

Geotechnical & Environmental Engineers

PHASE II SITE INVESTIGATION REPORT STOCKING LANE, SHENINGTON

Carried Out For:

ELAN HOMES LIMITED

November 2021

Report Reference: 21076J-02



Carried Out For: Elan Homes Limited

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EXECUTIVE SUMMARY

INTRODUCTION

Discovery CE (DCE) was instructed by Elan Homes to carry out a Ground Investigation at the site known as Stocking Lane, Shenington.

OBJECTIVES

The overall objectives presented in this report were to recover geotechnical and geo-environmental data to allow assessment of the underlying ground conditions at the site with respect to geotechnical and contaminated land issues relevant to the proposed development

SITE

The site is located off Stocking Lane, Shenington centred approximately at National Grid reference 436889, 242743 and occupies an area of approximately 2.75 hectares. The site is irregular in shape, and at the time of investigation was an open field used for animal grazing.

DEVELOPMENT PROPOSALS

It is understood that the site will comprise a housing development consisting of semi-detached and detached houses, small apartments and bungalows with gardens and public open spaces.

GEOLOGY AND HYDROGEOLOGY

British Geological Survey (BGS) maps indicate that the solid geology at the site comprises the Marlstone Rock formation – composed of Ferruginous Limestone and Ironstone. No superficial or drift deposits are indicated to lie stratigraphically above this at the site.

The Environment Agency (EA) indicates the Marlstone Rock formation is classified as a Secondary A aquifer.

FIELDWORK AND LABORATORY TESTING

The fieldwork was undertaken in general accordance with BS5930 (2015) and comprised: excavation of 7 no trial pits with follow on Soakaway Infiltration Testing in 2 No. pits, excavation of 7 No. hand dug trial pits, 7 No. Dynamic Sample boreholes, installation of 4 No. gas and groundwater monitoring wells.

Geotechnical laboratory was undertaken on a total of 6 No. samples, chemical testing on 36 No. soil samples.

GROUND CONDITIONS

The ground conditions at the site where in general accordance with those anticipated from the geological mapping and included grass overlying topsoil comprising brown, orange-brown, yellow-orange-brown sandy clayey GRAVEL and sandy gravelly CLAY with occasional fine rootlets (< 5 mm). This was in turn underlain by the Marlstone Rock formation which comprised medium dense and dense becoming very dense orange-brown slightly clayey sandy GRAVEL, becoming orange-brown and dark brown occasionally dark grey thinly laminated SANDSTONE with regular iron staining and iron deposits. The Marlstone Rock formation was not fully penetrated.

In DS101 and DS102 loose and very loose orange-brown slightly gravelly clayey SAND was encountered from 3.00 m below ground level (bgl).

No groundwater was encountered during the fieldworks or the subsequent monitoring visits to date.

HUMAN HEALTH ASSESSMENT

The results of the chemical testing on the soils were compared to the published Generic Assessment Criteria (GAC). Exceedances of arsenic, nickel and vanadium were recorded. It is recommended that a suitable thickness (recommendation for a minimum of 0.60 m) of clean cover is provided in garden or landscaped areas across the site.

It is recommended that a remediation strategy be compiled for the site and submitted to the relevant local authority.

CONTROLLED WATERS RISK ASSESSMENT

No viable pollutant linkage has been identified at the site and the risk to controlled waters is considered VERY LOW / NEGLIGIBLE

GROUND GAS ASSESSMENT

4 no. visits have been undertaken for gas and groundwater monitoring to date, with 2 further visits scheduled and to be reported on once complete. To date, the results show volumetric flow rates at or below 0.1 l/hr with low or absent readings for methane and carbon dioxide. As such the site is classified as a Characteristic Situation 1.

The site is in a Radon affected area with 30% of dwellings exceeding Radon Action Level. As a result, **FULL RADON PROTECTION MEASURES** will be required for all new dwellings.



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GEOTECHNICAL ASSESSMENT

Ground Strength	Ground strength was generally found to be increasing in strength with depth. In general, SPT testing revealed				
Profile	"N" values between 14 - 60. An average of 31 was calculated. Cohesive material, where present, has been				
	classified as 'firm'.				
	Two areas in the north of the site (DS101 and DS102) exhibited SPT values that lend to a description of				
	loose and very loose, these areas will require further investigation.				
	Interpretation of refusal suggests bands of sandstone and siltstone approaching rockhead or at Marlstone Rock				
	formation as seen in nearby trial pits.				
Clay Volume	The cohesive material underlying the site, where present, have high and very high plasticity. However, due to				
Change Potential	the limited fines content (< 35 %) it is considered as non-shrinkable.				
Spread	An allowable bearing capacity of 125 kN/m ² is considered appropriate for strip foundations up to 0.9 m wide				
Foundations	placed at a minimum depth of 0.75 m below ground level. Total settlement would then be limited to 25 mm. It				
	is recommended that additional investigation is carried out in the north of the site prior to further design				
	development to further assess the locally very loose materials identified in DS101 and DS102 below around 3				
	m depth.				
Pile Foundations	Pile foundations are not considered necessary for the proposed development.				
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Pile Foundations Ground Improvement Floor Slab/Pavement	Pile foundations are not considered necessary for the proposed development. Ground improvement is not considered necessary for the proposed development. Particle size distribution testing and Atterberg limit determinations indicate that near surface clay soils at the site are not considered to be frost susceptible.				
Pile Foundations Ground Improvement Floor Slab/Pavement Design	Pile foundations are not considered necessary for the proposed development. Ground improvement is not considered necessary for the proposed development. Particle size distribution testing and Atterberg limit determinations indicate that near surface clay soils at the site are not considered to be frost susceptible. Following proof rolling and removal of soft spots a design equilibrium CBR of 5% is considered appropriate.				
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Pile Foundations Ground Improvement Floor Slab/Pavement Design Infiltration Properties Excavations Sulphate Assessment	 Pile foundations are not considered necessary for the proposed development. Ground improvement is not considered necessary for the proposed development. Particle size distribution testing and Atterberg limit determinations indicate that near surface clay soils at the site are not considered to be frost susceptible. Following proof rolling and removal of soft spots a design equilibrium CBR of 5% is considered appropriate. Ground bearing floor slabs may be considered appropriate for the site. In area vulnerable to heave, suspended floor slabs should be adopted. Soakaways are considered feasible in parts of the site, a preliminary infiltration rate of 1.01 x10⁻³ is considered appropriate for the site. No special precautions required. Chemical assessment indicates soils from the topsoil and Marlstone Rock formation are classified as DS – 1, AC – 1. No special precautions are required. 				



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1 INTRODUCTION

1.1 Engagement of Discovery CE Limited

Discovery CE Limited (DCE) was instructed by Elan Homes Ltd to carry out a Ground Investigation at a site known as Stocking Lane, Shenington.

The offer to carry out the works is contained in DCE proposal reference 21076J-QLO01 dated 7th July 2021 and the instruction to proceed with the work was contained in an email from Elan Homes Limited dated 2nd August 2021 (order reference ERE16077).

1.2 Objectives and Limitations

This report follows on from a Phase 1 Geo-environmental Desk Study (see DCE report reference 21076J "Desk Study and Preliminary Risk Assessment") which has been used to facilitate the planning and execution of the Ground Investigation. The overall objectives of the work presented in this report were to carry out a ground investigation to gather geological, geotechnical and environmental data to allow assessment of the underlying ground conditions at the site with respect to Geotechnical and Contaminated Land issues relevant to the proposed development. Specifically the objectives were as follows:

- to carry out intrusive investigation to identify the general near surface geological conditions beneath the subject site;
- 2. to carry out in-situ and laboratory testing to allow assessment of the geotechnical conditions beneath the site;
- to assess the likely magnitude and extent of potential Contaminants of Concern identified in the Phase 1 Desk Study or from field observations in both soil and groundwater;
- 4. to recover hydrogeological data to allow refinement of the Conceptual Site Model;
- 5. to provide and interpretation of the geotechnical data recovered and present recommendations for potential foundation design and conditions with respect to chemical attack on buried concrete;

- 6. to carry out a Human Health Risk assessment using generic assessment criteria and further detailed Human Health Risk assessment if necessary;
- 7. with respect to controlled waters to assess the significance of the Contaminants of Concern recorded at the site through screening against generic assessment criteria and if required detailed quantitative risk assessment;
- 8. to provide conclusions and recommendations for further work if considered necessary.

The conclusions and recommendations provided in this report are based on the conditions encountered at the exploratory hole locations and intrusive work has been restricted to the level of detail considered necessary to achieve the stated objectives. The possibility of significant variations occurring between exploratory holes cannot be discounted and additional assessment may be necessary should such variation be revealed subsequent to preparation of this report.

1.3 Sources of Information

The following sources of information have been used in the preparation of this report.

- Discovery CE Limited report reference 21076J-01 "Desk Study and Preliminary Risk Assessment" 26th August 2021
- 2. Topographical site survey drawing by AD Horner LTD reference 5942-21JAN20-01-02-03 provided by the client.



2 SITE DESCRIPTION

2.1 On site

The site is situated off of Stocking Lane (to the north of the site), in Shenington at approximate National Grid Reference 436889, 242743 as shown in Figure 1 and site occupies an area of approximately 2.75 Ha.



Figure 1 Site location and area of development

The boundaries of the site are formed predominantly by thick hedgerows, combined with fencing and a line of Oak trees to the south-west. Beyond the northern most border is Stocking Lane, to the northeast and east there are domestic properties and Rattlecombe Road, the southern border meets the agricultural land of Quarry Farm, the Shenington Church of England Primary School is beyond the western border.



Currently the site has no buildings or current occupants. Horses, use the northern half of the site as pasture. The flat grassland is surrounded by electric fencing. The southern half is dense Wild Flower Shrubland which is also currently not in use. The site topography is flat and level compared to the surroundings.

2.2 Site surroundings

The site boundaries are formed by hedgerows with some mature trees present along the southern and south-western sections.

Two off-site substations are present, one 24m to the south east, the other 4m to the north, northeast. The 'Old Quarry Farm' is present to the south west of the site as well as Selecto Part UK LTD to the east.

A primary school is located approximately 20 m north-west of the site.

The Phase 1 report identified through the Groundsure report that a former petrol station was located 11 m south-east of the site.

A former quarry was located south and south-west of the site.



3 GEOLOGY, HYDROLOGY & HYDROGEOLOGY

3.1 Geology

British Geological Survey (BGS) sheet no 201 (1:50 000, New Series) indicates that the solid geology at the site comprises the Marlstone Rock formation – composed of Ferruginous Limestone and Ironstone. No superficial or drift deposits are indicated to lie stratigraphically above this at the site.

3.2 Hydrology

The nearest surface water course identified is an inland river located 129 m south of the site, with records suggesting that it contains water all year round. No chemical data is available for this water course.

Records from the EA have recorded the local groundwater body (The Banbury Jurassic) and was given an overall and chemical rating of 'Poor' in 2015.

3.3 Hydrogeology

The Environment Agency classifies the bedrock geology at the site as a Secondary-A Aquifer. This is defined by the EA as:

"Secondary-A – Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers."

Monitoring to date has encountered no groundwater in any of the monitoring standpipes, with no groundwater encountered in any exploratory holes during the intrusive fieldwork.



4 FIELDWORK & LABORATORY TESTING

4.1 Fieldwork

The fieldwork was carried out in general accordance with BS5930 (2015) and comprised the following works. Details of the fieldworks methodology is presented in Appendix D.

Works	Objectives
Installation of 4 no. dynamic sampler boreholes with groundwater and ground gas monitoring standpipes:	To provide detailed rock descriptions to aid the geological succession underlying the site, and to identify ground gas conditions and any potential shallow groundwater at the site. To allow rock strength determinations to be made to aid on the geotechnical understanding of the site.
Installation of 3 no. dynamic sampler boreholes:	To provide detailed rock descriptions to aid the geological succession underlying the site. To allow rock strength determinations to be made to aid on the geotechnical understanding of the site. Furthermore, to install groundwater monitoring wells in the MarIstone Rock Formation . Holes to be placed across the site to allow for as much coverage as possible. To carry out in-situ testing to characterise the geotechnical conditions beneath the site.
3 no. dynamic probes	To provide further information regarding rock strengths across the site.
Excavation of 5 no. Trial Pits: TP101, TP103, TP104, TP106 and TP107	To investigate specific areas likely to contain Contaminants of Concern identified in the Phase 1 Desk study and site walkover survey and to provided information on the general geology beneath the site
Excavation of 6 no Trial pits with hand tools	To provide additional coverage across the site at shallow depths.
Excavation of 2 no. Trial Pits: TP102 and TP105	To provide additional coverage across the site to facilitate BRE 365 infiltration testing.
Gas and Groundwater monitoring and sampling	Monitoring of boreholes including groundwater sampling over a 3 month period to provide data to characterise contaminant status and its variation over time and spatially and allow gas conditions to be characterized.

Table 1Fieldwork Objectives

4.2 Geotechnical Laboratory Testing

A programme of geotechnical laboratory testing has been carried out in accordance with BS1377 (1990) "Methods of Tests for Soils for Civil Engineering Purposes" at a UKAS registered testing laboratory. The tests listed below were carried out at the results are presented in Appendix E.

 Table 2
 Geotechnical Laboratory Testing

BS1377 Ref	Test Description	Number of tests
Part 2 section 3	Moisture Content	3
Part 2 Sections 4 & 5	Atterberg Limit Determination	3
Part 2 Section 9	Particle Size Distribution	3

4.3 Chemical Laboratory Testing

Chemical testing has been carried out on selected samples for determinants based on the identified Contaminants of Concern listed below. Note that the suite of testing varies according to the COCs relevant for the particular exploratory hole location.

The list of CoCs identified includes arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium zinc, total petroleum hydrocarbons criteria working group (TPH CWG),



speciated polycyclic aromatic hydrocarbons (PAHs), herbicides and pesticides and sulphate testing in line with BRE SD1. Furthermore, PBET testing for arsenic was undertaken on two samples following receipt of the initial chemical testing results.

Soil samples and samples for leachate testing were recovered in amber glass jars and/or 1 - 2 kg plastic tubs as advised by the testing laboratory. All samples were stored in temperature controlled conditions (<4°C) once collected and during despatch to the laboratory

Chemical Laboratory testing for soils was carried out using MCERTS accredited tests whenever possible failing this UKAS and/or ISO17025 accredited tests were used. For water samples UKAS and/or ISO17025 accredited tests were used. Details of the accreditation status for specific tests are presented on the laboratory analysis report sheets.

A total of 36 soil samples have been chemically analysed during this investigation, the results of which are presented in Appendix F



5 GROUND AND GROUNDWATER CONDITIONS

5.1 Ground Conditions and Material Properties

The ground conditions at the site where in general accordance with those anticipated from the geological mapping and included grass overlying topsoil which in turn were found to overlie the Marlstone Rock Formation. A summary of the ground conditions encountered in presented in Table 3 below with further discussion presented in the following sections.

Table 3 Summary	of Ground Conditions
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Strata & General Description	Depth Encountered (m bgl)	Thickness Range (m)
1 TOPSOIL Grass overlying brown, orange-brown, yellow-orange-brown sandy clayey GRAVEL, and sandy gravelly CLAY with occasional fine rootlets (< 5mm diameter). Gravel is brown sub-rounded fine to medium quartzite and brown becoming dark brown sub-angular fine to medium sandstone with occasional iron staining. (All exploratory hole locations)	Ground Level – 0.75	0.15 – 0.75
2 MARLSTONE ROCK FORMATION Medium dense and dense becoming very dense orange-brown slightly clayey sandy GRAVEL. Gravel is orange-brown occasionally black sub-angular occasionally tabular, fine to medium, becoming medium to coarse sandstone with iron staining and occasional iron deposits. (DS102 to DS107 inclusive)	0.15 – 4.25	1.90 – 6.25+
Loose and very loose orange-brown slightly gravelly clayey SAND. Gravel is orange-brown occasionally black sub-angular, fine to medium, becoming medium to coarse sandstone with iron staining and occasional iron deposits. (DS101 and DS102 only)	3.00 - 6.45+	1.15 – 6.25+
Firm orange-brown very sandy CLAY (DS102 to DS106 inclusive)	0.50 – 1.90	0.30 – 1.15
Orange-brown and dark brown occasionally dark grey thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine to medium orange sand. (TP101 to TP107 inclusive)	1.75 – 3.00	0.50 – 1.05

5.1.1 Topsoil

Topsoil was encountered in all exploratory hole locations across the site and was found from ground level underlying grass to vary randomly in thickness from between 0.15 to 0.40 m. The stratum varied from a sandy clayey gravel to sandy gravelly clay.

5.1.2 Marlstone Rock Formation

The Marlstone Rock Formation was encountered in all exploratory hole locations across the site, underlying the topsoil. The top of the stratum was found between 0.15 and 0.75 m bgl and extended to a maximum proven depth of 6.45 m bgl (achieved in DS101).



SPT testing revealed SPT 'N' values of varying between 1 and 60, with an average of 31. In general SPTs were greater than or equal to 20. 4 tests (3 from DS101 and 1 from DS102) returned results of 4 or less, together with less recovery than what is expected from the dynamic sampler. The in-situ testing confirms that the cohesive material (where present) is firm.

Dynamic probing undertaken adjacent to DS101 (at location DP101) achieved a maximum penetration of 3.20 m before refusal, whilst probing undertaken adjacent to TP101 and DS107 achieved a maximum penetration of 1.80 and 1.90 m (respectively) before achieving refusal.

Atterberg limit determinations carried out on samples of the cohesive material encountered revealed moisture contents of between 17 and 26 %, liquid limits of 57 to 79 %, plastic limits of 37 to 42 % and plasticity index values of between 15 and 42 % indicating that the material is of high and very high plasticity but due to limited fines content (< 35 %) are non-shrinkable.

Table 4 below gives a summary of the testing undertaken.

-	lest .	Result
SPT test	No. of tests	18
SPTiesi	Result Range	1 to 60 (generally 20 to 50 increasing with depth)
	No. of tests	3
	Moisture Content	17 to 26 %
Atterberg Limit (%)	Liquid Limit	57 to 79%
	Plastic Limit	37 to 42%
	Plasticity Index	15 to 42%
	No. of tests	3
	Very Coarse	0 to 6%
Particle Size Distribution (% Dry Mass)	Gravel	32 to 66%
	Sand	14 to 36%
	Fines	16 to 32%

Table 4 Summary of Geotechnical Testing

5.2 Groundwater Conditions

Groundwater was not encountered during the fieldwork.

Groundwater monitoring wells were installed across the site determine if shallow groundwater exists over the long term at the site. To date no groundwater has been encountered during any of the monitoring visits (4 no. undertaken to date at the issue of this report).

As such, it is deemed that the groundwater table is at greater depth than the depths to which the intrusive works were able to be achieve.

5.3 Infiltration Testing

A total of six infiltration tests were undertaken at the site, 3 each within TP102 and TP105. Once excavated, 1m³ of water was added to the excavation and allowed to drain in accordance with BRE 365.



All tests undertaken achieved full drainage. Rates were then calculated, with a minimum rate of 1.01 x 10^{-3} m/s recorded in TP105. Full details of the infiltration testing are given in Figures A2 – A7 inclusive, while table 5 provides a summary of the results.

Table 5	Summary	of Infiltration	Testing
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Trial Pit Location	First Fill (m/s)	Second Fill (m/s)	Third Fill (m/s)
TP102	2.20 x 10 ⁻³	2.29 x 10 ⁻³	1.58 x 10 ⁻³
TP105	1.58 x 10⁻³	1.32 x 10 ⁻³	1.01 x 10 ⁻³



6 CONTAMINATED LAND ASSESSMENT

6.1 Legislation And Approach

Contaminated Land is defined in Part 2A of the Environmental Protection Act 1990 as "any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

- (a) significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) pollution of controlled waters is being, or is likely to be, caused".

