reported if the results from each end of the sample are within ±10% of the mean value. Note:- CBR Results are water content dependent - an increase in water content will result in a decrease of CBR value.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

UKAS TESTING 0998

Contract	**Taverham**
Serial No.	**34711-2**

CALIFORNIA BEARING RATIO TEST

Borehole /Pit No.	Depth (m)	Sample Type	Sample Reference	Description	Remarks
TP201	0.50	B	1	Brown gravelly fine and medium SAND with rare soft clayey lumps. Gravel is brown, black and white fine to coarse angular to subangular chert.	

Specimen Preparation

Condition	Remoulded
Details	Recompacted with specified standard effort using 2.5kg rammer

Material Retained on 20mm Sieve Removed		2.9	%
Initial Specimen Details:	Bulk Density	1.82	Mg/m³
	Dry Density	1.71	Mg/m³

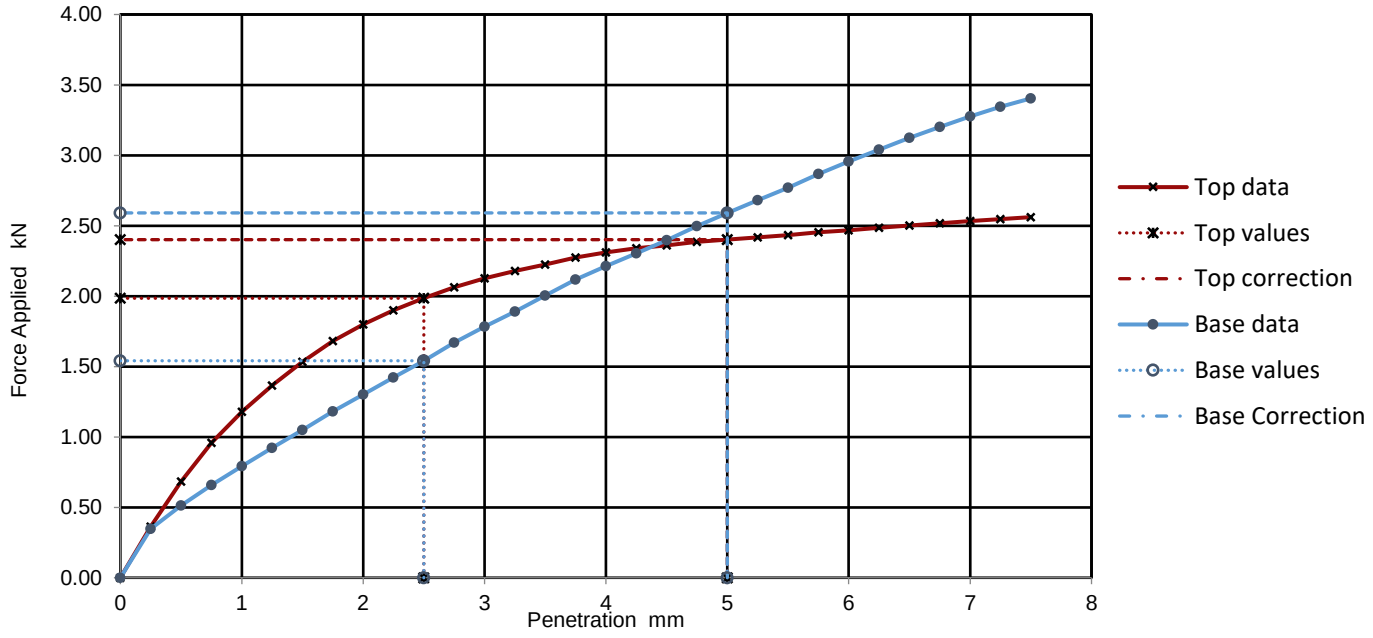
Soaking Details	Soaked	
Period of Soaking	4	days
Time to Surface	1	days
Amount of Swell Recorded		mm
Initial Water Content	6.5	%

Surcharge Applied	15	kg

Test Results

	Curve Correction	CBR Values (%) 2.5mm	5.0mm	Highest	Mean*	Water Content (%)
TOP	No	15	12	15	14	18.8
BASE	No	12	13	13		17.1

Force v Penetration Plots



Method of Preparation:	BS1377: Part1: 2016 & BS1377: Part 4: 1990: 7.2.4.4, 7.3
Method of Test:	BS1377: Part 4: 1990: 7
Type of Sample Key	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT= Split Spoon Sample, C = Core Cutter
Comments:	*Only reported if the results from each end of the sample are within ±10% of the mean value. Note:- CBR Results are water content dependent - an increase in water content will result in a decrease of CBR value.
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 11/06/2019