It should be noted that under the Water Act 2003, part (b) of the above definition is to be amended to also include the word "significant".

Land contamination and its risk to human health is a material consideration under the planning regime as it applies to the intended use of a site which requires that risk assessment for planning purposes should be consistent with the requirements under Part 2A and that as a minimum, after carrying out the development and commencement of its use, the land should not be capable of being determined as *Contaminated Land* under Part 2A of the EPA 1990.

The National Planning Policy Framework (NPPF - 2012) puts the onus on local planning authorities to develop their own guidance and processes for dealing with potentially contaminated land under planning.

The key paragraphs from NPPF - 2012 relating to planning and dealing with land contamination are listed below.

^{120.} To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner. 121. Planning policies and decisions should also ensure that: the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation; after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and adequate site investigation information, prepared by a competent person, is presented.



122. In doing so, local planning authorities should focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes. Local planning authorities should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.

Therefore, early engagement with the local authority and their environmental health/pollution control staff is advised.

A risk based approached is taken in the assessment of contaminated land which takes account of the proposed (or existing) use of a site. The key stages are as follows:

- 1. **Development of a Site Conceptual Model** This is key to the establishment of viable pollutant linkages from a hazardous source (e.g. hydrocarbon contamination) to a sensitive receptor (e.g. a river) through a viable pathway (e.g., groundwater flow) which allows the hazard to reach the receptor. On some occasions the lack of a viable pollutant linkage will result in no further assessment being necessary
- 2. Generic Quantitative Risk Assessment -This comprises a screening exercise comparing measured chemical data against published data which are based on numerous assumptions regarding the nature of the source, pathway and receptor which are valid or err on the side of safety for the current site in question. Typically for human health risk assessment this involves comparing chemical data with published Generic Assessment Criteria. For controlled waters assessment this typically comprises the direct comparison of chemical tests on leachate or groundwater with Environmental Quality Standards (EQS) or other suitable assessment criteria.
- 3. Detailed Quantitative Risk Assessment Should contaminants of concern be present at the site at concentrations exceeding the Generic Assessment Criteria, further detailed quantitative assessment can be carried out which accounts for the specific exposure conditions at the site (with respect to human health assessment) or models the degradation, dilution and attenuation of contaminants during transport from source to receptors.
- 4. Evaluation The final stage in the process is to appraise the findings of the Risk Assessment and determine the need or otherwise for additional assessment or remediation.



6.2 Conceptual Site Model

A preliminary conceptual model was presented in the Phase 1 Desk Study report which included a preliminary qualitative risk assessment that has guided the ground investigation work. That model has been refined and updated based on the information obtained during the ground investigation presented herein and is discussed in the following sections.

6.2.1 Sources

The desk study had previously identified several potential sources of contamination to the site. Upon completion of the ground investigation the following have been confirmed as potential sources of contamination:

- 1. Arsenic, nickel and vanadium from the natural local geology; (COCs heavy metals);
- 2. Radon gas;

6.2.2 Receptors

The site is to be redeveloped for residential housing with private gardens. Potential receptors identified during through the desk study, and updated following the ground investigation, include:

Human Health;

- 1. Current and future site users;
- 2. Site development and maintenance workers;

Environmental;

1. No shallow groundwater has been encountered at the site during the investigation. However, the underlying geology is Secondary-A aquifer.

6.2.3 Pathways

The following pathways have been identified and are considered viable for the site

Human Health;

- 1. Ingestion of source soils;
- 2. Inhalation of source dusts, vapours and gases;
- 3. Direct skin exposure (dermal contact) with soils.



6.2.4 Pollutant Linkages

Several viable pollutant linkages have been identified for the site affecting human receptors, including ingestion, inhalation and dermal contact of end users and site soils and inhalation of Radon Gas.

6.3 Generic Human Health Quantitative Risk Assessment

6.3.1 Human Health

The results of the chemical testing on soils have been compared with published Soil Guideline Values (S4UL) as an initial screen to determine if more detailed assessment is required. Full details of the screening exercise are presented in Appendix F. The results that exceeded their relevant screening criteria are summarised in Table 6 below.

Contaminant of Concern	Screening Value (mg/kg)	Exceedances Recorded	
Arsenic	37	190 mg/kg in TP101 at 0.70 m bgl 64 mg/kg in TP101 at 1.60 m bgl 200 mg/kg in TP102 at 0.30 m bgl 130 mg/kg in TP102 at 0.90 m bgl 130 mg/kg in TP102 at 1.00 m bgl 200 mg/kg in TP103 at 0.80 m bgl 240 mg/kg in TP104 at 0.60 m bgl 130 mg/kg in TP105 at 0.50 m bgl 260 mg/kg in TP105 at 1.20 m bgl 150 mg/kg in TP106 at 0.70 m bgl	290 mg/kg in TP107 at 0.40 m bgl 200 mg/kg in TP107 at 1.40 m bgl 250 mg/kg in DS101 at 0.20 m bgl 500 mg/kg in DS101 at 0.75 m bgl 320 mg/kg in DS102 at 0.30 m bgl 320 mg/kg in DS103 at 0.15 m bgl 480 mg/kg in DS103 at 0.90 m bgl 470 mg/kg in DS104 at 0.40 m bgl 500 mg/kg in DS105 at 0.50 m bgl 550 mg/kg in DS106 at 0.10 m bgl 430 mg/kg in DS106 at 0.80 m bgl
Nickel	180	200 mg/kg in TP105 at 0.50 m bgl 230 mg/kg in DS103 at 0.90 m bgl 240 mg/kg in DS104 at 0.40 m bgl 290 mg/kg in DS105 at 0.50 m bgl 270 mg/kg in DS106 at 0.10 m bgl 260 mg/kg in DS106 at 0.80 m bgl	
Vanadium	410	530 mg/kg in TP105 at 0.50 m bgl 440 mg/kg in TP107 at 1.40 m bgl 480 mg/kg in DS102 at 0.30 m bgl 470 mg/kg in DS103 at 0.15 m bgl 660 mg/kg in DS103 at 0.90 m bgl 670 mg/kg in DS104 at 0.40 m bgl 800 mg/kg in DS105 at 0.50 m bgl 790 mg/kg in DS106 at 0.10 m bgl 630 mg/kg in DS106 at 0.80 m bgl	

Table 6 Soils Results Exceeding Human Health Screening Va	alues
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<u>Arsenic</u>

All twenty-two samples that were tested for arsenic recorded exceedances in excess of the guideline value of 37 mg/kg. Values ranged between 64 mg/kg and 550 mg/kg.

PBET testing was undertaken on the two highest values recorded (500 mg/kg and 550 mg/kg). Using the criteria gained from the testing, a site-specific screening value could be calculated using the CLEA version 1.071 spreadsheet. A new value of 99.5 mg/kg was calculated. When using this site-



specific screening value, only one of the previous results become acceptable to the criteria: sample from TP101 at 1.60 m bgl recording 64 mg/kg.

Nickel and Vanadium

Nickel was found in 6 no. samples to exceed the guideline value of 180 mg/kg, with a maximum value of 290 mg/kg recorded in DS105 at 0.50 m bgl.

Vanadium was found in 9 no. samples to exceed the guideline value of 410 mg/kg with a maximum value of 800 mg/kg recorded in DS105 at 0.50 m bgl.

No Made Ground was encountered at the site, with all soils encountered being natural.

6.4 Generic Human Health Assessment Discussion and Conclusions

The underlying natural geology at the site contains concentrations of arsenic, nickel and vanadium that exceeds the corresponding GAC for the proposed housing end us. <u>It is recommended that a suitable thickness (recommendation for a minimum of 0.60 m) of clean cover is provided in garden or landscaped areas across the site.</u>

It is recommended that a remediation strategy be compiled for the site and submitted to the relevant local authority.

6.4.1 Controlled Waters - Groundwater

No groundwater has been recorded during the investigation and no Made Ground or anthropogenic contamination identified at the site. As a consequence the risk to controlled waters is very low.

6.5 Gas Assessment

A ground gas assessment has been undertaken to assess risks associated with carbon dioxide and methane to new buildings and their users. 4 No. gas monitoring visits have been undertaken to date the site between the 30th September and 11th November 2021, with two further visits scheduled. This section will be updated following completion of the ongoing monitoring.

Atmospheric pressures recorded over the duration the monitoring visits were recorded to range between 984mb and 999mb. The results of the gas monitoring are summarised in Table 7 below and full details are presented in Appendix D.



Table 7 Summary of Gas Monitoring

.Well	Range of Measurements Recorded			
	Methane (CH₄) % v/v	Carbon Dioxide (CO ₂) % v/v	Oxygen (O ₂) %v/v	Flow Rate I/hr
DS101	0.0	0.1 – 0.7	19.9 – 20.9	0
DS103	0.0	0.0 - 0.4	19.9 – 21.0	0
DS104	0.0	0.0 - 0.6	19.5 – 20.9	0
DS106	0.0	0.0 - 0.4	20.0 - 20.9	0 – 0.5

Interpretation of gas monitoring has been carried out in accordance with the recommendations contained within CIRIA 665 (2007) 'Assessing risks posed by hazardous ground gases to buildings'. This guidance includes the calculation of volumetric flow rates of ground based on maximum recorded gas concentrations and maximum recorded gas flow rates. Limiting factors are applied to the gas monitoring results and a characteristic situation is then applied to the site. The worst-case volumetric flow rates are presented in Table 8 below.

Well	Maximum CH₄ %v/v	Maximum CO₂ %v/v	Maximum Flow Rate (I/hr)	Volumetric Flow Rate (I/hr)
DS101	0.0	0.7	< 0.1*	< 0.0007
DS103	0.0	0.4	< 0.1*	< 0.0004
DS104	0.0	0.6	< 0.1*	< 0.006
DS106	0.0	0.4	0.5	0.002

Table 8	Summary of Gas Monitoring
---------	---------------------------

* Actual maximum flow rate recorded was 0.0 l/hr. Accuracy of monitoring equipment is to +/- 0.1 l/hr

The gas monitoring indicates that the site may be classified as Characteristic Situation 1 using a modified Wilson and Card classification scheme defined in CIRIA C665. As such no special precautions are necessary as given in Table 8.6 of Ciria C665 with regards to methane and carbon dioxide.

Notwithstanding the above assessment the site is in a Radon affected area with 30% of dwellings exceeding Radon Action Level. As a result, **FULL RADON PROTECTION MEASURES** will be required for all new dwellings.



7 GEOTECHNICAL ENGINEERING ASSESSMENT

7.1 Development Proposals

It is understood that the site is to be redeveloped as residential housing with private gardens. No details have been supplied with respect to the development details but based on our knowledge of similar developments it is likely that bearing capacities in the region of 150 kN/m². The development will include associated hardstanding, infrastructure and parking.

7.2 Spread Foundations

Ground conditions at the site were found to comprise Topsoil overlying Marlstone rock formation. The Marlstone rock formation has been encountered as generally dense or very dense GRAVEL with varying cobble content. Sandstone beds were encountered at the base of the trial pits. Locally layers of CLAY were encountered, particularly in the upper 1 m which were generally found to be firm. Locally loose and very loose deposits were encountered below a depth of 3 m in the northern section of the site.

Based on the ground conditions encountered (and in consideration of the local variability encountered in the Marlstone rock formation deposits) an allowable bearing capacity of 125 kN/m² is considered appropriate for strip foundations up to 0.9 m wide placed at a minimum depth of 0.75 m below ground level. Total settlement would then be limited to 25 mm. It is recommended that additional investigation is carried out in the north of the site prior to further design development to further assess the locally very loose materials identified in DS101 and DS102 below around 3 m depth.

Note that the Marlstone Rock deposits have been found to be generally coarse and laboratory testing indicates that the finer materials encountered are non-shrinkable in accordance with NHBC guidelines. Should shrinkable materials be encountered during subsequent works, NHBC guidelines should be followed for any plots within the influence of existing or proposed trees.

All foundation excavations should be inspected by a suitable qualified engineer prior to blinding and any loose or soft spots removed and replaced with lean mix concrete.

7.3 Pile Foundations

Based on the conditions encountered at the site, pile foundations are not considered necessary. Should pile foundations be considered further, addition ground investigation will be required.



7.4 Floor Slab

Full radon protection will need to be incorporated into building construction and consequently a suspended ground floor slab will be required.

7.5 Ground Improvement

Ground improvement is not considered necessary at this stage subject to the findings of additional ground investigation recommended in section 7.2.

7.6 Pavement Design

Particle size distribution testing and Atterberg limit determinations indicate that the near surface materials at the site may be considered to be frost susceptible. The near surface Marlstone Rock deposits were found to be mixtures of fine and coarse soils. Plasticity index testing carried out in the cohesive soils indicates that an equilibrium CBR of 5 % would be appropriate for this material following proof rolling and removal of soft spots.

7.7 Excavations

Groundwater monitoring has recorded no groundwater at shallow depth at the site. Excavation sides were found to be generally stable in the short term during trial pitting, but given the coarse nature of these materials, some side instability should be anticipated. Side support should be provided for deep excavations and any excavations carried out in the vicinity of existing buildings, infrastructure or services or where person entry is required.

7.8 Sulphate Design Classification

The classification of the site in terms of concrete in aggressive ground is based on the guidance provided within the BRE Special Digest 1 (BRE SD1). The characteristic chemical laboratory test results for the eight soil samples testing are presented in Table 9.

Table 9	Characteristic soil chemistry results for soil classification
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Determinant	Units	Marlstone Rock Formation
рН	pH Units	7.6 – 8.2 (average of 8.0)
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	< 10

Chemical testing of samples recovered from soils underlying the site indicates a Design Sulphate class DS-1 with corresponding Aggressive Chemical Environment for Concrete AC-1 is appropriate for any buried concrete at the site.



For Discovery CE Limited



Edward Tainsh BSc Assistant Geo-environmental Engineer

Cathal Gillege

Cathal Gillespie BEng MSc (Eng) Director



APPENDIX A - FIGURES

Report Number: 21076J-02





Time Elapsed (t) mins	Depth below Ground level at time t (m)
0	2.2
0.25	2.3
0.5	2.42
0.75	2.47
1	2.5
1.25	2.57
1.5	2.6

TP102 Test 1
22/09/2021
3 0.45 2.6
2.2
0.27
0.75
2.73

2.20E-03

Soakaway Test	Project	Contract
	Stocking Lane	21076J
Discovery C	Shenington	Figure
Geotechnical & Environmental Engi	neers	A2



Time Elapsed (t) mins	Depth below Ground
	level at time t (m)
0	2.15
0.25	2.26
0.5	2.35
0.75	2.4
1	2.48
1.25	2.58
1.5	2.6

Trial Pit No:	TP102 Test 2
Date:	22/09/2021
Test Details	
Length of Trial Pit a (m): Width of Trial Pit b (m): Depth of Trial Pit D (m):	3 0.45 2.6
Test Strata:	
Maximum Effective Depth (m)	2.15
Volume Outflow between 75% and 25% effective depth ((Vp75-25)m3)	0.30375
Time for water to fall from 75% to 25% effective depth ((Tp75-25)mins)	0.761805556
Outflow Area ((Ap50) m2)	2.9025

2.29E-03

 Remarks: total of 1000 litres added to test location

 Soakaway Test
 Project Stocking Lane
 Contract 21076J

 Discovery Correct Geotechnical & Environmental Engineers
 Shenington
 Figure A3



Time Elapsed (t) mins	Depth below Ground
	level at time t (m)
0	2
0.25	2.15
0.5	2.27
0.75	2.32
1	2.36
1.25	2.38
1.5	2.45
2	2.5
2.5	2.6

Trial Pit No:	TP102 Test 3	
Date:	22/09/2021	
Test Details		
Length of Trial Pit a (m): Width of Trial Pit b (m): Depth of Trial Pit D (m):	,	3 0.45 2.6
Test Strata:		
Maximum Effective Depth (m)		2
Volume Outflow between 75% and 25% effective depth ((Vp75-25)m3)	0.	.405
Time for water to fall from		
75% to 25% effective depth ((Tp75-25)mins)		1.25
Outflow Area ((Ap50) m2)	:	3.42

1.58E-03

 Remarks: total of 1000 litres added to test location

 Soakaway Test
 Project Stocking Lane
 Contract 21076J

 Discovery Cepe Geotechnical & Environmental Engineers
 Shenington
 Figure A4



Trial Pit No:	TP105 Test 1
Date:	22/09/2021
Test Details	
Length of Trial Pit a (m): Width of Trial Pit b (m): Depth of Trial Pit D (m):	3 0.45 2
Test Strata:	
Maximum Effective Depth (m)	1.4
Volume Outflow between 75% and 25% effective depth ((Vp75-25)m3)	0.405
Time for water to fall from 75% to 25% effective depth	4.05
((Tp75-25)mins)	1.25
Outflow Area ((Ap50) m2)	3.42

1.58E-03

Remarks: total of 1000 litres added to test location

Soakaway Test	Project	Contract
	Stocking Lane	21076J
Discovery CD	Shenington	Figure
Geotechnical & Environmental Engineers		A5



Trial Pit No:	TP105 Test 2
Date:	22/09/2021
Test Details	
Length of Trial Pit a (m): Width of Trial Pit b (m): Depth of Trial Pit D (m):	3 0.45 2
Test Strata:	
Maximum Effective Depth (m)	1.4
Volume Outflow between 75% and 25% effective depth ((Vp75-25)m3)	0.405
Time for water to fall from 75% to 25% effective depth ((Tp75-25)mins)	1.5
Outflow Area ((Ap50) m2)	3.42

1.32E-03

Remarks: total of 1000 litres added to test location

Soakaway Test	Project	Contract
	Stocking Lane	21076J
Discovery CD	Shenington	Figure
Geotechnical & Environmental Engineers		A6





APPENDIX B - DRAWINGS

Report Number: 21076J-02



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00	242141.21						
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37	242740.61						
10	242712.44						
86	242884.99						
58	242820 77						
72	242691 28						
12	242031.20						
40	242740.42						
31	242725.73						
58	242741.48						
20	242794.84						
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Elan Shenington/Drawings/21076-DR02 Exploratory Hole Location



APPENDIX C - FIELDWORK METHODOLOGY

Report Number: 21076J-02


Dynamic Continuous Sampling Boreholes

If carried out the locations of the Dynamic continuous sampling boreholes are shown on the exploratory hole location plan. They are put down using a Competitor Dart Drilling rig (Figure C2).

Figure C2: Competitor Dart Rig



The sampling is progressed by driving a hollow steel tube with a plastic inner liner into the ground. Both cohesive and granular soils are "wedged" into the tubing, relying on the friction between the soil and liner to retain the sample on withdrawal of the tubing. Sample can be lost, particularly in loose granular soils if frictional resistance is not sufficient. The technique can be used in the absence of casing in cohesive soils, although the diameter of tubing is progressively reduced from 101 mm, through 92, 79, 70, 57 and 47 mm dia to ensure that frictional resistance on the sides of the sampling tubing does not exceed the capacity of the equipment to pull the tubing from the hole. Small diameter 115 mm diameter casing can be driven simultaneously with the sampling tube in soft or loose soils to a maximum depth of around 7 m. Standard penetration testing and recovery of "undisturbed" samples is possible in the correct conditions.

Full details of the dynamic continuous sampling holes including soil descriptions to BS 5930, SPT test results and samples recovered are presented on the exploratory hole location plan.

Dynamic Probing



Dynamic Probing holes are carried out using a Competitor Dart Drilling rig (Figure C2). Two variants of dynamic probing are commonly carried out as detailed in BS1377 Part 9 section 3.2, 1998 including Dynamic Probing Heavy (DPH) and Dynamic Probing Super Heavy (DPSH), details are given in Table C1 below.

Part	Heavy (DPH)	Super Heavy(DPSH)
Drive Weight (kg)	50 ± 0.5	63.5 ± 0.5
Drop Height (mm)	500 ± 10	750 ± 20
Nom. Cone Area (cm2)	15	20
Cone Diameter (mm)	43.7 ± 0.3	50.5 ± 0.5
Cone Mantle Length		
(mm)	43.7 ± 1	50.5 ± 2
Cone Tip Length (mm)	21.9 ± 0.1	55.3 ± 0.4
Drive Rod Diameter		
(mm)	35	35
Drive Rod Mass (kg/m)	6	8

Table C1: Dynamic Probing Summary

The test is carried out by driving 1 m long drive rods, marked up with 100 mm graduations into the ground and counting the number of blow required for each 100 mm of penetration. Where very soft or loose deposits are encountered, the rods can penetrate more than 100 mm for a single blow in which case the penetration for that blow (to the nearest 100 mm) is recorded on the results sheet.

If dynamic probing was carried out for this project, full details will be included in Appendix D.

Trial Pitting

Trial pits are typically machine excavated using a JCB 3CX type mechanical excavator. Where hard surfacing is present at the trial pit locations, a hydraulic breaker attachment is used to penetrate the layer and allow subsequent excavation using either a 600 mm or 900 mm wide toothed excavator bucket. Excavation is progressed slowly to allow inspection of the geology revealed and samples were recovered at the discretion of the supervising engineer for subsequent laboratory analysis.

Excavations are typically taken to a maximum depth of 4 m bgl or in the event of obstructions or shallow groundwater being present, excavations are terminated at shallower depth. On completion, the trial pits are backfilled with lightly compacted arisings, tamped into place using the knuckle of the excavator bucket.



Full details of the trial pitting including soil descriptions to BS 5930 including details of samples recovered are presented in Appendix D

Gas and Groundwater Monitoring

Gas monitoring is carried out using a Gas Data GFM430 infra-red gas analyser to record concentrations of Carbon Dioxide, Oxygen, Methane and record atmospheric and downhole pressures together with borehole gas flow rates.

Prior to groundwater sampling, each borehole is purged, and in-situ readings recovered for pH, temperature, electrical conductivity, dissolved oxygen and redox potential. Samples are recovered once the parameters measured had stabilised.

Rising head permeability testing is commonly carried out in the boreholes on a return visit to site.

Details of any gas and groundwater monitoring or permeability testing is presented in Appendix D.

Topographical Survey

On completion of the fieldwork a topographical survey is usually carried out to determine the location and elevation of the boreholes and trial pits. Exploratory holes are surveyed to a Local Grid/ Ordnance Survey National Grid and the details are presented on the exploratory hole log drawing and on the exploratory hole logs.

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APPENDIX D - FIELDWORK RECORDS



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1.50	D	5,5,	,,,		1//.0/		$\frac{1.30}{1.040}$	MAR	RLSTONE	ROCK FO	RMATIC	DN.		/		
-					177.27	 	1.90	Firm	orange-br	own very sa	ndy CLA	AY.				
$\begin{bmatrix} 2.00 \\ 2.00 \end{bmatrix}$	В	NI	4					MAR	RLSTONE	ROCK FO	RMATIC	DN				
-		8,5 3,3,3	5/ 3,5				(1.10)	dark sands	um dense brown and stone with	orange-brov l brown ang iron stainin	vn slight jular and g.	ly clayey sub-angu	gravelly SA lar fine to r	AND. Gravel 1s nedium		
E an					176.17	· • · ·	3.00	MAR	RESTONE	ROCK FO	RMATIC	DN				
- 3.00		N 10,	1 2/			- · · · · · · · · · · · · · · · · · · ·		NOF	RECOVER	ζΥ 						
-		1,0,0	0,0			-· · <u>-</u>	(0.80)	Possi SAN	ibly very l D. Gravel	oose becomi is angular a	ing very on nd sub-ar	dense ora ngular me	nge-brown dium sand	clayey gravelly stone with iron		
3.80		NI50/2/	10		175.37		- 3.80	staini	ing.	-		-		,		
- 5.80		20,	5/ 5/	1	174.02		(0.45)	MAR	RECOVE	ROCK FO	RMATIC	DN		/		
- - - -		3,20,2	20,7		1/4.92		- 4.23 - - -	Very	dense ora	nge-brown o r medium sr	clayey gr adstone	avelly SA with iron	ND. Grave staining.	el is angular		10024
							-	MAR	LSTONE	ROCK FO	RMATIC	N	0			
-							-	[112 LI	LEFICITE	ROCKIO						
-							E									
-							Ę									
[]							-									
							Ē									
							E									
							-									
							-									
							È									
-							Ę									
-							Ę									
	1	1			1	L		1						GENE REMA	RAL RKS	, ,
														No groundwate encountered. To early due to SP 4.25 m. Backfi clean gravel.	r ermina T refu lled wi	ated sal at th
All dimen Sc	isions in ale 1:50	metres	C	lient	Elan	Homes	Limited		Method/ Plant Use	ed Corr	petitor	DART		Logged By ET	- -	



Project																BOR	EH	OLE	No
Sto	cking	Lane,	Shei	ning	ton											П		102	
Job No			Date	° 29	9-09-21		Ground L	evel (n	n)	Co-O	ordinates ())				U	3	103	
21	076J			29	9-09-21		1	77.93]	E 436,97	4.0	N 242,	690.0					
Contractor																Sheet			
Dis	covery	y CE]	1 0	f 1	-
SAMPL	ES &	TEST	`S	r					S	STRA	ATA							y	lent/
Depth	Type No	Tes Resu	t ılt	Wate	Reduced Level	Legend	Depth (Thick- ness)				DESC	CRIPT	TION					Geolog	Instrum Backfil
0.15	ES						(0.60)	Gras Grav fine	s overlying el is brown to medium	g light n sub-i i sands	orange-bro rounded fir stone with i	own sl ne to r iron st	lightly gra nedium q aining. C	avelly sar uartzite a ccasiona	ndy C and su I fine	LAY. b-angula rootlets	ar		
0.50	D				177.33 177.03		0.60 0.90	(less	than 5 mn SOIL	n diam	eter).								
-0.90 - 1.00 - 1.00	ES D	N50/20	Jmm		176.48	0000	(0.55)	Firm dark with	orange-br brown sub iron staini	own s o-roun ng.	lightly grav ded and su	velly s ıb-ang	andy CL ular fine	AY. Grav to mediu	vel is l m san	orown ai dstone	nd		
-		6,8 13,20	,17		170.40	000	- 1.43	MAF	RESTONE	ROC	K FORMA	ATION	J.						
			-				-	Very brow	dense ora n and oran	nge-bi	rown-yello gular and s	w san sub-an	dy GRAV Igular me	/EL. Gra dium to c	vel is coarse	dark			
-							-	MAI	RLSTONE	ROC	K FORMA	ATION	V						
-							- - -												
- - -							- - -												
							- - -												
- - -							- -												
-							- - -												
							- - -												
11/21							-												
.6DT 22							 - -												
AGS 3_1							- - -												
							- - -												
							-												
							-												
																GEI REN	NEI MA	RAL RKS	
076J SHENINGTON LOG															No enc earl 1.4: gro gas	groundw ountered y due to 5 m. Inst undwate standpip	vater I. Te SPT called r and pe to	rmina Frefus 1 with d grou 1.0 m	ted sal at nd 1.
							T • • •		26.1.1							1.0			
All dimen	sions in ale 1:50	metres		lient	Elan l	Homes	Limited		Method/ Plant Use	ed	Competi	itor E	DART		Log	ged By	ΕT		



Pro	ject															BORE	HOLE	E No
	Stoc	king	Lane,	Sher	ning	ton											240/	
Job	No			Date	20	9-09-21		Ground L	evel (n	n)	Co-O	rdinates ()					5104	ŀ
	210)76J			29	9-09-21		1	78.78	3	I	E 436,922	.0 N	1 242,74	7.0			
Co	ntractor															Sheet		
	Dise	covery	/ CE													1	of 1	
S	AMPL	ES &	TEST	`S	'n	_				S	STRA	TA						ent/
Г	Depth	Type No	Tes Resi	t ılt	Wate	Reduced Level	Legend	Depth (Thick- ness)				DESCF	RIPTIO	ON			Geolog	Instrum Backfill
THIS ONE.GPJ GINT STD AGS 3_1.GDT 22/11/21	0	ES	N60/22 6,1(15,16	5mn)/ ,29	1	<u>178.28</u> <u>177.78</u> <u>177.33</u>		(0.50) 0.50 (0.50) (0.50) (0.45) 1.45	Gras Grav fine (less TOP Med and c sand Very medi MAI	ss overlying vel is brow to medium than 5 mm <u>PSOIL</u> fium dense dark brown stone with <u>RLSTONE</u> <u>RLSTONE</u>	g light n sub-r sands orange n sub-r iron st ROCI low-br rse san ROCI	orange-brow ounded fine tone with irc eter).	wn slig e to me on stai yey sar sub-a fION. sandy iron s ΓΙΟΝ	htly gravd dium qua ning. Occ ndy GRA ngular fin GRAVE taining.	elly sand rtzite an asional f VEL. Gr e to med L. Grave	y CLAY. d sub-angular ine rootlets avel is brown ium		
ENINGTON LOGS - USE																GEN REM No groundwa encountered. early due to S 1.45 m. Back clean gravel	ERAI ARKS Termin SPT refu filled w	ated usal at rith
DS 21076J SH																ereari gravel.		
	ll dimens Sca	ions in le 1:50	metres	Cl	lient	Elan	Homes	Limited		Method/ Plant Use	ed	Competito	or DA	ART		Logged By	ET	



Project														BOREH	OLE	No
Sto	cking	Lane, S	Shen	ning	ton										4 N E	
Job No			Date	20	9-09-21		Ground L	evel (m))	Co-Ordina	ates ()			0	105	
210)76J			2	9-09-21		1	77.84		E 43	7,020.0	N 242	727.0			
Contractor														Sheet		
Dis	covery	/ CE												1 0	of 1	
SAMPL	ES &	TEST	S	SI.					S	TRATA						lent/
Depth	Type No	Tes Resu	t ılt	Wat	Reduced Level	Legend	Depth (Thick- ness)				DESCRI	PTION			Geolog	Instrun Backfil
	D	N20 4,3 5,5,5 15,1 50	0 /;;5 5mm 0/		<u>177.19</u> <u>176.84</u> <u>176.34</u> <u>175.39</u>		(0.65) 0.65 1.00 (0.50) 1.50 -(0.95) 2.45	Grass Grave fine to (less ti TOPS Orang dark b with in MARI Stiff b brown MARI Dense Grave with in MARI	OVERIGING 1 is brown 1 is brown is brown shown OIL ge-brown sub- prown sub- prown-oral- torange a LSTONE becoming 1 is orange 1 is orang	Alight orange sub-round sandstone diameter).	ge-brown led fine to with iron	dy CLAY. ngular fine <u>DN.</u> very sand ium sands <u>DN</u> slightly cla d sub-angu <u>DN</u>	Gravel is i ccasional Gravel is i to medium y CLAY. O tone grave	Gravel is GRAVEL. n sandstone		
														GENE REMA No groudwater encountered. T	RAL RKS	ited
														early due to SP 2.45 m. Backfi clean gravel.	T refu lled wi	sal at ith
All dimens	sions in ile 1:50	metres	Cl	ient	Elan	Homes	Limited		Method/ Plant Use	d Cor	npetitor	DART		Logged By E	 [



Project													BOREH	OLE	No
Sto	ocking	Lane,	She	ning	ton								פח	106	
Job No			Dat	^e 2	9-09-21		Ground L	evel (n	n)	Co-Ordinates ()			03	100	
21	076J			2	9-09-21		1	79.34	-	E 436,827	7.0 N 242	,740.0			
Contractor	•												Sheet	. .	
Dis	scover	y CE											1 0	of 1	
SAMPI	LES &	TEST	ΓS	er						STRATA				23	nent/ II
Depth	Type No	Tes Res	st ult	Wat	Reduced Level	Legend	Depth (Thick- ness)			DESC	RIPTION			Geolog	Instrun Backfi
0.10	ES				178.69		(0.65) 0.65	Gras Grav fine (less	s overlyin rel is brow to medium than 5 mr	g light orange-brown n sub-rounded find n sandstone with ir n diameter).	wn slightly g e to medium on staining. (avelly sand quartzite and Occasional f	y CLAY. d sub-angular ĭne rootlets		
0.80	ES				178.39		0.95	TOP	SOIL	1 1	1 0		/		
1.00		N3 10,1 12,12	33 10/ 2,6,3		177.89		(0.50) 1.45	and and sand	ium dense dark brow stone with	orange-brown cla n sub-rounded and iron staining.	yey sandy Gl l sub-angular	RAVEL. Gra fine to med	avel is brown ium		
1.40	D							MAI	RLSTONE	E ROCK FORMA	TION.				
2.00		N2	20				7_ 	Dens angu depo	se orange- lar medius sits.	yellow-brown slig m and coarse sand	htly clayey sa stone with iro	ndy GRAV	EL. Gravel is and rare iron		
-		13,	5/ .3.3					MAR	21 STONE	FROCK FORMA	TION				
			,- ,-				(2.00)	Med	ium dense elly clayey	becoming very de SAND. Gravel is	ense orange-b orange-brow	rown-yellov m angular fi	v slightly ne to medium		
- 2.80 - 3.00	D	N50/16	50mn	n			1 	sand	stone with	iron staining.	TON				
		10,1 3,22	10/ ,25		175.89		3.45	MA	RESTONE	E ROCK FORMA	TION				
													GENE REMA No groundwate encountered. T early due to SP 3.45 m. Installe groundwater ar gas standpipe t	RAL RKS err ermina T refus ed with ad grou o 3.00	ted sal at md m.
All dimer Sc	sions in ale 1:50	metres	C	lient	Elan	Homes	Limited		Method/ Plant Us	ed Competit	or DART		Logged By E7		

Project

Job No

-1.00



Rugby, Wa	rwicksh	ire, CV23 8	HF		D	YNAM	IIC SAMI	PLING LOG	Geotechnical	& Environment	al Eng	ineers
Project										BOREH	OLE	No
Sto	ocking	Lane, She	ning	gton							107	
Job No		Da	^{te} 2	9-09-21		Ground L	evel (m)	Co-Ordinates ()		03'	107	
21	076J		2	9-09-21		1	78.47	E 436,922.0	N 242,712.0			
Contractor	r									Sheet		
Di	scover	y CE								1 0	f 1	
SAMPI	LES &	TESTS						STRATA			y	ent/
Depth	Type No	Test Result	Wate	Reduced Level	Legend	Depth (Thick- ness)		DESCRIPT	ION		Geolog	Instrum Backfill
0.20	ES	N50/295mi 5,6/ 6,14,15,15		178.17		0.30	Grass overlyii orange-brown sandstone wit TOPSOIL Very dense or is orange-darl sandstone wit MARLSTON	ng orange-brown-yellow -yellow angular and sub h iron staining. ange-brown occasionall c brown angular and sub h iron staining. <u>E ROCK FORMATION</u>	gravelly SAND. C -angular fine to m y yellow sandy GR -angular fine to m (Gravel is edium		
			<u> </u>			<u> </u>				GENE	RAL	
										No groundwater encountered. Te early due to SP 1.45 m. Backfil clean gravel	r erminat Γ refus led wit	ted al at th

AGS3 UK DS 21076J SHENINGTON LOGS - USE THIS ONE. GPJ GINT STD AGS 3_1.GDT 22/11/21 All dimensions in metres Scale 1:50 Method/ Plant Used Client Elan Homes Limited Logged By Competitor DART ΕT

TRIAL PIT LOG



Project							TF	RIAL PIT No
Stocking	g Lane,	Shenington						TD101
Job No		Date 22-09-21	Ground Level (n	n) Co-Or	dinates ()			
21076J		22-09-21	179.86	5 E	436,855.0 N 242,79	94.0		
Contractor							Sheet	
Discove	ry CE							1 of 1
			STRATA			SAN	MPLE	S & TESTS
ļ						Depth	No	Remarks/Tests
Depth 0.00-0.25 0.25-0.70 0.70-0.80 0.80-1.50	M_{1} M_{2} M_{2	ass overlying light orang p-rounded fine to mediu ining. Occasional fine r <u>OPSOIL</u> ange-brown gravelly ve d sub-angular fine to me <u>ARLSTONE ROCK FO</u> m orange-brown slightl gular medium sandstone <u>ARLSTONE ROCK FO</u> ange-brown sandy cobb	DESC ge-brown slightly gra m quartzite and sub-a ootlets (less than 5 m ry sandy CLAY. Grav dium sandstone with PRMATION. y gravelly very sandy with occasional iron PRMATION.	RIPTION velly clayey SANI ingular fine to mee m diameter). vel is brown and d iron staining. CLAY. Gravel is staining. is dark brown ang	D. Gravel is brown lium sandstone with iron ark brown sub-rounded brown and dark brown	0.70	ES	
1.50-1.60 1.60-2.00	$\begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 $	m orange-brown-yellow o-angular fine to mediur ARLSTONE ROCK FO ange-brown sandy cobb	with iron staining. PRMATION v gravelly sandy CLA n sandstone with iron PRMATION Ily GRAVEL. Gravel	Y. Gravel is dark staining.	brown angular and	1.60	ES	
2.00-2.50		ARLSTONE ROCK FO ange-brown and dark bi d iron deposits. Occasio ARLSTONE ROCK FO	PRMATION rown thinly laminated nal bands of fine oran PRMATION.	SANDSTONE w	/ ith regular iron staining	-		
	out: N							
Shoring/Support	ort: No ble 3.10	B 0.45				N er 2. di g p j z z B	G o grour counte 50 m b gging. oundw pe insta one 0.00 ackfille	ENERAL EMARKS Indwater red. Terminated at gl due to hard Gas and ater monitoring alled, response 0 - 2.50 m. id with arisings.
All dimensions Scale 1:2	in metres 25	Client Elan Hor	mes Limited	Method/ Plant Used	JCB 3CX		ogged I	³ y ET



TRIAL PIT LOG



Geotechnical & Environmental Engineers

Project							TR	RIAL PIT No
Sto	cking Lane	, Shenington						TP102
Job No		Date 22-09-21	Ground Level (m	n) Co-O	rdinates ()			
210)76J	22-09-21	178.88	ŀ	E 436,918.0 N 242,7'	74.0		
Contractor	a F						Sheet	1 0 1
Dis	covery CE							1 of 1
		S	STRATA			SA	MPLE	S & TESTS
						Depth	n No	Remarks/Tests
Depth 0.00-0.25	No $\frac{ \underline{x} _{\ell}}{l_{\ell} + \underline{x}^{1}/l} = \mathbf{G}$	rass overlying orange-brow b-rounded fine to medium aining. Occasional fine roo	DESC vn slightly gravelly s quartzite and sub-a otlets (less than 5 mr	RIPTION sandy CLAY. Gr ngular fine to me n diameter).	avel is brown dium sandstone with iron			
0.25-0.60		OPSOIL Drange-brown gravelly very	sandy CLAY. Grav	el is brown and o	/ dark brown sub-rounded	0.30	ES	
0.60-1.60		Ind sub-angular fine to med	ium sandstone with	iron staining.	,			
		Drange-brown sandy GRAV	EL. Gravel is brown ndstone with occasion	n and dark brown onal iron staining	angular occasionally and iron deposits.			
						0.90	ES	
	0 0 0 0 0 0 0 0 0 0	1ARLSTONE ROCK FOR	MATION.			1.00	ES	
	00					1.50		
1.60-2.00	o o con	Prange-brown sandy cobbly nedium to coarse sandstone	GRAVEL. Gravel i with iron staining.	s dark brown an	gular occasionally tabular	1.50	D	
		IARLSTONE ROCK FOR	MATION			1.80	В	
2.00-2.60	C an	Prange-brown and dark bro nd iron deposits. Occasiona	wn thinly laminated al bands of fine to m	SANDSTONE v edium orange sa	vith regular iron staining nd.			
	N	IARLSTONE ROCK FOR	MATION.					
						2.40	В	
Shoring/S Stability:	Support: No Stable	one					G	ENERAL EMARKS
							No grour	ndwater red. Terminated at
	— 3.00 — A						2.60 m b digging.	gl due to hard Used for
D		■ 0.45					infiltratic Backfille	on testing. d with arisings.
	С	I						
All dimens	sions in metre ile 1:25	s Client Elan Home	es Limited	Method/ Plant Used	JCB 3CX		Logged F	By ET

- USE THIS ONE GPJ GINT STD AGS 3 1.GDT 15/11/21 AGS3 UK TP 21076.1 SHENINGTON LOGS -



No groundwater encountered. Terminated at 2.40 m due to hard digging. Used for infiltration testing. Backfilled with arisings.