Contract:	**Taverham**
Serial No:	**34711-2**

DETERMINATION OF THE SULPHATE CONTENT AND pH OF SOIL AND GROUNDWATER

Borehole / Pit No.	Depth (m)	Sample		Conc. of Soluble SO3		Calc'd Conc. Of SO4 (g/L)	pH Value	% Sample Passing 2mm Sieve	Description	Remarks
		Type	Ref.	Water Soluble 2:1 (g/L)	Ground Water (g/L)					
WS201	0.90	B	1	0.11		0.14	6.1	100	Reddish yellow slightly clayey silty fine SAND with occasional light orangish brown mottling	
WS201	1.50	D	2	0.26		0.32	5.3	99	Reddish yellow and light orangish brown silty fine SAND with rare fine and medium gravel	
WS205	0.90	D	1	0.04		0.04	7.2	99	Reddish yellow and light orangish brown slightly clayey silty fine SAND with rare fine and medium gravel	
WS205	1.85	D	2	0.05		0.06	7.0	97	Reddish brown slightly clayey slightly gravelly silty fine SAND with occasional light orangish brown mottling. Gravel is white, brown and black fine and medium chert	

Method of Preparation:	BS1377: Part 1: 2016: 8.5, BS1377: Part 3: 1990: 5.3 Soil/Water Extract, 5.4 Groundwater
Method of Test:	BS1377: Part 3: 1990: 5.5
Type of Sample Key:	U= Undisturbed, B= Bulk, D= Disturbed, J= Jar, W= Water, SPT= Split Spoon Sample, C= Core Cutter
Comments:	**Test not UKAS accredited**
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location, and origin of test specimen within original sample. Oven drying temperature if not 105-110C.

Appendix 10 – Photographs

3921,GI Photographs

Photograph 1

Photograph 2

Photograph 3

Photograph 4

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 1

Looking east across a section of the site, north

Photograph 2

Looing south east across a section of the site, north

Photograph 3

Looking north across a section of the site, south west

Photograph 4

Looking north across a section of the site, south east

PROJECT

Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

PROJECT NUMBER

3921,GI

TITLE

Photographs at Fir Covert Road, Taverham

DATE

21/06/2019

Photograph 5

Photograph 6

Photograph 7

Photograph 8

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 5
Looking west across a section of the site, south

Photograph 6
Looking north west across a section of the site, middle

Photograph 7
Looking north east at a section of the site, east

Photograph 8
Trial Pit SK1

PROJECT
Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

PROJECT NUMBER
3921,GI

TITLE
Photographs at Fir Covert Road, Taverham

DATE
21/06/2019

Photograph 9

Photograph 10

Photograph 11

Photograph 12

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 9
Trial Pit SK2

Photograph 10
Trial Pit SK3

Photograph 11
Trial Pit SK4

Photograph 12
Trial Pit SK5

PROJECT
Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

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3921,GI

TITLE
Photographs at Fir Covert Road, Taverham

DATE
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Photograph 13

Photograph 14

Photograph 15

Photograph 16

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 13
Trial Pit SK6

Photograph 14
WS01

Photograph 15
WS04

Photograph 16
WS06

PROJECT
Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

PROJECT NUMBER
3921,GI

TITLE
Photographs at Fir Covert Road, Taverham

DATE
21/06/2019

Photograph 17

Photograph 18

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 17
WS07

Photograph 18
WS08

Photograph 19
WS09

Photograph 19

Photograph 20

Photograph 20
WS10

PROJECT
Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

PROJECT NUMBER
3921,GI

TITLE
Photographs at Fir Covert Road, Taverham

DATE
21/06/2019

Photograph 21

Photograph 22

Photograph 23

Photograph 24

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 21
WS11

Photograph 22
WS12

Photograph 23
WS13

Photograph 24
WS14

PROJECT
Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

PROJECT NUMBER
3921,GI

TITLE
Photographs at Fir Covert Road, Taverham

DATE
21/06/2019

Photograph 25

Photograph 26

Photograph 27

Photograph 28

GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 25
WS15

Photograph 26
WS16

Photograph 27
WS17

Photograph 28
WS18

PROJECT
Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

PROJECT NUMBER
3921,GI

TITLE
Photographs at Fir Covert Road, Taverham

DATE
21/06/2019

GEOSPHERE ENVIRONMENTAL

Ec Ecology.

Fr Flood Risk.

Ge Geotechnical.

En Environmental.

Kw Knotweed.

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