TRIAL PIT LOG



Project					TR	IAL PIT No
Stocking Lane,	Shenington					TD103
Job No	Date 22-09-21	Ground Level (m)	Co-Ordinates ()			11103
21076J	22-09-21	178.49	E 436,984.0 N 242,7	80.0		
Contractor					Sheet	
Discovery CE						1 of 1
		STRATA		SAN	MPLE	S & TESTS
				Depth	No	Remarks/Tests
Depth No 0.00-0.35	rass overlying light orang b-rounded fine to medium ameter).	DESCRIPT ge-brown slightly gravelly m quartzite and sandstone.	ION sandy CLAY. Gravel is brown Fine rootlets (less than 5 mm			
$\begin{array}{c c} 0.35 - 1.40 & \xrightarrow{-} & Tt \\ & & & & 0 \\$	DPSOIL range-brown sandy GRA bular medium to coarse a ccasional cobbles. ARLSTONE ROCK FO	VEL. Gravel is brown and ingular sandstone with iron RMATION.	dark brown angular occasionally n staining and rare iron deposits.	0.80	ES	
1.40-1.90	range-brown sandy cobb edium to coarse sandston ARLSTONE ROCK FO	ly GRAVEL. Gravel is dat e with iron staining. RMATION	k brown angular occasionally tabular	1.50	D	
1.90-3.00	range-brown and dark br ANDSTONE with regula edium orange sand. ARLSTONE ROCK FO	own occasionally very dar r iron staining and iron de RMATION.	k grey thinly laminated posits. Occasional bands of fine to	2.10	В	
Shoring/Support: No Stability: Stable	B 0.45			N er 3. di ar	G RI to groun necounter 00 m ba igging. I risings.	ENERAL EMARKS dwater red. Terminated at gl due to hard Backfilled with
All dimensions in metres Scale 1:25	S Client Elan Hon	nes Limited Met Plan	hod/ nt Used JCB 3CX		ogged E	By ET



General Notes No groundwater encountered. Terminated at 3.00 m. Backfilled with arisings.

TRIAL PIT LOG



Project							TR	RIAL PIT No				
Sto	cking Lane,	, Shenington										
Job No		Date 22-09-21	Ground Level (m)	Co-Ordi	nates ()			19104				
21)76J	22-09-21	178.02	E 4	37,004.0 N 242,7	35.0						
Contractor							Sheet					
Dis	covery CE							1 of 1				
		S	STRATA			SAI	MPLE	S & TESTS				
						Depth	No	Remarks/Tests				
Depth 0.00-0.35	No Gr	rass overlying light orange- ib-rounded fine to medium ccasional fine rootlets (less	DESCRIP brown slightly gravelly quartzite and sub-angu than 5 mm diameter).	TION y very sandy CL llar fine to mediu	AY. Gravel is brown um sandstone.							
0.35-1.50		OPSOIL range-brown sandy GRAV ccasionally tabular medium ccasional cobbles	EL. Gravel is brown be to coarse sandstone wi	ecoming dark bro ith iron staining	own angular and rare iron deposits.							
		IARLSTONE ROCK FOR	MATION.			0.60	ES					
						1.00	ES					
1.50-2.20		range-brown and dark brov Indstone. Cobbles are angul ccasional fine to medium or	vn gravelly COBBLES lar and tabular if sandst range sand.	. Gravel is angul tone. Occasiona	ar and tabular coarse l iron staining and	1.50	В					
2.20-2.40		range-brown and dark brow nd iron deposits. Occasiona	vn thinly laminated SA l bands of fine orange	NDSTONE with sand.	n regular iron staining	2.30	D					
		IARLSTONE ROCK FORI	MATION.		/							
Shoring/S	Support: No	one					G	ENERAL				
Stability:	Stability: Stable REMARKS No groundwater accountered Tempineted at											
D	A D B 0.45 B 0.45											
	С											
All dimen Sca	sions in metres ale 1:25	s Client Elan Home	es Limited Ma Pla	ethod/ ant Used	JCB 3CX	L	ogged H	³ y ET				



TRIAL PIT LOG



Project							TR	IAL PIT No
Sto	cking La	ne, Shenington						
Job No		Date 22-09-21	Ground Level (r	n) Co-Oi	dinates ()			1 - 105
21	076J	22-09-21	178.30) I	E 436,973.0 N 242,7	39.0		
Contractor							Sheet	
Dis	covery (CE						1 of 1
			STRATA			SA	MPLE	S & TESTS
	<u> </u>	I				Depth	No	Remarks/Tests
Depth 0.00-0.20 0.20-1.60		Grass overlying light or sub-rounded fine to mec Occasional fine rootlets TOPSOIL Orange-brown sandy G sandstone. Occasional c MARLSTONE ROCK	DESC ange-brown slightly gra dium quartzite and sub-a (less than 5 mm diamet RAVEL. Gravel is angu cobbles. FORMATION.	RIPTION velly very sandy (angular fine to me er). lar occasionally ta	CLAY. Gravel is brown dium sandstone.	0.50	ES	
1.60-1.75		Orange-brown and dark	brown angular occasio	nally tabular coar	se sandstone GRAVEL	1.20	ES	
1 75-2 00	0	with cobbles, occasiona	l iron staining and occas	sional medium or	inge sand.			
	30	MARLSTONE ROCK	FORMATION.	ES Crevelia en	,	/ 1.80	D	
		sandstone. Cobbles are occasional fine to mediu MARLSTONE ROCK	angular and tabular if sa ım orange sand. FORMATION.	ndstone. Occasio	nal iron staining and	2.00	BD	
Shoring/S	Support: Stable	None					G	ENERAL
D	3.00 AC	B 0.45				P e 2 c i i H	No groun incounter 2.50 m by ligging. I nfiltratio Backfille	dwater red. Terminated at gl due to hard Used for n testing. d with arisings.
All dimen	sions in me ale 1:25	etres Client Elan H	lomes Limited	Method/ Plant Used	JCB 3CX	I	.ogged B	By ET



TRIAL PIT LOG



Project					TF	RIAL PIT No
Stocking Lane,	Shenington					TD106
Job No	Date 22-09-21	Ground Level (m)	Co-Ordinates ()			1 - 100
21076J	22-09-21	178.10	E 436,898.0 N 242,69	90.0		
Contractor					Sheet	:
Discovery CE						1 of 1
	S	ΓRATA		SAN	MPLE	S & TESTS
				Depth	No	Remarks/Tests
Depth 0.00-0.15 0.15-0.50 0.15-0.50 0.15-0.50 0.15-0.50 0.15-0.50 0.15-0.50 0.15-0.50 0.15-0.50 0.15-0.50 0.00-0.15 0.00	ass overlying light orange-te to medium quartzite and s ccasional fine rootlets (less to DPSOIL ange-brown slightly gravelly	DESCRIPTIC prown slightly gravelly SA sub-angular fine to mediu than 5 mm diameter).	N ND. Gravel is brown sub-rounded m sandstone with iron staining.			
$\begin{array}{c c} 0.50\text{-}1.65 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ $	ARLSTONE ROCK FORM ange-brown sandy GRAVE casionally tabular medium t casional cobbles.	ATION. CL. Gravel is brown become to coarse sandstone with i	ning dark brown angular ron staining and rare iron deposits.	0.70	ES D	
	ALD FOIL ROCK FORM			1.50	D	
$1.65-2.10$ $\begin{array}{c c} $	range-brown and dark brow ndstone. Cobbles are angula casional fine to medium ora ARLSTONE ROCK FORM	n gravelly COBBLES. Gr ır and tabular if sandstone ınge sand. IATION.	avel is angular and tabular coarse e. Occasional iron staining and			
2.10-2.50	ange-brown and dark brow d iron deposits. Occasional ARLSTONE ROCK FORM	n thinly laminated SAND bands of fine orange sand IATION.	STONE with regular iron staining l.	2.30	D	
Shoring/Support: No Stability: Stable	ne			N	G R	ENERAL EMARKS
A 3.15 — A D C	B 0.45			er 2. di gr pi zc	150 m b 150 m b 199 199 199 199 199 199 199 19	red. Terminated at gl due to hard Gas and ater monitoring alled, response 0 - 2.50 m.
All dimensions in metres Scale 1:25	Client Elan Homes	s Limited Metho Plant	d/ Used JCB 3CX	L	ogged H	^{Зу} ЕТ



TRIAL PIT LOG



Stocking Lanc, Sherington TP107 Job N Discovery CE Silent Discovery CE Silent Discovery CE Silent Discovery CE Silent Conservery CE Silent Discovery CE Silent Depth No Remarks Test Openh No Remarks Test Depth No Case overlying light comacy-brown slightly gravelly very sandy CLAY. Gravel is brown brown brown and and arbs angular fine to medium sandstone. Openh No Remarks Test Openh No Remarks Test Openh No Remarks Test Openh No Remarks Test Openh work and order down slightly gravelly very sandy CLAY. Gravel is brown brown brown and and brown angular occasionality thrown any GLAY CLAY. Gravel is brown brown brown and and brown angular cocasionality thrown any GLAY CLAY. Gravel is brown brown brown and and brown angular cocasionality and tabular core or one colspan="2">Into and any CLAY. Gravel is brown brown brown angular cocasionality and tabulary core or one colspan="2">Into angular cocasionality and tabular	Project									Т	RIAL PIT No		
Job No Date 22-09-21 Ground Level (m) Co-Ordinates () FT UT Contractor Discovery CE Ites 1 178.90 E 436,880.0 N 242,730.0 Sheet 1 of 1 Discovery CE STRATA SAMPLESS STESTS Sheet 1 of 1 Outo.30 No Consolvery made first to mailing startly startly (LAY, Gavel is brown sub-mandel first to mailing startly startly startly (LAY, Gavel is brown sub-mandel first to mailing startly startly startly (LAY, Gavel is brown sub-mandel first to mailing startly startly startly cLAY. Gravel is brown for an adminer. 0.40 ES 0.300.80 TOPSOIL Orange-brown and drik brown slightly gravelly very startly CLAY. Gravel is brown from start and start angular first to mailian startstore. 0.40 ES 0.300.81 TOPSOIL Orange-brown and drik brown slightly gravelly very startly CLAY. Gravel is brown from start and start angular first to mailian startstore. 0.40 ES 0.300.82 TOPSOIL Orange-brown and drik brown sight first of mailian startstore. 0.40 ES 0.300.83 TOPSOIL Orange-brown and drik brown sight and tabular if antidoxic. Coccessional to bular if and start angular and tabular corne startstore. 0.40 ES 1.40 Top	Sto	Stocking Lane, Shenington TP107 Ob No Date 22.00.21 Ground Level (m) Co-Ordinates () TP107											
21076J 22-09-21 178.90 E 436,880.0 N 242,730.0 Contractor Steet 1 of 1 STRATA SAMPLES & TESTS Dopth No Crass overlying light onnego-toron slightly gravelly sandy CLAY. Cravel is brown side-outable files to motivin uncrited and sub-negular files to motivin surfactore. 0.40 FS 0.00-0.30 Crass overlying light onnego-toron slightly gravelly sandy CLAY. Cravel is brown sub-could file throws sub-could file throws sub-could and and sub-negular file to motivin uncrite and sub-negular files to motivin uncrite and sub-negular files to motivin sandstone. 0.40 FS 0.30-0.80 Crass overlying light onnego-toron slightly gravelly variably CLAY. Cravel is brown becoming draw from sandsore with rare incommunicational cobles. 0.40 FS 0.30-0.80 Crass overlying independent and sub-negular files to motivin sandsore with rare incommunicational cobles. 0.40 FS 0.30-1.75 Crass overlying independent and sub-negular overly sands/CLAY. Cravel is advance. Coccasional file to motive and core sandsore. 1.40 FS 1.75-2.00 Comme-torown and dark brown gravelly COBBLES. Gravel is angular and tolular coreare sandsore. Coccasional file notabular coreare in a sandsore. 1.80 B 2.00-2.70 Orange-torown and dark brown file on doti in uncoreas sandsore. 1.80 B 3.05 C Crass overlying in the towen file on doti in uncoreas sandsore.<	Job No			Date 22-09-21	Ground Level (r	n) C	o-Ordinate	es ()			1 1 107		
Outractor 1 of 1 I of 1 STRATA SAMPLES & TESTS Depth No I of 1 Depth No I of 1 Depth No Depth No Depth No Outraction and dark hown slightly gavely sandy CLAY. Carvel is bown Outraction and dark hown slightly gavely wardy CLAY. Carvel is bown 0.300.080 The Orange-Stream and dark hown slightly gavely wardy CLAY. Carvel is bown 0.40 ES 0.300.080 The Orange-Stream and dark hown slightly gavely wardy CLAY. Carvel is bown 0.40 ES 0.300.080 The Orange-Stream and dark hown signal fraction colspan="2">Intervent saturation. 0.300.080 The Orange-Stream and dark hown signal gavely wardy CLAY. Carvel is bown on stating and the orange and the orange and the orange and the orange and the own signal fraction. 0.40 ES 1.55.200 Ge Samge-Stream and dark hown signal gavely wardy and the corange and tabular fractional models. 1.40 FS 2.00-2.70 MARLSTONE ROCK FORMATION. 1.40 FS 1.40 B 2.00-2.70 MARLSTONE ROCK FORMATION. 1.40 <t< td=""><td>21</td><td>076J</td><td></td><td>22-09-21</td><td>178.90</td><td>)</td><td>E 436</td><td>,880.0 N 242,7</td><td>730.0</td><td></td><td></td></t<>	21	076J		22-09-21	178.90)	E 436	,880.0 N 242,7	730.0				
Discovery CE I of 1 STRATA SAMPLES & TESTS Depth No Emmission in control Out-0.30 Image: Strand Colspan="2">Strand Colspan= Colspan= Colspan="2" Ostrand Forop S	Contractor									She	et		
STRATA SAMPLES & TESTS Depth No Emails/Test 0.00-0.30 Crass overlying light canges-brown slightly gravelly sandy CLAY. Cravel is brown sub-counded fine to medium quantize and sub-angular fine to medium sandstone. Occasional time routes (GENERAL STONE ROCK FORMATION. 0.40 ES 0.80-1.75 Corage-brown and dark brown gravelly COBBLES. Gravel is angular and tabular occasional time ordinal magnetize and cobbles. 1.40 FS 0.40 Corage-brown and dark brown gravelly COBBLES. Gravel is angular and tabular occasional time ordinal magnetize gravelly cobbles. 1.40 FS 0.40 Gravel for the ordinal quantity framework in angular occasional time to medium magnetize gravelly cobbles. 1.40 FS 1.75-2.00 Gorage-brown and dark brown gravelly COBBLES. Gravel is angular and tabular occare and the local time ordinal cobbles. 1.40 FS 2.00-2.70 MARLSTONE ROCK FORMATION. 1.40 FS 1.80 B 2.00-2.70 MARLSTONE ROCK FORMATION. 1.40 FS 1.80 B 3.05 T T T T T 3.05 T T T T T 3.05 T T T T T 3.05 T	Dis	covery	/ CE								1 of 1		
Depth No Default STOR 0.000.030 Image: Starting light energies/hourn elightly gravelly sendy CLAY. Gravel is hown and source of the number of time of mandations. 0.40 ES 0.300.080 Image: Starting light energies/hourn elightly gravelly very sandy CLAY. Gravel is hown and source of the number of the				S	STRATA				SA	AMPL	ES & TESTS		
Depth 0.000-030 No The second fine to medium quartitie and sub-angular fine to medium sandstone. Consistent fine rootlets (less that 5 mm diameter). 0.40 ES 0.30-0.80 The second fine to medium quartitie and sub-angular fine to medium sandstone. Consistent fine rootlets (less that 5 mm diameter). 0.40 ES 0.30-0.80 The second fine to medium sandstone. 0.40 ES 0.30-0.80 The second fine to medium sandstone. 0.40 ES 0.30-0.80 The second fine to medium sandstone. 0.40 ES 0.30-1.75 The second fine to medium sandstone. 0.40 ES 0.30-1.75 The second fine to medium sandstone. 0.40 ES 0.30-1.75 The second fine to medium to constantion. 0.40 ES 1.52.200 The second fine to medium constanting fine to medium sandstone. 1.40 ES 1.52.200 The second fine to medium constanting fine to medium sandstone. 1.80 B 2.00-2.70 MARLSTONE ROCK FORMATION. 1.80 B 2.00-2.70 MARLSTONE ROCK FORMATION. 2.10 B MARLSTONE ROCK FORMATION. Second fine to medium conge sand. 1.80 B Soboring/Support: </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Dept</td> <td>h No</td> <td>Remarks/Tests</td>									Dept	h No	Remarks/Tests		
0.30-0.80 2 Orongs-brown and dark brown slightly gravelly very sndy CLAV. Gravel is brown for staining. 0.40 ES 0.80-1.75 3 0.40 ES 0.80-1.75 0.40 ES 1.40 ES 1.75-2.00 Orange-brown and dark brown gravelly COBBLES. Gravel is angular and tabular coarse standstone. Coessional buda if standstone. Occasional into staining and coarse castone mage and. 1.40 ES 1.75-2.00 Orange-brown and dark brown angular databalari if standstone. Occasional into staining and ion deposits. Occasional bands of fine orange stand. 1.80 B 2.00-2.70 MARLSTONE ROCK FORMATION. 2.10 B MARLSTONE ROCK FORMATION. 0 0 0 0 MARLSTONE ROCK FORMATION.	Depth 0.00-0.30	No No	Gra Gra Sub Oct	nss overlying light orange -rounded fine to medium casional fine rootlets (less	DESC y-brown slightly gr quartzite and sub-a than 5 mm diamet	RIPTION avelly sandy angular fine to er).	CLAY. Gr	avel is brown sandstone.					
0.80-1.75 The Direction of AVEL Convel is dark brown angular occasionally tabular medium to coarse sandstone. Occasional cobbles. 1.40 ES 1.75-2.00 The performance of the periference of the performance of the performance of the performance	0.30-0.80		TO TO Dra bec iron	PSOIL. inge-brown and dark brow oming dark brown sub-rc 1 staining.	vn slightly gravelly punded and sub-ang	v very sandy C gular fine to n	CLAY. Gra nedium sar	avel is brown adstone with rare	0.40	ES			
1.75-2.00 Orange-brown and dark brown gravelly COBBLES. Gravel is angular and tabular coarse casional fine to medium orange sand. 1.40 ES 2.00-2.70 MARLSTONE ROCK FORMATION. 1.80 B Orange-brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand. 2.10 B MARLSTONE ROCK FORMATION. Orange-brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand. 2.10 B MARLSTONE ROCK FORMATION. Orange-brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand. 2.10 B MARLSTONE ROCK FORMATION. Market fine orange sand. 2.10 B MARLSTONE ROCK FORMATION. Market fine orange sand. 2.10 B Market fine orange sand. Market fine orange sand. 2.10 B Market fine or collapse on eastern face Market fine orange sand. No groundwater fine mainted fine or here the fine or here there the fine or here there the fine or her	0.80-1.75												
1.75-2.00 Orange-brown and dark brown gravelly COBBLES. Gravel is angular and tabular coarse acquar and tabular is sandstone. Occasional iron staining and accasional fine to medium orange sand. 1.80 B 2.00-2.70 MARLSTONE ROCK FORMATION. Dampe brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand. 2.10 B MARLSTONE ROCK FORMATION. MARLSTONE ROCK FORMATION. 2.10 B MARLSTONE ROCK FORMATION. MARLSTONE ROCK FORMATION. 2.10 B Shoring/Support: None Stability: Minor collapse on eastern face EEMERAL REMARKS No groundwater encountered. Terminated Science of the state of th		ES											
2.00-2.70 MARLSTONE ROCK FORMATION. Orange-brown and dark bown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand. 2.10 B MARLSTONE ROCK FORMATION. MARLSTONE ROCK FORMATION. 2.10 B Shoring/Support: None Stability: Minor collapse on eastern face EEMARKS REMARKS More and the second secon	1.75-2.00	0000	Ora San	ange-brown and dark brow dstone. Cobbles are angu asional fine to medium or	vn gravelly COBB lar and tabular if sa range sand.	LES. Gravel i indstone. Oce	s angular a casional ir	and tabular coarse on staining and	1.80	В			
Shoring/Support: None GENERAL Stability: Minor collapse on eastern face GENERAL Image: Collapse on eastern face No groundwater Image: Collapse on eastern face REMARKS No groundwater encountered. Terminated Image: Collapse on eastern face Remarks Image: Collapse on eastern face Remarks <t< td=""><td>2.00-2.70</td><td>В</td><td></td></t<>	2.00-2.70	В											
Shoring/Support: None GENERAL Stability: Minor collapse on eastern face REMARKS A No groundwater A Image: Collapse on eastern face All dimensions in metres Client Elan Homes Limited Method/ Plant Used ICB 3CX Logged By FT													
All dimensions in metres Scale 1:25 Client Elan Homes Limited Method/ Plant Used ICB 3CX FT	Shoring/S Stability:	Suppor Mino — 3.(A	t: Nor r colla	ne pse on eastern face B 0.45						I No grou encoun 2.70 m digging arisings	GENERAL REMARKS undwater tered. Terminated at bgl due to hard g. Backfilled with s.		
	All dimen	sions in	metres	Client Elan Home	es Limited	Method/ Plant Used		ICB 3CX		Logged	By FT		



TRIAL PIT LOG



Project						TRIAL PIT No
Sto	cking La	ane, Shenington	Crown d Lowel (m) Co Ordinates ()		HP101
JOB NO 21	0761	13-10-21	179 98	F 436 910.0	N 242 885 0	
Contractor		15 10 21	177.90	L 130,910.0	11 2-12,005.0	Sheet
Dis	scovery (CE				1 of 1
			STRATA		SA	AMPLES & TESTS
		1			Dept	h No Remarks/Tests
Depth 0.00-0.60	No - - - - - - - - - - - - - - - - - -	Grass overlying firm ligh sub-rounded fine to medi staining. Occasional fine TOPSOIL	DESCI t orange-brown slightly um quartzite and sub-ar rootlets (less than 5 mm	RIPTION y gravelly sandy CLAY. Gravel is ngular fine to medium sandstone n diameter).	brown with iron 0.50	в
0.60-0.75		Medium dense orange-br dark brown sub-rounded MARLSTONE ROCK F	own slightly gravelly vo and sub-angular fine to ORMATION.	ery clayey SAND. Gravel is brow medium sandstone with iron stai	n and ning. 0.75	D
Shoring/3	Support:					GENERAL
Stability:	—— 0.45 A	B 0.45				REMARKS No groundwater encountered. Hand dug trial pit. Terminated at 0.75 m bgl due to hard digging. Backfilled with arisings.
	C					15
All dimen Sc	sions in m ale 1:25	etres Client Elan Ho	omes Limited	Method/ Plant Used		Logged By ET

TRIAL PIT LOG



Project		·						TF	RIAL PIT No
Sto	cking L	ane, Shenington	l	~	<u> </u>				HP102
Job No		Date 13-1	0-21	Ground Level (n	n)	Co-Ordinates ()			111 102
Contractor	J76J	13-1	0-21	1/9.1/		E 436,942.0 N 242,82	20.0	Sheet	
Dis	coverv	CE						Sheet	1 of 1
210			S	ΓΡΔΤΔ			SA	MPI F	S & TESTS
							Deptl	n No	Remarks/Tests
Depth 0.00-0.75 0.75-1.00	No 0	Grass overlying sub-rounded fine staining. Occasio TOPSOIL Firm orange-bro sub-rounded and MARLSTONE 1	firm light oran e to medium q onal fine rootl wn slightly gr l sub-angular ROCK FORM	DESC nge-brown slightly uartzite and sub-a ets (less than 5 m avelly sandy CLA fine to medium sa IATION.	RIPTION / gravelly s ngular fine n diameter Y. Gravel i ndstone wi	andy CLAY. Gravel is brown to medium sandstone with iron). is brown and dark brown th iron staining.	0.40	B	
Shoring/S Stability:	Support 0.45 	5	5					G R No groun encounte pit. Term bgl due t Backfille	ENERAL EMARKS ndwater red. Hand dug trial ninated at 1.00 m o hard digging. ed with arisings.
All dimen Sca	sions in r ale 1:25	netres Client I	Elan Homes	Limited	Method/ Plant Use	d		Logged I	By ET

TRIAL PIT LOG



Project								TF	RIAL PIT No
Sto	cking	Lane, S	henington						HP103
Job No		1	Date 13-10-21	Ground Level (n	n)	Co-Ordinates ()			
21	076J		13-10-21	177.93	5	E 436,973.0 N 242,6	90.0	<u> </u>	
Contractor		TH CE						Sneet	1 of 1
Dis	scover	YCE							1 01 1
				STRATA			SA	MPLE	S & TESTS
	N			DEGG	DIDTION		Depth	No	Remarks/Tests
Depth 0.00-0.60	No	Gras	s overlying firm light rounded fine to mediu ing. Occasional fine ro	DESC orange-brown slightly m quartzite and sub-a ootlets (less than 5 mi	RIPTION y gravelly s ingular fine m diameter	andy CLAY. Gravel is brown to medium sandstone with iron).	0.30	в	
			SOIL				0.50		
0.60-0.90		○ Firm sub-	orange-brown slightly rounded and sub-angu	y gravelly sandy CLA lar fine to medium sa	Y. Gravel ndstone wi	is brown and dark brown th iron staining.		П	
		<u>• </u>	RLSTONE ROCK FO	RMATION.			0.80		
Shoring									ENIEDAI
Snoring/S Stability:	Suppo	rt:					1	R R No grour	ENEKAL EMARKS ndwater
	0	.45 —— A	→ B 0.45					encounte oit. Term ogl due t Backfille	red. Hand dug trial inated at 0.90 m o hard digging. d with arisings.
		С	Y						
All dimen	sions in ale 1:2:	n metres 5	Client Elan Hor	nes Limited	Method/ Plant Use	d		Logged I	³ y ET

TRIAL PIT LOG



Project								T	RIAL PIT No
Sto	cking La	ne, S	henington						
Job No		I	Date 13-10-21	Ground Level (n	n)	Co-Ordinates ()			NF 104
21	076J		13-10-21	178.78	3	E 436,921.0 N 242,7	47.0		
Contractor								Shee	t
Dis	scovery C	CE							1 of 1
			S	TRATA			SA	MPLE	ES & TESTS
							Deptl	n No	Remarks/Tests
Depth 0.00-0.50	No	Gras sub- stain TOP	s overlying firm light or rounded fine to medium ing. Occasional fine roo SOIL	DESC ange-brown slightly quartzite and sub-a tlets (less than 5 m	RIPTION y gravelly angular fin m diamete	sandy CLAY. Gravel is brown e to medium sandstone with iron r).			
0.50-1.00		Med sub- MAI	ium dense orange-browr rounded and sub-angular RLSTONE ROCK FOR	n clayey sandy GRA r fine to medium sa MATION.	AVEL. Gra ndstone w	avel is brown and dark brown ith iron staining.	0.60 0.60	B D	
Shoring/Stability:	Support: 0.45		⊳				-	R No grou encounte pit. Terr	ENERAL EMARKS ndwater ered. Hand dug trial ninated at 1.00 m
D	A C		B 0.45					bgl due Backfill	to hard digging. ed with arisings.
All dimer	sions in me ale 1:25	etres	Client Elan Home	es Limited	Method/ Plant Us	ed		Logged	By ET

TRIAL PIT LOG



Project							TF	RIAL PIT No
Sto	cking Lan	e, Shenington						
Job No		Date 13-10-21	Ground Level (n	n) C	Co-Ordinates ()			
21	076J	13-10-21	177.84	-	E 437,019.0 N 242,72	27.0		
Contractor							Sheet	t
Dis	covery CI	3						1 of 1
			STRATA			SAI	MPLE	S & TESTS
						Depth	No	Remarks/Tests
Depth 0.00-0.65	No	Grass overlying firm light sub-rounded fine to mediu staining. Occasional fine r TOPSOIL	DESC orange-brown slightly um quartzite and sub-a rootlets (less than 5 mi	RIPTION y gravelly sa ngular fine t m diameter).	ndy CLAY. Gravel is brown o medium sandstone with iron			
						0.50	D	
0.65-1.00		Firm orange-brown gravel and sub-angular fine to me MARLSTONE ROCK FC	lly sandy CLAY. Grav edium sandstone with DRMATION.	vel is brown a iron staining	and dark brown sub-rounded 3.	0.75	в	
Shoring/S	Support:							ENERAL
Stability:	0.45 A C	■ B 0.45				N er bj B	to groun ncounter it. Term gl due t ackfille	EMARKS indwater bred. Hand dug trial initiated at 1.00 m o hard digging. ed with arisings.
All dimen Sc	sions in met ale 1:25	res Client Elan Hor	mes Limited	Method/ Plant Used		L	ogged I	^{By} ET

TRIAL PIT LOG



Project						TR	RIAL PIT No
Sto	cking La	ne, Shenington					
Job No		Date 13-10-21	Ground Level (m) Co-Ordinates ()			
21	076J	13-10-21	179.34	E 436,826	.0 N 242,740.0		
Contractor						Sheet	
Dis	covery (CE					1 of 1
			STRATA		SA	MPLE	S & TESTS
		1			Dept	n No	Remarks/Tests
Depth 0.00-0.65	No	Grass overlying firm light sub-rounded fine to mediu staining. Occasional fine r TOPSOIL	DESCI orange-brown slightly um quartzite and sub-ar pootlets (less than 5 mm	RIPTION gravelly sandy CLAY. Grav ngular fine to medium sandst n diameter).	vel is brown tone with iron 0.40	D	
0.65-0.95		Orange-brown clayey sand sub-angular fine to mediu	dy GRAVEL. Gravel is m sandstone with iron	s brown and dark brown sub staining.	-rounded and 0.80	в	
Stability:	0.45 A	⊳ I				No groun encounter pit. Term bgl due to	EMARKS dwater red. Hand dug trial inated at 0.95 m o hard digging.
D	C	B 0.45				Backfille	d with arisings.
All dimen Sc	sions in m ale 1:25	etres Client Elan Hor	mes Limited	Method/ Plant Used		Logged F	^{3y} ET



SITE

Geotechnical & Environmental Engineers Shenington PROJECT No. 21076J Atmospheric & Ground Conditions Ground Surface Conditions Atmospheric Pressure Variations During Visit SH Carried Out by: 994 -995 mb Wet Date: 30-Sep-21 Weather Conditions Atmospheric Pressure Trend Over Previous 24hrs Instrument GFM-430 & Dip Meter Wind Details CH4 (% v/v) Well No. Cover Well Flow Rate Differential Flow Rate Differential Flow Rate Differential CH4 CO2 (% v/v) O2 (% v/v) H2S (ppm) CO (ppm) Duration Flow Rate Differential PID (ppm) Atmospheric Water Depth of COMMENTS Height (l/hr) Initial Pressure (Pa) (l/hr) 15 s ressure (Pa Pressure (Pa Pressure (mb) Diameter Pressure (l/hr) Steady (secs)^ (l/hr) Level Pipe (m LEL (%) Min Peak Peak Steady (m bgl) (m agl) (mm) Initial (Pa) 15 s Steady Steady Peak Steady Peak Steady Steady Steady Peak Steady bgl) NR TP101 0.50 42 NR DRY 2.00 TP107 42 NR DRY 1.73 0.71 DS101 0.0 0.0 19.9 20.1 0.0 0.0 2.0 0.0 180 0.0 NR NR 994 DRY 4.26 0.44 42 0 0 0 0 0 0 0.0 0.0 0.1 0.0 DS103 0.48 42 0 0 0 0 0 0 0.0 0.0 0.0 0.4 0.4 19.9 20.0 0.0 0.0 2.0 0.0 180 0.0 0.0 NR NR 994 DRY 1.15 42 0 0 0 0.0 NR DS104 0.42 0 0 0 0.0 0.0 0.6 0.6 19.5 19.8 0.0 0.0 7.0 0.0 180 0.0 0.0 NR 995 DRY 1.24 DS106 0.40 42 0.5 0 0 0 0.0 0.0 0.0 0.3 0.3 20.0 20.0 0.0 0.0 2.0 2.0 180 0.0 0.0 NR NR 995 DRY 3.35 1 0

NR = Not Recorded Notes:

^ For measurement of gas concentrations

> = Above LEL WST = Water Sample Taken GL = Ground Level



SITE

Geotechnical & Environmental Engineers Shenington PROJECT No. 21076J **Atmospheric & Ground Conditions** Ground Surface Conditions Atmospheric Pressure Variations During Visit EW Carried Out by: Ranged from 987-990mb during visit Dry Date: 21-Oct-21 Atmospheric Pressure Trend Over Previous 24hrs Weather Conditions Instrument GFM-430 & Dip Meter Cloudy and sunny Details CH4 (% v/v) Well No. Cover Well Flow Rate Differential Flow Rate Differential Flow Rate Differential CH4 CO2 (% v/v) O2 (% v/v) H2S (ppm) CO (ppm) Duration Flow Rate Differential PID (ppm) Atmospheric Water Depth of COMMENTS Height (l/hr) Initial Pressure (Pa) (l/hr) 15 s ressure (Pa (l/hr) Pressure (Pa Pressure (mb) Level Diameter Pressure (l/hr) Steady (secs)^ Pipe (m Peak LEL (%) Min Peak Peak Peak Steady (m bgl) (m agl) (mm) Initial (Pa) 15 s Steady Steady Steady Peak Steady Steady Steady Steady bgl) NR TP101 0.50 42 NR TP107 42 NR 0.71 DS101 0.44 0.0 0.6 20.4 20.2 0.0 0.0 0.0 0.0 180 0.0 0.0 990 Dry 5.04 42 0 0 0 0 0 0 0.0 0.0 0.7 0.0 0.0 Dry DS103 0.48 42 0 0 0 0 0 0 0.0 0.0 0.0 0.0 0.0 20.7 20.8 0.0 0.0 0.0 0.0 180 0.0 0.0 0.0 0.0 990 Dry 2.45 Dry 0 42 0 0 0.0 DS104 0.42 0 0 0 0.0 0.0 0.5 0.4 20.4 20.6 0.0 0.0 0.0 0.0 180 0.0 0.0 0.0 0.0 988 Dry 2.01 Dry DS106 0.40 42 0 0 0 0 0 0.0 0.0 0.0 0.4 0.0 20.7 20.7 0.0 0.0 0.0 0.0 180 0.0 0.0 0.0 0.0 987 Dry 3.07 Drv 0

NR = Not Recorded Notes:

^ For measurement of gas concentrations

> = Above LEL WST = Water Sample Taken GL = Ground Level



Geotechnical & Environmental Engineers

SITE Shenington

PROJECT N	о.	21076J																		Atmos	pheric & G	Fround Cond	itions					
															Atmos	pheric F	ressure	Variati	ons Duri	ing Visit					Ground	I Surfac	e Condit	ions
Carried Out	by:	EW														R	anged fro	om 984-	986							Dry	,	
Date:		28-Oct-21															- J											
Instrument							-								Atmosph	eric Pre	ssure I	rend Ov	er Previ	ious 24hrs	5				We	ather Co	onditions	6
Details					GFIVI-4		er								Vari	es from	1003 to 9	968 over	the last	24hrs					Ove	ercast, D	ry, Wind	/
Well No.	Cover	Well	Flow Rate	Differential	Flow Rate	Differential	Flow Rate	Differential	CH4	(% v/v)	CH4	CO2	(% v/v)	02 (% v/v)	H2S	(ppm)	CO	(ppm)	Duration	Flow Rate	Differential	PID	(ppm)	Atmospheric	Water	Depth of	COMMENTS
	Height	Diameter	(I/hr) Initial	Pressure (Pa)	(l/hr) 15 s	Pressure (Pa)	(l/hr)	Pressure (Pa)			Steady									(secs)^	(l/hr)	Pressure (Pa)			Pressure (mb)	Level	Pipe (m	
	(iii agi)	(11111)		mua		15 5	Sleady	Sleady	Deak	Chandler	LEL (%)	Deek	Chandy	Min	Chandy	Beek	Chandy	Deak	Chandre				Deek	Steady		(in bgi)	bgi)	
TD101	0.50	40	ND	ND	ND	ND	ND	ND	ND	Sleady	ND	ND	Sleady	MIN	Steady	ND	ND	ND	Steauy	ND	ND	ND	ND	Steady	ND	/	2.01	Dry No bung
TP107	0.50	42	NR	NR		NR		NR				NR		NR					NR			NR	NR		NR	/	2.91	Dry- No bung
DS101	0.44	42	0	0	0	0	0	0	0	0	0	0.5	0.4	20.7	20.8	0	0	0	0	180	0	0	NR	NR	986	/	5.04	Dry
DS103	0.48	42	0	0	0	0	0	0	0	0	0	0.0	0	20.9	21.0	0	0	0	0	180	0	0	NR	NR	985	/	2.01	Dry
DS104	0.42	42	0	0	0	0	0	0	0	0	0	0.7	0.6	20.9	20.9	0	0	0	0	180	0	0	NR	NR	985	/	2.03	Dry
DS106	0.40	42	0	0	0	0	0	0	0	0	0	0.4	0	20.9	20.9	0	0	0	0	180	0	0	NR	NR	984	/	3.06	Dry
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Notes: NR = Not Recorded

^ For measurement of gas concentrations

> = Above LEL WST = Water Sample Taken

GL = Ground Level



SITE		Sheningto	ton											Geotechnical & Environmental Engineers														
PROJECT N	lo.	21076J																		Atmos	pheric & G	iround Cond	litions					
															Atmos	pheric F	ressure	Variatio	ons Duri	ng Visit					Groun	d Surfac	e Condi	tions
Carried Out	by:	CT														Fall	ng from	999 - 99	7 mb							Wet ope	en field	
Date:		11-Nov-2	1														-											
Instrument					OFM 420									A	tmosph	eric Pre	ssure I	rend Ov	er Previ	ous 24hrs	5				W	eather C	ondition	S
Details					GFIN-430	a Dip iviete	31																			Light	rain	
Well No.	Cover	Well	Flow Rate	Differential	Flow Rate	Differential	Flow Rate	Differential	CH4	(% v/v)	CH4	CO2	(% v/v)	02 (% v/v)	H2S	(ppm)	CO	(ppm)	Duration	Flow Rate	Differential	PID	(ppm)	Atmospheric	Water	Depth of	COMMENTS
	Height	Diameter	(l/hr) Initial	Pressure (Pa)	(l/hr) 15 s	Pressure	(l/hr)	Pressure (Pa)			Steady									(secs)^	(l/hr)	Pressure (Pa)			Pressure (mb)	Level	Pipe (m	
	(m agl)	(mm)		Initial		(Pa) 15 s	Steady	Steady	Peak	Steady	LEL (%)	Peak	Steady	Min	Steady	Peak	Steady	Peak	Steady				Peak	Steady		(m bgl)	bgl)	
TP101	0.50	42	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	DRY	2.44	
TP107	0.71	42	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	DRY	2.22	
DS101	0.44	42	0	0	NR	NR	0	0	0.0	0.0	0.0	0.0	0.0	20.9	20.9	0.0	0.0	0.0	0.0	180	0.0	0.0	NR	NR	997	DRY	4.63	
DS103	0.48	42	0	0	NR	NR	0	0	0.0	0.0	0.0	0.0	0.0	20.7	20.7	0.0	0.0	0.0	0.0	180	0.0	0.0	NR	NR	999	DRY	1.55	
DS104	0.42	42	0	0	NR	NR	0	0	0.0	0.0	0.0	0.3	0.3	20.5	20.5	0.0	0.0	0.0	0.0	180	0.0	0.0	NR	NR	998	DRY	1.64	
DS106	0.40	42	0	0	NR	NR	0	0	0.0	0.0	0.0	0.2	0.2	20.7	20.7	0.0	0.0	0.0	0.0	180	0.0	0.0	NR	NR	997	DRY	2.70	
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Notes: NR = Not Recorded ^ For measurement of gas concentrations

> = Above LEL WST = Water Sample Taken

GL = Ground Level



APPENDIX E - GEOTECHNICAL TEST RESULTS




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Contract Number: 56235

Client Ref: **21076J** Client PO:

Laboratory Report

Report Date: 29-10-2021

Client Discovery CE Geotechncial & Enviromental Engineers The Granary Broadwell House Farm, Broadwell, Rugby, Warwickshire CV23 8HF 01926 813909

Contract Title: Shenington - Hand Pits For the attention of: Edward Tainsh

Date Received: **14-10-2021** Date Completed: **29-10-2021**

Test Description

Moisture Content

BS 1377:1990 - Part 2 : 3.2 - * UKAS

4 Point Liquid & Plastic Limit

BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS

PSD Wet Sieve method

BS 1377:1990 - Part 2 : 9.2 - * UKAS

Samples Received

- @ Non Accredited Test

Disposal of samples for job

Notes: Observations and Interpretations are outside the UKAS Accreditation

- * denotes test included in laboratory scope of accreditation
- # denotes test carried out by approved contractor
- @ denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager) Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)

GEO Site & Testing Services Ltd Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk











APPENDIX F - CHEMICAL TEST RESULTS

😵 eurofins

Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL Tel: 01638 606070 Email: info@chemtest.com

Final Report			Email: info@chemtest.co
Report No.:	21-33783-1		
Initial Date of Issue:	04-Oct-2021		
Client	Discovery CE Ltd		
Client Address:	The Granary Broadwell House Farm Broadwell Rugby Warwickshire CV23 8HF		
Contact(s):	Discovery Ed Tainsh		
Project	21076J Shenington		
Quotation No.:		Date Received:	29-Sep-2021
Order No.:		Date Instructed	: 29-Sep-2021
No. of Samples:	21		
Turnaround (Wkdays):	5	Results Due:	05-Oct-2021
Date Approved:	04-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

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CY'S

Client: Discovery CE Ltd	Chemtest Job No.:		21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783		
Quotation No.:	0	Chemte	est Sam	ple ID.:	1288356	1288357	1288358	1288359	1288360	1288361	1288362	1288363	1288364
		Sa	ample L	ocation:	TP101	TP101	TP102	TP102	TP102	TP103	TP104	TP104	TP105
			Sampl	e Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top De	pth (m):	0.70	1.60	0.30	0.90	1.00	0.80	0.60	1.00	0.50
		Bot	ttom De	pth (m):	0.70	1.60	0.30	0.90	1.00	0.80	0.60	1.00	0.50
			Date Sa	ampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021
Determinand	Accred.	SOP	Units	LOD									
Moisture	N	2030	%	0.020	18	21	18	25	20	21	21	22	18
Soil Colour	N	2040		N/A	Brown								
Other Material	N	2040		N/A	Stones								
Soil Texture	N	2040		N/A	Sand								
рН	М	2010		4.0	7.2	7.4	7.1	8.6	8.3	7.5	7.2	7.5	7.2
Boron (Hot Water Soluble)	М	2120	mg/kg	0.40	0.78	0.40	0.77	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.96
Sulphate (2:1 Water Soluble) as SO4	М	2120	g/l	0.010									
Arsenic	M	2450	mg/kg	1.0	190	64	200	130	130	200	240	130	360
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10	0.13
Chromium	M	2450	mg/kg	1.0	180	160	180	300	190	280	210	310	340
Copper	M	2450	mg/kg	0.50	9.5	3.1	10	6.0	5.9	6.8	12	5.0	18
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10
Nickel	M	2450	mg/kg	0.50	110	83	100	140	100	150	130	160	200
Lead	M	2450	mg/kg	0.50	33	1/	38	33	23	35	54	27	85
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
	U	2450	mg/kg	5.0	280	180	270	340	240	380	350	370	530
	M	2450	mg/kg	0.50	210	120	230	200	150	180	260	160	420
Chromium (Hexavalent)	N N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
	IVI M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Acenaphthylene	IVI N4	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Acenaphtnene	IVI M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Phoponthropo	IVI M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Renzo[a]anthracene	M	2700	ma/ka	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Chrysene	M	2700	ma/ka	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	ma/ka	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	ma/ka	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Benzolalpyrene	M	2700	ma/ka	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Indeno(1.2.3-c.d)Pvrene	M	2700	ma/ka	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Dibenz(a,h)Anthracene	М	2700	mg/ka	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	ma/ka	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Total Of 16 PAH's	М	2700	mg/kg	2.0	< 2.0		< 2.0					< 2.0	< 2.0
Demeton-O	N	2820	mg/ka	0.20			< 0.20						
Phorate	N	2820	mg/ka	0.20			< 0.20						
Demeton-S	N	2820	mg/ka	0.20			< 0.20						i
Disulfoton	Ν	2820	mg/kg	0.20			< 0.20						

Client: Discovery CE Ltd	Chemtest Job No.:		21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783		
Quotation No.:	(Chemte	est Sam	ple ID.:	1288356	1288357	1288358	1288359	1288360	1288361	1288362	1288363	1288364
		Sa	ample Lo	ocation:	TP101	TP101	TP102	TP102	TP102	TP103	TP104	TP104	TP105
			Sampl	e Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top De	oth (m):	0.70	1.60	0.30	0.90	1.00	0.80	0.60	1.00	0.50
		Bot	ttom De	oth (m):	0.70	1.60	0.30	0.90	1.00	0.80	0.60	1.00	0.50
			Date Sa	ampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021
Determinand	Accred.	SOP	Units	LOD									
Fenthion	N	2820	mg/kg	0.20			< 0.20						
Trichloronate	N	2820	mg/kg	0.20			< 0.20						
Prothiofos	N	2820	mg/kg	0.20			< 0.20						
Fensulphothion	N	2820	mg/kg	0.20			< 0.20						
Sulprofos	N	2820	mg/kg	0.20			< 0.20						
Azinphos-Methyl	N	2820	mg/kg	0.20			< 0.20						
Coumaphos	N	2820	mg/kg	0.20			< 0.20						
Atraton	N	2830	mg/kg	0.20			< 0.20						
Prometon	N	2830	mg/kg	0.20			< 0.20						
Simazine	N	2830	mg/kg	0.20			< 0.20						
Atrazine	N	2830	mg/kg	0.20			< 0.20						
Propazine	N	2830	mg/kg	0.20			< 0.20						
Terbuthylazine	N	2830	mg/kg	0.20			< 0.20						
Secbumeton	N	2830	mg/kg	0.20			< 0.20						
Simetryn	N	2830	mg/kg	0.20			< 0.20						
Ametryn	N	2830	mg/kg	0.20			< 0.20						
Prometryn	N	2830	mg/kg	0.20			< 0.20						
Terbutryn	N	2830	mg/kg	0.20			< 0.20						
Alpha-HCH	N	2840	mg/kg	0.20			< 0.20						
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20			< 0.20						
Beta-HCH	N	2840	mg/kg	0.20			< 0.20						
Delta-HCH	N	2840	mg/kg	0.20			< 0.20						
Heptachlor	N	2840	mg/kg	0.20			< 0.20						
Aldrin	N	2840	mg/kg	0.20			< 0.20						
Heptachlor Epoxide	N	2840	mg/kg	0.20			< 0.20						
Gamma-Chlordane	N	2840	mg/kg	0.20			< 0.20						
Alpha-Chlordane	N	2840	mg/kg	0.20			< 0.20						
Endosulfan I	N	2840	mg/kg	0.20			< 0.20						
4,4-DDE	N	2840	mg/kg	0.20			< 0.20						
Dieldrin	N	2840	mg/kg	0.20			< 0.20						
Endrin	N	2840	mg/kg	0.20			< 0.20						
4,4-DDD	N	2840	mg/kg	0.20			< 0.20						
Endosulfan II	Ν	2840	mg/kg	0.20			< 0.20						
Endrin Aldehyde	Ν	2840	mg/kg	0.20			< 0.20						
4,4-DDT	N	2840	mg/kg	0.20			< 0.20						
Endosulfan Sulphate	N	2840	mg/kg	0.20			< 0.20		l		l		
Methoxychlor	Ν	2840	mg/kg	0.20			< 0.20						
Endrin Ketone	Ν	2840	mg/kg	0.20			< 0.20						

Client: Discovery CE Ltd	Chemtest Job No.:		21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783		
Quotation No.:	(Chemte	est Sam	ple ID.:	1288365	1288366	1288367	1288368	1288369	1288370	1288371	1288372	1288373
		Sa	ample Lo	ocation:	TP105	TP106	TP107	TP107	TP102	TP103	TP104	TP105	TP105
			Sampl	е Туре:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top De	pth (m):	1.20	0.70	0.40	1.40	1.50	1.50	2.30	1.80	2.00
		Bot	ttom De	pth (m):	1.20	0.70	0.40	1.40	1.50	1.50	2.30	1.80	2.00
			Date Sa	ampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021
Determinand	Accred.	SOP	Units	LOD									
Moisture	N	2030	%	0.020	21	21	20	21	18	19	14	21	13
Soil Colour	N	2040		N/A	Brown								
Other Material	N	2040		N/A	Stones								
Soil Texture	N	2040		N/A	Sand								
рН	М	2010		4.0	7.3	7.9	7.6	7.6	7.6	8.2	8.1	8.1	8.0
Boron (Hot Water Soluble)	М	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40					
Sulphate (2:1 Water Soluble) as SO4	М	2120	g/l	0.010					< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Arsenic	М	2450	mg/kg	1.0	210	150	290	200					
Cadmium	М	2450	mg/kg	0.10	< 0.10	< 0.10	0.13	< 0.10					
Chromium	М	2450	mg/kg	1.0	210	340	280	330					
Copper	М	2450	mg/kg	0.50	12	6.3	15	6.8					
Mercury	М	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10					
Nickel	М	2450	mg/kg	0.50	110	160	160	150					
Lead	М	2450	mg/kg	0.50	42	35	58	32					
Selenium	М	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20					
Vanadium	U	2450	mg/kg	5.0	320	400	440	390					
Zinc	М	2450	mg/kg	0.50	240	190	280	180					
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50					
Naphthalene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Acenaphthylene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Acenaphthene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Fluorene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Phenanthrene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Anthracene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Fluoranthene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Pyrene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Benzo[a]anthracene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Chrysene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Benzo[b]fluoranthene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Benzo[k]fluoranthene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Benzo[a]pyrene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Indeno(1,2,3-c,d)Pyrene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Dibenz(a,h)Anthracene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Benzo[g,h,i]perylene	М	2700	mg/kg	0.10		< 0.10		< 0.10					
Total Of 16 PAH's	М	2700	mg/kg	2.0		< 2.0		< 2.0					
Demeton-O	N	2820	mg/kg	0.20			< 0.20						
Phorate	N	2820	mg/kg	0.20			< 0.20						
Demeton-S	N	2820	mg/kg	0.20			< 0.20						
Disulfoton	N	2820	mg/kg	0.20			< 0.20						

Client: Discovery CE Ltd	Chemtest Job No.:		21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783	21-33783		
Quotation No.:	(Chemte	est Sam	ple ID.:	1288365	1288366	1288367	1288368	1288369	1288370	1288371	1288372	1288373
		Sa	ample Lo	ocation:	TP105	TP106	TP107	TP107	TP102	TP103	TP104	TP105	TP105
			Sampl	e Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top De	oth (m):	1.20	0.70	0.40	1.40	1.50	1.50	2.30	1.80	2.00
		Bot	ttom De	oth (m):	1.20	0.70	0.40	1.40	1.50	1.50	2.30	1.80	2.00
			Date Sa	ampled:	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021
Determinand	Accred.	SOP	Units	LOD									
Fenthion	N	2820	mg/kg	0.20			< 0.20						
Trichloronate	N	2820	mg/kg	0.20			< 0.20						
Prothiofos	N	2820	mg/kg	0.20			< 0.20						
Fensulphothion	N	2820	mg/kg	0.20			< 0.20						
Sulprofos	N	2820	mg/kg	0.20			< 0.20						
Azinphos-Methyl	N	2820	mg/kg	0.20			< 0.20						
Coumaphos	N	2820	mg/kg	0.20			< 0.20						
Atraton	N	2830	mg/kg	0.20			< 0.20						
Prometon	N	2830	mg/kg	0.20			< 0.20						
Simazine	N	2830	mg/kg	0.20			< 0.20						
Atrazine	N	2830	mg/kg	0.20			< 0.20						
Propazine	N	2830	mg/kg	0.20			< 0.20						
Terbuthylazine	N	2830	mg/kg	0.20			< 0.20						
Secbumeton	N	2830	mg/kg	0.20			< 0.20						
Simetryn	N	2830	mg/kg	0.20			< 0.20						
Ametryn	N	2830	mg/kg	0.20			< 0.20						
Prometryn	N	2830	mg/kg	0.20			< 0.20						
Terbutryn	N	2830	mg/kg	0.20			< 0.20						
Alpha-HCH	N	2840	mg/kg	0.20			< 0.20						
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20			< 0.20						
Beta-HCH	N	2840	mg/kg	0.20			< 0.20						
Delta-HCH	N	2840	mg/kg	0.20			< 0.20						
Heptachlor	N	2840	mg/kg	0.20			< 0.20						
Aldrin	N	2840	mg/kg	0.20			< 0.20						
Heptachlor Epoxide	N	2840	mg/kg	0.20			< 0.20						
Gamma-Chlordane	N	2840	mg/kg	0.20			< 0.20						
Alpha-Chlordane	N	2840	mg/kg	0.20			< 0.20						
Endosulfan I	N	2840	mg/kg	0.20			< 0.20						
4,4-DDE	N	2840	mg/kg	0.20			< 0.20						
Dieldrin	N	2840	mg/kg	0.20			< 0.20						
Endrin	N	2840	mg/kg	0.20			< 0.20						
4,4-DDD	N	2840	mg/kg	0.20			< 0.20						
Endosulfan II	Ν	2840	mg/kg	0.20			< 0.20						
Endrin Aldehyde	Ν	2840	mg/kg	0.20			< 0.20						
4,4-DDT	Ν	2840	mg/kg	0.20			< 0.20						
Endosulfan Sulphate	N	2840	mg/kg	0.20			< 0.20		l		l		
Methoxychlor	Ν	2840	mg/kg	0.20			< 0.20						
Endrin Ketone	Ν	2840	mg/kg	0.20			< 0.20						

Client: Discovery CE Ltd		Che	ntest Jo	ob No.:	21-33783	21-33783	21-33783
Quotation No.:	(Chemte	st Sam	ole ID.:	1288374	1288375	1288376
		Sa	ample Lo	ocation:	TP106	TP106	TP106
			Sample	e Type:	SOIL	SOIL	SOIL
			Тор Dep	oth (m):	1.00	1.50	2.30
		Bot	tom Dep	oth (m):	1.00	1.50	2.30
			Date Sa	mpled:	22-Sep-2021	22-Sep-2021	22-Sep-2021
Determinand	Accred.	SOP	Units	LOD			
Moisture	Ν	2030	%	0.020	18	16	13
Soil Colour	Ν	2040		N/A	Brown	Brown	Brown
Other Material	Ν	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand
рН	М	2010		4.0	8.1	8.0	8.1
Boron (Hot Water Soluble)	М	2120	mg/kg	0.40			
Sulphate (2:1 Water Soluble) as SO4	М	2120	g/l	0.010	< 0.010	< 0.010	< 0.010
Arsenic	М	2450	mg/kg	1.0			
Cadmium	М	2450	mg/kg	0.10			
Chromium	М	2450	mg/kg	1.0			
Copper	М	2450	mg/kg	0.50			
Mercury	М	2450	mg/kg	0.10			
Nickel	М	2450	mg/kg	0.50			
Lead	М	2450	mg/kg	0.50			
Selenium	М	2450	mg/kg	0.20			
Vanadium	U	2450	mg/kg	5.0			
Zinc	М	2450	mg/kg	0.50			
Chromium (Hexavalent)	Ν	2490	mg/kg	0.50			
Naphthalene	М	2700	mg/kg	0.10			
Acenaphthylene	М	2700	mg/kg	0.10			
Acenaphthene	М	2700	mg/kg	0.10			
Fluorene	М	2700	mg/kg	0.10			
Phenanthrene	М	2700	mg/kg	0.10			
Anthracene	М	2700	mg/kg	0.10			
Fluoranthene	М	2700	mg/kg	0.10			
Pyrene	М	2700	mg/kg	0.10			
Benzo[a]anthracene	М	2700	mg/kg	0.10			
Chrysene	М	2700	mg/kg	0.10			
Benzo[b]fluoranthene	М	2700	mg/kg	0.10			
Benzo[k]fluoranthene	М	2700	mg/kg	0.10			
Benzo[a]pyrene	М	2700	mg/kg	0.10			
Indeno(1,2,3-c,d)Pyrene	М	2700	mg/kg	0.10			
Dibenz(a,h)Anthracene	М	2700	mg/kg	0.10			
Benzo[g,h,i]perylene	М	2700	mg/kg	0.10			
Total Of 16 PAH's	М	2700	mg/kg	2.0			
Demeton-O	N	2820	mg/kg	0.20			
Phorate	N	2820	mg/kg	0.20			
Demeton-S	N	2820	mg/kg	0.20			
Disulfoton	N	2820	mg/kg	0.20			

Client: Discovery CE Ltd		Che	ntest Jo	b No.:	21-33783	21-33783	21-33783
Quotation No.:	(Chemte	st Sam	ole ID.:	1288374	1288375	1288376
		Sa	ample Lo	cation:	TP106	TP106	TP106
			Sample	e Type:	SOIL	SOIL	SOIL
			Тор Dep	oth (m):	1.00	1.50	2.30
		Bot	tom Dep	oth (m):	1.00	1.50	2.30
			Date Sa	mpled:	22-Sep-2021	22-Sep-2021	22-Sep-2021
Determinand	Accred.	SOP	Units	LOD			
Fenthion	N	2820	mg/kg	0.20			
Trichloronate	N	2820	mg/kg	0.20			
Prothiofos	N	2820	mg/kg	0.20			
Fensulphothion	N	2820	mg/kg	0.20			
Sulprofos	N	2820	mg/kg	0.20			
Azinphos-Methyl	N	2820	mg/kg	0.20			
Coumaphos	N	2820	mg/kg	0.20			
Atraton	N	2830	mg/kg	0.20			
Prometon	N	2830	mg/kg	0.20			
Simazine	N	2830	mg/kg	0.20			
Atrazine	N	2830	mg/kg	0.20			
Propazine	N	2830	mg/kg	0.20			
Terbuthylazine	N	2830	mg/kg	0.20			
Secbumeton	N	2830	mg/kg	0.20			
Simetryn	N	2830	mg/kg	0.20			
Ametryn	N	2830	mg/kg	0.20			
Prometryn	N	2830	mg/kg	0.20			
Terbutryn	N	2830	mg/kg	0.20			
Alpha-HCH	N	2840	mg/kg	0.20			
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20			
Beta-HCH	N	2840	mg/kg	0.20			
Delta-HCH	N	2840	mg/kg	0.20			
Heptachlor	N	2840	mg/kg	0.20			
Aldrin	N	2840	mg/kg	0.20			
Heptachlor Epoxide	N	2840	mg/kg	0.20			
Gamma-Chlordane	N	2840	mg/kg	0.20			
Alpha-Chlordane	N	2840	mg/kg	0.20			
Endosulfan I	N	2840	mg/kg	0.20			
4,4-DDE	N	2840	mg/kg	0.20			
Dieldrin	N	2840	mg/kg	0.20			
Endrin	N	2840	mg/kg	0.20			
4,4-DDD	N	2840	mg/kg	0.20			
Endosulfan II	N	2840	mg/kg	0.20			
Endrin Aldehyde	N	2840	mg/kg	0.20			
4,4-DDT	N	2840	mg/kg	0.20			
Endosulfan Sulphate	N	2840	mg/kg	0.20			
Methoxychlor	N	2840	mg/kg	0.20			
Endrin Ketone	N	2840	mg/kg	0.20			

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2820	Organophosphorus (O-P) Pesticides in Soils by GC-MS	Organophosphorus pesticide representative suite including Parathion, Malathion etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2830	Organonitrogen (O-N) Pesticides in Soils by GC-MS	Organonitrogen pesticide representative suite including Triazines etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2840	Organochlorine (O-Cl) Pesticides in Soils by GC-MS	Organochlorine pesticide representative suite including DDT and its metabolites, 'drins' and HCH etc, plus client specific determinands	Dichloromethane extraction / GC-MS

Report Information

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

Comments or interpretations are beyond the scope of UKAS accreditation The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request None of the results in this report have been recovery corrected All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis All Asbestos testing is performed at the indicated laboratory Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt All water samples will be retained for 14 days from the date of receipt Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: <u>customerservices@chemtest.com</u>

😵 eurofins

Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL Tel: 01638 606070 Email: info@chemtest.com



Amended Report

Report No.:	21-34396-2		
Initial Date of Issue:	08-Oct-2021	Date of Re-Issue:	15-Oct-2021
Client	Discovery CE Ltd		
Client Address:	The Granary Broadwell House Farm Broadwell Rugby Warwickshire CV23 8HF		
Contact(s):	Discovery Ed Tainsh		
Project	21076J Shennington		
Quotation No :		Date Received:	04-Oct-2021
		Date Neceiveu.	04-001-2021
Order No.:		Date Instructed:	04-Oct-2021
Order No.: No. of Samples:	15	Date Instructed:	04-Oct-2021
Order No.: No. of Samples: Turnaround (Wkdays):	15 10	Date Instructed: Results Due:	04-Oct-2021 15-Oct-2021
Order No.: No. of Samples: Turnaround (Wkdays): Date Approved:	15 10 15-Oct-2021	Date Instructed: Results Due:	04-Oct-2021 15-Oct-2021
Order No.: No. of Samples: Turnaround (Wkdays): Date Approved: Approved By:	15 10 15-Oct-2021	Date Instructed: Results Due:	04-Oct-2021 15-Oct-2021
Order No.: No. of Samples: Turnaround (Wkdays): Date Approved: Approved By:	15 10 15-Oct-2021	Date Instructed: Results Due:	04-Oct-2021 15-Oct-2021

Client: Discovery CE Ltd		Che	mtest J	ob No.:	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396
Quotation No.:	C	Chemte	st Sam	ple ID.:	1291437	1291438	1291440	1291441	1291442	1291444	1291445	1291446	1291447
Order No.:		Clie	nt Samp	le Ref.:	ES1	ES2	D2	D3	ES1	ES1	ES2	D1	D2
		Sa	ample L	ocation:	DS101	DS101	DS101	DS101	DS102	DS103	DS103	DS103	DS103
			Sampl	e Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top De	pth (m):	0.20	0.75	5.00	5.80	0.30	0.15	0.90	0.50	1.00
		Bot	tom De	pth (m):	0.20	0.75	5.00	6.00	0.30	0.15	0.90	0.50	1.00
			Date Sa	ampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	Accred.	SOP	Units	LOD									
Moisture	N	2030	%	0.020	21	18	27	24	21	23	19	20	22
Soil Colour	N	2040		N/A	Brown								
Other Material	N	2040		N/A	None	None	Stones	Stones	Stones	None	None	None	Stones
Soil Texture	N	2040		N/A	Loam	Loam	Gravel	Clay	Loam	Loam	Loam	Loam	Loam
рН	М	2010		4.0	7.8	8.2	8.3	7.4	7.8	8.1	7.6		7.6
Boron (Hot Water Soluble)	М	2120	mg/kg	0.40	2.5	1.5			2.1	2.1	1.0		
Sulphate (2:1 Extract)	М	2120	mg/kg	20			< 20	< 20					< 20
Arsenic	М	2450	mg/kg	1.0	250	500			320	320	480		
Cadmium	М	2450	mg/kg	0.10	0.35	0.21			0.40	0.37	0.25		
Chromium	М	2450	mg/kg	1.0	210	240			290	270	400		
Copper	М	2450	mg/kg	0.50	17	10			17	18	12		
Mercury	М	2450	mg/kg	0.10	0.12	< 0.10			0.11	0.12	< 0.10		
Nickel	М	2450	mg/kg	0.50	130	170			160	150	230		
Lead	М	2450	mg/kg	0.50	52	37			120	77	58		
Selenium	М	2450	mg/kg	0.20	0.73	0.57			0.56	0.61	0.48		
Vanadium	U	2450	mg/kg	5.0	360	350			480	470	660		
Zinc	М	2450	mg/kg	0.50	290	120			370	360	390		
Chromium (Hexavalent)	Ν	2490	mg/kg	0.50	< 0.50	< 0.50			< 0.50	< 0.50	< 0.50		
Organic Matter	М	2625	%	0.40	3.6					5.3	1.7		
As Stomach Bioaccessibility	N	2630	mg/kg	0.20		3.8							
As Intestinal Bioaccessibility 1	Ν	2630	mg/kg	0.20		6.6							
As Intestinal Bioaccessibility 2	N	2630	mg/kg	0.20		7.4							
As Bioaccessible Fraction	Ν	2630	%	0.10		1.5							
Aliphatic TPH >C5-C6	Ν	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C6-C8	Ν	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C8-C10	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C10-C12	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C12-C16	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C16-C21	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C21-C35	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C35-C44	Ν	2680	mg/kg	1.0						< 1.0	< 1.0		
Total Aliphatic Hydrocarbons	Ν	2680	mg/kg	5.0						< 5.0	< 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C7-C8	Ν	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C8-C10	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C12-C16	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0						< 1.0	< 1.0		

Client: Discovery CE Ltd	Chemtest Job No.:		21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396		
Quotation No.:	(Chemte	est Sam	ple ID.:	1291437	1291438	1291440	1291441	1291442	1291444	1291445	1291446	1291447
Order No.:		Clie	nt Samp	le Ref.:	ES1	ES2	D2	D3	ES1	ES1	ES2	D1	D2
		Sa	ample Lo	ocation:	DS101	DS101	DS101	DS101	DS102	DS103	DS103	DS103	DS103
			Sampl	e Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Тор Dep	oth (m):	0.20	0.75	5.00	5.80	0.30	0.15	0.90	0.50	1.00
		Bot	tom Dep	oth (m):	0.20	0.75	5.00	6.00	0.30	0.15	0.90	0.50	1.00
			Date Sa	ampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C21-C35	М	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0						< 1.0	< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0						< 5.0	< 5.0		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0						< 10	< 10		
Naphthalene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Acenaphthylene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Acenaphthene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Fluorene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Phenanthrene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Anthracene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Fluoranthene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Pyrene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[a]anthracene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Chrysene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[b]fluoranthene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[k]fluoranthene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[a]pyrene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Indeno(1,2,3-c,d)Pyrene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Dibenz(a,h)Anthracene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[g,h,i]perylene	М	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Total Of 16 PAH's	М	2700	mg/kg	2.0	< 2.0				< 2.0	< 2.0	< 2.0		
Demeton-O	Ν	2820	mg/kg	0.20								< 0.20	
Phorate	Ν	2820	mg/kg	0.20								< 0.20	
Demeton-S	Ν	2820	mg/kg	0.20								< 0.20	
Disulfoton	Ν	2820	mg/kg	0.20								< 0.20	
Fenthion	Ν	2820	mg/kg	0.20								< 0.20	
Trichloronate	Ν	2820	mg/kg	0.20								< 0.20	
Prothiofos	Ν	2820	mg/kg	0.20								< 0.20	
Fensulphothion	Ν	2820	mg/kg	0.20								< 0.20	
Sulprofos	Ν	2820	mg/kg	0.20								< 0.20	
Azinphos-Methyl	Ν	2820	mg/kg	0.20								< 0.20	
Coumaphos	N	2820	mg/kg	0.20								< 0.20	
Atraton	Ν	2830	mg/kg	0.20								< 0.20	
Prometon	N	2830	mg/kg	0.20								< 0.20	
Simazine	Ν	2830	mg/kg	0.20								< 0.20	
Atrazine	Ν	2830	mg/kg	0.20								< 0.20	
Propazine	Ν	2830	mg/kg	0.20								< 0.20	
Terbuthylazine	Ν	2830	mg/kg	0.20								< 0.20	

Client: Discovery CE Ltd		Che	mtest J	ob No.:	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396
Quotation No.:	(Chemte	est Sam	ple ID.:	1291437	1291438	1291440	1291441	1291442	1291444	1291445	1291446	1291447
Order No.:		Clie	nt Samp	ole Ref.:	ES1	ES2	D2	D3	ES1	ES1	ES2	D1	D2
		Sa	ample L	ocation:	DS101	DS101	DS101	DS101	DS102	DS103	DS103	DS103	DS103
			Samp	le Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top De	pth (m):	0.20	0.75	5.00	5.80	0.30	0.15	0.90	0.50	1.00
		Bo	ttom De	pth (m):	0.20	0.75	5.00	6.00	0.30	0.15	0.90	0.50	1.00
			Date Sa	ampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	Accred.	SOP	Units	LOD									
Secbumeton	N	2830	mg/kg	0.20								< 0.20	
Simetryn	N	2830	mg/kg	0.20								< 0.20	
Ametryn	N	2830	mg/kg	0.20								< 0.20	
Prometryn	Ν	2830	mg/kg	0.20								< 0.20	
Terbutryn	Ν	2830	mg/kg	0.20								< 0.20	
Alpha-HCH	N	2840	mg/kg	0.20								< 0.20	
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20								< 0.20	
Beta-HCH	N	2840	mg/kg	0.20								< 0.20	
Delta-HCH	N	2840	mg/kg	0.20								< 0.20	
Heptachlor	N	2840	mg/kg	0.20								< 0.20	
Aldrin	N	2840	mg/kg	0.20								< 0.20	
Heptachlor Epoxide	N	2840	mg/kg	0.20								< 0.20	
Gamma-Chlordane	N	2840	mg/kg	0.20								< 0.20	
Alpha-Chlordane	N	2840	mg/kg	0.20								< 0.20	
Endosulfan I	N	2840	mg/kg	0.20								< 0.20	
4,4-DDE	N	2840	mg/kg	0.20								< 0.20	
Dieldrin	N	2840	mg/kg	0.20								< 0.20	
Endrin	N	2840	mg/kg	0.20								< 0.20	
4,4-DDD	N	2840	mg/kg	0.20								< 0.20	
Endosulfan II	N	2840	mg/kg	0.20								< 0.20	
Endrin Aldehyde	N	2840	mg/kg	0.20								< 0.20	
4,4-DDT	N	2840	mg/kg	0.20								< 0.20	
Endosulfan Sulphate	N	2840	mg/kg	0.20								< 0.20	
Methoxychlor	N	2840	mg/kg	0.20								< 0.20	
Endrin Ketone	N	2840	mg/kg	0.20								< 0.20	

Client: Discovery CE Ltd		Che	mtest Jo	ob No.:	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396
Quotation No.:	(Chemte	est Sam	ple ID.:	1291448	1291449	1291451	1291452	1291453	1291454
Order No.:		Clie	nt Samp	le Ref.:	ES1	ES1	ES1	ES2	D1	D2
		Sa	ample Lo	ocation:	DS104	DS105	DS106	DS106	DS106	DS106
			Sampl	e Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Dep	oth (m):	0.40	0.50	0.10	0.80	1.40	2.80
		Bo	ttom Dep	oth (m):	0.40	0.50	0.10	0.80	2.80	1.40
			Date Sa	ampled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	Accred.	SOP	Units	LOD				İ	İ. İ.	i i
Moisture	N	2030	%	0.020	18	17	14	19	19	26
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	None	Roots	Roots	None	Stones	None
Soil Texture	N	2040		N/A	Loam	Loam	Loam	Loam	Loam	Loam
рН	М	2010		4.0	7.4	7.4	7.9	7.8	8.4	8.4
Boron (Hot Water Soluble)	М	2120	mg/kg	0.40	1.6	1.6	1.7	0.94		
Sulphate (2:1 Extract)	М	2120	mg/kg	20					< 20	< 20
Arsenic	М	2450	mg/kg	1.0	470	500	550	430		
Cadmium	М	2450	mg/kg	0.10	0.11	0.10	0.37	0.12		
Chromium	М	2450	mg/kg	1.0	420	500	470	500		
Copper	М	2450	mg/kg	0.50	17	18	25	10		
Mercury	М	2450	mg/kg	0.10	0.16	0.11	0.19	< 0.10		
Nickel	М	2450	mg/kg	0.50	240	290	270	260		
Lead	М	2450	mg/kg	0.50	83	74	110	47		
Selenium	М	2450	mg/kg	0.20	0.77	0.71	0.57	< 0.20		
Vanadium	U	2450	mg/kg	5.0	670	800	790	630		
Zinc	М	2450	mg/kg	0.50	630	480	530	160		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		
Organic Matter	М	2625	%	0.40			3.8			
As Stomach Bioaccessibility	N	2630	mg/kg	0.20			0.85			
As Intestinal Bioaccessibility 1	N	2630	mg/kg	0.20			1.8			
As Intestinal Bioaccessibility 2	N	2630	mg/kg	0.20			2.7			
As Bioaccessible Fraction	N	2630	%	0.10			0.49			
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0						
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0						
Aliphatic TPH >C8-C10	М	2680	mg/kg	1.0						
Aliphatic TPH >C10-C12	М	2680	mg/kg	1.0						
Aliphatic TPH >C12-C16	М	2680	mg/kg	1.0						
Aliphatic TPH >C16-C21	М	2680	mg/kg	1.0						
Aliphatic TPH >C21-C35	М	2680	mg/kg	1.0						
Aliphatic TPH >C35-C44	Ν	2680	mg/kg	1.0						
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0						
Aromatic TPH >C5-C7	Ν	2680	mg/kg	1.0						
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0						
Aromatic TPH >C8-C10	М	2680	mg/kg	1.0						
Aromatic TPH >C10-C12	М	2680	mg/kg	1.0						
Aromatic TPH >C12-C16	М	2680	mg/kg	1.0						
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0						

Client: Discovery CE Ltd		Che	mtest Jo	ob No.:	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396
Quotation No.:	(Chemte	est Sam	ple ID.:	1291448	1291449	1291451	1291452	1291453	1291454
Order No.:		Clie	nt Samp	le Ref.:	ES1	ES1	ES1	ES2	D1	D2
		Sa	ample Lo	ocation:	DS104	DS105	DS106	DS106	DS106	DS106
			Sample	e Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Dep	oth (m):	0.40	0.50	0.10	0.80	1.40	2.80
		Bo	ttom Dep	oth (m):	0.40	0.50	0.10	0.80	2.80	1.40
			Date Sa	mpled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	Accred.	SOP	Units	LOD						
Aromatic TPH >C21-C35	М	2680	mg/kg	1.0						
Aromatic TPH >C35-C44	Ν	2680	mg/kg	1.0						
Total Aromatic Hydrocarbons	Ν	2680	mg/kg	5.0						
Total Petroleum Hydrocarbons	Ν	2680	mg/kg	10.0						
Naphthalene	М	2700	mg/kg	0.10			< 0.10			
Acenaphthylene	М	2700	mg/kg	0.10			< 0.10			
Acenaphthene	М	2700	mg/kg	0.10			< 0.10			
Fluorene	М	2700	mg/kg	0.10			< 0.10			
Phenanthrene	М	2700	mg/kg	0.10			< 0.10			
Anthracene	М	2700	mg/kg	0.10			< 0.10			
Fluoranthene	М	2700	mg/kg	0.10			< 0.10			
Pyrene	М	2700	mg/kg	0.10			< 0.10			
Benzo[a]anthracene	М	2700	mg/kg	0.10			< 0.10			
Chrysene	М	2700	mg/kg	0.10			< 0.10			
Benzo[b]fluoranthene	М	2700	mg/kg	0.10			< 0.10			
Benzo[k]fluoranthene	М	2700	mg/kg	0.10			< 0.10			
Benzo[a]pyrene	М	2700	mg/kg	0.10			< 0.10			
Indeno(1,2,3-c,d)Pyrene	М	2700	mg/kg	0.10			< 0.10			
Dibenz(a,h)Anthracene	М	2700	mg/kg	0.10			< 0.10			
Benzo[g,h,i]perylene	М	2700	mg/kg	0.10			< 0.10			
Total Of 16 PAH's	М	2700	mg/kg	2.0			< 2.0			
Demeton-O	N	2820	mg/kg	0.20			< 0.20			
Phorate	Ν	2820	mg/kg	0.20			< 0.20			
Demeton-S	N	2820	mg/kg	0.20			< 0.20			
Disulfoton	N	2820	mg/kg	0.20			< 0.20			
Fenthion	N	2820	mg/kg	0.20			< 0.20			
Trichloronate	Ν	2820	mg/kg	0.20			< 0.20			
Prothiofos	Ν	2820	mg/kg	0.20			< 0.20			
Fensulphothion	Ν	2820	mg/kg	0.20			< 0.20			
Sulprofos	N	2820	mg/kg	0.20			< 0.20			
Azinphos-Methyl	Ν	2820	mg/kg	0.20			< 0.20			
Coumaphos	Ν	2820	mg/kg	0.20			< 0.20			
Atraton	Ν	2830	mg/kg	0.20			< 0.20			
Prometon	Ν	2830	mg/kg	0.20			< 0.20			
Simazine	Ν	2830	mg/kg	0.20			< 0.20			
Atrazine	Ν	2830	mg/kg	0.20			< 0.20			
Propazine	Ν	2830	mg/kg	0.20			< 0.20			
Terbuthylazine	N	2830	mg/ka	0.20			< 0.20			

Client: Discovery CE Ltd		Che	mtest Jo	ob No.:	21-34396	21-34396	21-34396	21-34396	21-34396	21-34396
Quotation No.:	(Chemte	est Sam	ple ID.:	1291448	1291449	1291451	1291452	1291453	1291454
Order No.:		Clie	nt Samp	le Ref.:	ES1	ES1	ES1	ES2	D1	D2
		Sa	ample Lo	ocation:	DS104	DS105	DS106	DS106	DS106	DS106
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
			Top Dep	oth (m):	0.40	0.50	0.10	0.80	1.40	2.80
		Bo	ttom Dep	oth (m):	0.40	0.50	0.10	0.80	2.80	1.40
			Date Sa	mpled:	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021	29-Sep-2021
Determinand	Accred.	SOP	Units	LOD						
Secbumeton	N	2830	mg/kg	0.20			< 0.20			
Simetryn	N	2830	mg/kg	0.20			< 0.20			
Ametryn	N	2830	mg/kg	0.20			< 0.20			
Prometryn	N	2830	mg/kg	0.20			< 0.20			
Terbutryn	N	2830	mg/kg	0.20			< 0.20			
Alpha-HCH	N	2840	mg/kg	0.20			< 0.20			
Gamma-HCH (Lindane)	N	2840	mg/kg	0.20			< 0.20			
Beta-HCH	N	2840	mg/kg	0.20			< 0.20			
Delta-HCH	N	2840	mg/kg	0.20			< 0.20			
Heptachlor	N	2840	mg/kg	0.20			< 0.20			
Aldrin	N	2840	mg/kg	0.20			< 0.20			
Heptachlor Epoxide	N	2840	mg/kg	0.20			< 0.20			
Gamma-Chlordane	N	2840	mg/kg	0.20			< 0.20			
Alpha-Chlordane	N	2840	mg/kg	0.20			< 0.20			
Endosulfan I	N	2840	mg/kg	0.20			< 0.20			
4,4-DDE	N	2840	mg/kg	0.20			< 0.20			
Dieldrin	N	2840	mg/kg	0.20			< 0.20			
Endrin	N	2840	mg/kg	0.20			< 0.20			
4,4-DDD	N	2840	mg/kg	0.20			< 0.20			
Endosulfan II	N	2840	mg/kg	0.20			< 0.20			
Endrin Aldehyde	N	2840	mg/kg	0.20			< 0.20			
4,4-DDT	N	2840	mg/kg	0.20			< 0.20			
Endosulfan Sulphate	N	2840	mg/kg	0.20			< 0.20			
Methoxychlor	N	2840	mg/kg	0.20			< 0.20			
Endrin Ketone	N	2840	mg/kg	0.20			< 0.20			

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2630	PBET	РВЕТ	Extraction at 37C / ICP-MS
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35–C44Aromatics: >C5–C7, >C7–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2820	Organophosphorus (O-P) Pesticides in Soils by GC-MS	Organophosphorus pesticide representative suite including Parathion, Malathion etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2830	Organonitrogen (O-N) Pesticides in Soils by GC-MS	Organonitrogen pesticide representative suite including Triazines etc, plus client specific determinands	Dichloromethane extraction / GC-MS
2840	Organochlorine (O-Cl) Pesticides in Soils by GC-MS	Organochlorine pesticide representative suite including DDT and its metabolites, 'drins' and HCH etc, plus client specific determinands	Dichloromethane extraction / GC-MS

Report Information

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

Comments or interpretations are beyond the scope of UKAS accreditation The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request None of the results in this report have been recovery corrected All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis All Asbestos testing is performed at the indicated laboratory Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt All water samples will be retained for 14 days from the date of receipt Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: <u>customerservices@chemtest.com</u>



APPENDIX G - CHEMICAL SCREENING CRITERIA



CHEMICAL SCREENING CRITERIA

Rationale

For the protection of human health, screening criteria were selected from published generic assessment criteria (GACs) as published by DEFRA/CL:AIRE, LQM/CIEH and/or EIC/AGS/CL:AIRE. Generic values are selected based on the soil organic matter (SOM) content of the soils concerned. Currently generic criteria are published for SOM of 1, 2.5 or 6 %. In order to retain a degree of conservatism, screening criteria based on an SOM value of 1 % were adopted for the generic screening assessment. The possible generic end use scenario considered in the assessment of risks to long term human health was for a Residential with Homegrown Produce end use (RWHP), as an initial screen to determine if more detailed assessment is required.

The RWHP scenario is defined as a standard end use for GACs based on the Human Health Risk Assessment guidance developed in line with the CLEA model.

This assessment used Suitable for Use levels (S4ULs) as published by LQM/CIEH whenever possible as the most up to date GACs. The S4ULs were used under licence, (Copyright Land Quality Management Limited, reproduced with permission; publication number S4UL3396. All rights reserved). It should be noted that S4UL values calculated for threshold substances represent a concentration in soils below which the risk to human health is **NEGLIGIBLE**. For non-threshold substances concentrations in soil less than the S4UL values represent a **MINIMAL** risk.

In addition, Category 4 Screening Levels (C4SLs) were used as published by DEFRA/CL:AIRE, in this case for lead (Pb). In the absence of S4ULs or C4SLs, EIC/AGS/CL:AIRE GACs and/or in house calculated values were used (using the CLEA spreadsheet) or values from the USEPA Region 9 criteria were used.

The site has been considered as a single averaging area for the human health screening process. This is based on the size and proposed use of the site.

If exceedences were recorded, the relevant data sets were reassessed using the statistical methods as set out in "Guidance on Comparing Soil Contamination Data with a Critical Concentration", CL:AIRE/CIEH, May 2008.

The investigation has confirmed that there is no viable pollutant linkage regarding controlled waters, as such water screening values are not relevant to the study site.

It may become evident following further investigation and analysis that additional COCs come to light that are not present in the current list which may require screening criteria to be applied. If this becomes the case additional criteria shall be selected/derived and submitted to the regulators for comment and agreement.



The screening criteria for human health assessment are presented below in Table G1 (Residential With Homegrown Produce), with the respective summary shown in Table G2.

HUMAN HEALTH SCREENING

Determinand	Units	Screen (RWHP @1% SOM)	Screen Source
Asbestos in Soil	Type	Presence	CAR 2012
pH - Automated	pH Units	<5 or >10	Professional Judgement
Naphthalene	mg/kg	2.3	S4UL
Acenaphthylene	mg/kg	170	S4UL
Acenaphthene	mg/kg	210	S4UL
Fluorene	mg/kg	170	S4UL
Phenanthrene	mg/kg	95	S4UL
Anthracene	mg/kg	2400	S4UL
Fluoranthene	mg/kg	280	S4UL
Pyrene	mg/kg	620	S4UL
Benzo(a)anthracene	mg/kg	7.2	S4UL
Chrysene	mg/kg	15	S4UL
Benzo(b)fluoranthene	mg/kg	2.6	S4UL
Benzo(k)fluoranthene	mg/kg	77	S4UL
Benzo(a)pyrene	mg/kg	2.2	S4UL
Indeno(1,2,3-cd)pyrene	mg/kg	27	S4UL
Dibenz(a,h)anthracene	mg/kg	0.24	S4UL
Benzo(ghi)perylene	mg/kg	320	S4UL
Arsenic (aqua regia extractable)	mg/kg	37	S4UL
Boron (aqua regia extractable)	mg/kg	290	S4UL
Cadmium (aqua regia extractable)	mg/kg	11	S4UL
Chromium (hexavalent)	mg/kg	6	S4UL
Chromium (aqua regia extractable)	mg/kg	910	S4UL
Copper (aqua regia extractable)	mg/kg	2400	S4UL
Lead (aqua regia extractable)	mg/kg	200	C4SL
Mercury (aqua regia extractable)	mg/kg	1.2	S4UL
Nickel (aqua regia extractable)	mg/kg	130	S4UL
Selenium (aqua regia extractable)	mg/kg	250	S4UL
Vanadium (aqua regia extractable)	mg/kg	410	S4UL
Zinc (aqua regia extractable)	mg/kg	3700	S4UL
Benzene	µg/kg	87	S4UL
Toluene	µg/kg	130000	S4UL
Ethylbenzene	µg/kg	47000	S4UL
p & m-xylene	µg/kg	56000	S4UL
o-xylene	µg/kg	60000	S4UL
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	4900	EIC/CL:AIRE
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	42	S4UL
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	100	S4UL
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	27	S4UL
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	130	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	1100	S4UL
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	65000	S4UL Aliphatic EC >16-35
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	65000	54UL Aliphatic EC >16-35
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	70	
TPH-CWG - Aromatic >EC/ - EC8	mg/kg	130	54UL
TPH-CWG - Aromatic >EC8 - EC10	mg/Kg	34	54UL
TPH CWG Aromatics EC12 EC16	mg/kg	14	54UL \$4UU
TPH CWG Aromatics EC16 EC24	mg/kg	140	04UL 04UU
TPH CWG Aromatics EC21 EC25	mg/kg	200	04UL 04UU
1FIT-GWG - AIOMAIIC >EG21 - EG35	mg/kg	1100	34UL

Table G1: Human Health Soil Screening Criteria for a RWHP End Use (1% SOM)



Geotechnical & Environmental Engineers

Table G2: Human Health Soil Screening Summary

Determinand	Units	Limit of detection	Minimum	Mean	Maximum	Count	Screen (RWHP @1% SOM)	Screen Source	No. of Exceedences
Asbestos in Soil	Туре	NA	NA	NA	0		Presence	CAR 2012	0
Naphthalene	mg/kg	0.1	0.1	0.1	11		2.3	S4UL	0
Acenaphthylene	mg/kg	0.1	0.1	0.1	11		170	S4UL	0
Acenaphthene	mg/kg	0.1	0.1	0.1	11		210	S4UL	0
Fluorene	mg/kg	0.1	0.1	0.1	11		1/0	S4UL	0
Anthracene	mg/kg	0.1	0.1	0.1	11		95 2400	S4UL S4UI	0
Fluoranthene	ma/ka	0.1	0.1	0.1	11		2400	S4UL	0
Pyrene	mg/kg	0.1	0.1	0.1	11		620	S4UL	0
Benzo(a)anthracene	mg/kg	0.1	0.1	0.1	11		7.2	S4UL	0
Chrysene	mg/kg	0.1	0.1	0.1	11		15	S4UL	0
Benzo(b)fluoranthene	mg/kg	0.1	0.1	0.1	11		2.6	S4UL	0
Benzo(k)fluoranthene	mg/kg	0.1	0.1	0.1	11		77	S4UL	0
Benzo(a)pyrene	mg/kg	0.1	0.1	0.1	11		2.2	S4UL	0
Dibenz(a b)anthracene	mg/kg	0.1	0.1	0.1	11		0.24	S4UL S4UI	0
Benzo(ghi)pervlene	ma/ka	0.1	0.1	0.1	11		320	S4UI	0
Arsenic	mg/kg	64	287	550	22		37	S4UL	22
Boron (water soluble)	mg/kg	0.4	0.9795	2.5	22		290	S4UL	0
Cadmium	mg/kg	0.1	0.1655	0.4	22		11	S4UL	0
Chromium (hexavalent)	mg/kg	0.5	0.5	0.5	22		6	S4UL	0
Chromium	mg/kg	160	300.45	500	22		910	S4UL	0
Copper	mg/kg	3.1	11.836	25	22		2400	S4UL C4SL	0
Mercury	mg/kg	0.1	0 1095	0.19	22		200	S4U	0
Nickel	ma/ka	83	166.05	290	22		180	S4UI	6
Selenium	mg/kg	0.2	0.3545	0.77	22		250	S4UL	0
Vanadium	mg/kg	180	440.91	800	22		410	S4UL	9
Zinc	mg/kg	120	279.55	630	22		3700	S4UL	0
Benzene	µg/kg	0	0	0	0		87	S4UL	0
Toluene	µg/kg	0	0	0	0		130000	S4UL	0
	µg/kg	0	0	0	0		47000	S4UL	0
	µg/kg	0	0	0	0		60000	S4UL S4UI	0
MTBF (Methyl Tertiary Butyl Ether)	ua/ka	0	0	0	0		49000	FIC/AGS/CL:AIRE	0
Aliphatic >EC5 - EC6	mg/kg	0	0	0	0		42	S4UL	0
Aliphatic >EC6 - EC8	mg/kg	0	0	0	0		100	S4UL	0
Aliphatic >EC8 - EC10	mg/kg	0	0	0	0		27	S4UL	0
Aliphatic >EC10 - EC12	mg/kg	0	0	0	0		130	S4UL	0
Aliphatic >EC12 - EC16	mg/kg	0	0	0	0		1100	S4UL	0
Aliphatic >EC16 - EC21	mg/kg	0	0	0	0		65000	S4UL	0
Aniphalic >EC21 - EC35 Aromatic >EC5 - EC7	mg/kg	0	0	0	0		00000 70	S4UL S4UI	0
Aromatic >EC3 - EC7	ma/ka	0	0	0	0		130	S4UI	0
Aromatic >EC8 - EC10	mg/kg	0	0	0	0		34	S4UL	0
Aromatic >EC10 - EC12	mg/kg	0	0	0	0		74	S4UL	0
Aromatic >EC12 - EC16	mg/kg	0	0	0	0		140	S4UL	0
Aromatic >EC16 - EC21	mg/kg	0	0	0	0		260	S4UL	0
Aromatic >EC21 - EC35	mg/kg	0	0	0	0		1100	S4UL	0
Aliphatic >EC5 - EC6	mg/kg	1	1	1	2		42	S4UL	0
Aliphatic > EC8 EC10	mg/kg	1	1	1	2		27	540L	0
Aliphatic >EC0 - EC12	ma/ka	1	1	1	2		130	S4UL	0
Aliphatic >EC12 - EC16	ma/ka	1	1	1	2		1100	S4UL	0
Aliphatic >EC16 - EC21	mg/kg	1	1	1	2	1	65000	S4UL	0
Aliphatic >EC21 - EC35	mg/kg	1	1	1	2		65000	S4UL	0
Aliphatic >EC35 - EC44	mg/kg	1	1	1	2		65000	S4UL	0
Aromatic >EC5 - EC7	mg/kg	1	1	1	2	<u> </u>	70	S4UL	0
Aromatic >EC7 - EC8	mg/kg	1	1	1	2	<u> </u>	130	S4UL	0
Aromatic >EC30 $=$ EC10	mg/kg	1	1	1	2		34	54UL	0
Aromatic >EC10 - EC12	ma/ka	1	1	1	2		14	S40L S4111	0
Aromatic >EC16 - EC21	ma/ka	1	1	1	2		260	S4UL	0
Aromatic >EC21 - EC35	mg/kg	1	1	1	2		1100	S4UL	Ũ
Aromatic >EC35 - EC44	mg/kg	1	1	1	2		1100	S4UL	0



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Determinand	Units	Limit of detection	Minimum	Mean	Maximum	Count	Screen (RWHP @1% SOM)	Screen Source	No. of Exceedences
TPH >C6-C8.	mg/kg	0	0	0	0		70	S4UL (Aro C5 to C7 or Ali C6 to C8)	0
TPH >C8-C10.	mg/kg	0	0	0	0		27	S4UL (Aro or Ali C8 to C10)	0
TPH >C10-C12.	mg/kg	0	0	0	0		74	S4UL	0
TPH >C12-C16.	mg/kg	0	0	0	0		140	S4UL (Aro or Ali C12 to C16)	0
TPH >C16-C21.	mg/kg	0	0	0	0		260	S4UL (Aro C16 to C21)	0
TPH >C21-C25.	mg/kg	0	0	0	0		1100	S4UL (Aro C21 to C35)	0
TPH >C25-C35.	mg/kg	0	0	0	0		1100	S4UL (Aro C21 to C35)	0
TPH >C35-C40.	mg/kg	0	0	0	0		1100	S4UL (Aro C35 to C44)	0

Note: Exceedances highlighted in red text on yellow fill.

There were some exceedances which are summarised in Table G2a below.

Table G2a: Human Health Soil Screening Exceedences

Location	Determinand	Value	Screen	Units
TP101 @ 0.70 m	Arsenic	37	190	mg/kg
TP101 @ 1.60 m	Arsenic	37	64	mg/kg
TP102 @ 0.30 m	Arsenic	37	200	mg/kg
TP102 @ 0.90 m	Arsenic	37	130	mg/kg
TP102 @ 0.90 m	Nickel	130	140	mg/kg
TP102 @ 1.00 m	Arsenic	37	130	mg/kg
TP103 @ 0.80 m	Arsenic	37	200	mg/kg
TP103 @ 0.80 m	Nickel	130	150	mg/kg
TP104 @ 0.60 m	Arsenic	37	340	mg/kg
TP104 @ 0.60 m	Nickel	130	160	mg/kg
TP104 @ 1.00 m	Arsenic	37	130	mg/kg
TP105 @ 0.50 m	Arsenic	37	360	mg/kg
TP105 @ 0.50 m	Nickel	130	200	mg/kg
TP105 @ 0.50 m	Vanadium	410	530	mg/kg
TP105 @ 1.20 m	Arsenic	37	210	mg/kg
TP105 @ 1.40 m	Nickel	130	160	mg/kg
TP106 @ 0.70 m	Arsenic	37	150	mg/kg
TP106 @ 0.70 m	Nickel	130	160	mg/kg
TP107 @ 0.40 m	Arsenic	37	290	mg/kg
TP107 @ 0.40 m	Nickel	130	150	mg/kg
TP107 @ 1.40 m	Arsenic	37	200	mg/kg
TP107 @ 1.40 m	Vanadium	410	440	mg/kg
DS101 @ 0.20 m	Arsenic	37	250	mg/kg
DS101 @ 0.75 m	Arsenic	37	500	mg/kg
DS101 @ 0.75 m	Nickel	130	170	mg/kg
DS102 @ 0.30 m	Arsenic	37	320	mg/kg
DS102 @ 0.30 m	Nickel	130	160	mg/kg
DS102 @ 0.30 m	Vanadium	410	480	mg/kg
DS103 @ 0.15 m	Arsenic	37	320	mg/kg
DS103 @ 0.15 m	Nickel	130	150	mg/kg
DS103 @ 0.15 m	Vanadium	410	470	mg/kg
DS103 @ 0.90 m	Arsenic	37	480	mg/kg
DS103 @ 0.90 m	Nickel	130	230	mg/kg
DS103 @ 0.90 m	Vanadium	410	660	mg/kg
DS104 @ 0.40 m	Arsenic	37	470	mg/kg
DS104 @ 0.40 m	Nickel	130	240	mg/kg
DS104 @ 0.40 m	Vanadium	410	670	mg/kg



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DS105 @ 0.50 m	Arsenic	37	500	mg/kg
DS105 @ 0.50 m	Nickel	130	290	mg/kg
DS105 @ 0.50 m	Vanadium	410	800	mg/kg
DS106 @ 0.10 m	Arsenic	37	550	mg/kg
DS106 @ 0.10 m	Nickel	130	270	mg/kg
DS106 @ 0.10 m	Vanadium	410	790	mg/kg
DS106 @ 0.80 m	Arsenic	37	430	mg/kg
DS106 @ 0.80 m	Nickel	130	260	mg/kg
DS106 @ 0.80 m	Vanadium	410	630	mg/kg

All twenty-two samples that were tested for arsenic recorded exceedances in excess of the guideline value of 37 mg/kg. Values ranged between 64 mg/kg and 550 mg/kg.

PBET testing was undertaken on the two highest values recorded (500 mg/kg and 550 mg/kg). Using the criteria gained from the testing, a site-specific screening value could be calculated using the CLEA version 1.071 spreadsheet. A new value of 99.5 mg/kg was calculated. When using this site-specific screening value, only one of the previous results become acceptable to the criteria: sample from TP101 at 1.60 m bgl recording 64 mg/kg.

Nickel was found in 15 no. samples to exceed the guideline value of 130 mg/kg, with a maximum value of 290 mg/kg recorded in DS105 at 0.50 m bgl.

Vanadium was found in 9 no. samples to exceed the guideline value of 410 mg/kg with a maximum value of 800 mg/kg recorded in DS105 at 0.50 m bgl.

CONTROLLED WATERS SCREENING

No groundwater has been recorded during the investigation and no Made Ground or anthropogenic contamination identified at the site. As a consequence the risk to controlled waters is very low.