Discovery

Geotechnical & Environmental Engineers

PHASE II SITE INVESTIGATION REPORT
STOCKING LANE, SHENINGTON

Carried Out For: **ELAN HOMES LIMITED**

November 2021 **Report Reference: 21076J-02**

Discovery
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STOCKING LANE, SHENINGTON

Carried Out For: **Elan Homes Limited**

Discovery CE Limited
The Granary
Broadwell House Farm
Broadwell, Rugby
Warwickshire
CV23 8HF

Tel: 01926 813909
Fax: 01926 814909
Email: discovery@dce-services.co.uk
Web: www.dce-services.co.uk

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REPORT
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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.

GEOTECHNICAL ASSESSMENT

Ground Strength Profile	Ground strength was generally found to be increasing in strength with depth. In general, SPT testing revealed "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 Change Potential	The cohesive material underlying the site, where present, have high and very high plasticity. However, due to the limited fines content (< 35 %) it is considered as non-shrinkable.
Spread Foundations	An allowable bearing capacity of 125 kN/m^2 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.
Pile Foundations	Pile foundations are not considered necessary for the proposed development.
Ground Improvement	Ground improvement is not considered necessary for the proposed development.
Floor Slab/Pavement Design	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.
Infiltration Properties	Soakaways are considered feasible in parts of the site, a preliminary infiltration rate of 1.01 x10^{-3} is considered appropriate for the Marlstone Rock formation. Further investigation is recommended once detailed development layouts are finalised in parts of the site.
Excavations	No special precautions required.
Sulphate Assessment	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:

1. 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;

3. 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.

1. 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 north-east 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, north-east. 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.

Table 1 Fieldwork Objectives

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 Marlstone 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.

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

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.

Table 4 Summary of Geotechnical Testing

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

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, 1m^3 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

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.

Table 6 Soils Results Exceeding Human Health Screening Values

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 TP104 at 1.00 m bgl 360 mg/kg in TP105 at 0.50 m bgl 210 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	

Arsenic

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. 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.

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 (CH_4) % v/v	Carbon Dioxide (CO_2) % v/v	Oxygen (O_2) %v/v	Flow Rate l/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.

Table 8 Summary of Gas Monitoring

Well	Maximum CH_4 %v/v	Maximum CO_2 %v/v	Maximum Flow Rate (l/hr)	Volumetric Flow Rate (l/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

* 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/m^2. 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/m^2 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

Determinant	Units	Marlstone Rock Formation
pH	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**

[redacted]

Edward Tainsh
BSc
Assistant Geo-environmental Engineer

Cathal Gillespie
BEng MSc (Eng)
Director

APPENDIX A - FIGURES

Discovery
Geotechnical & Environmental Engineers
The Granary, Broadwell House Farm
Broadwell, Rugby CV238HF
www.dce-services.co.uk

Project	STOCKING LANE, SHENINGTON
Title	KEY PLAN
Client	ELAN HOMES

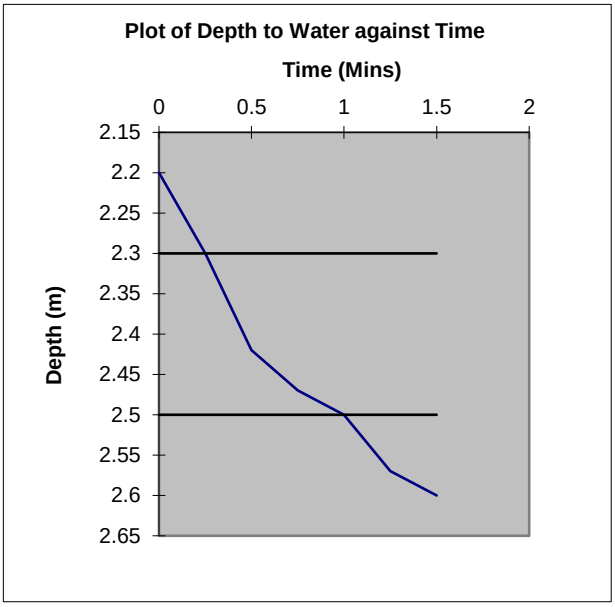
Project Number	21076J
Sheet No	1 of 1
Date	02/11/2021

Notes

Reproduced from the Ordnance Survey 1:50,000 scale Landranger with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office,

Figure

A1



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

Trial Pit No: TP102 Test 1

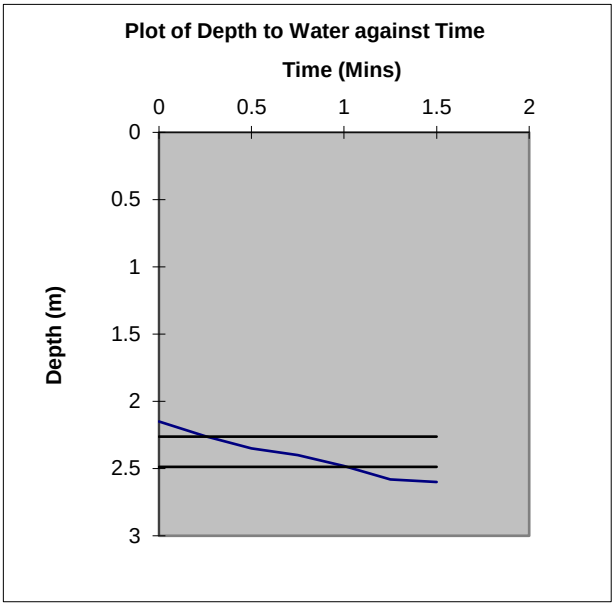
Date: 22/09/2021

Test Details

Length of Trial Pit **a** (m):	3
Width of Trial Pit **b** (m):	0.45
Depth of Trial Pit **D** (m):	2.6
Test Strata:	
Maximum Effective Depth (m)	2.2
Volume Outflow between 75% and 25% effective depth ((Vp75-25)m3)	0.27
Time for water to fall from 75% to 25% effective depth ((Tp75-25)mins)	0.75
Outflow Area ((Ap50) m2)	2.73
Soil Infiltration rate ((f)m/s)	2.20E-03

Remarks: total of 1000 litres added to test location

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

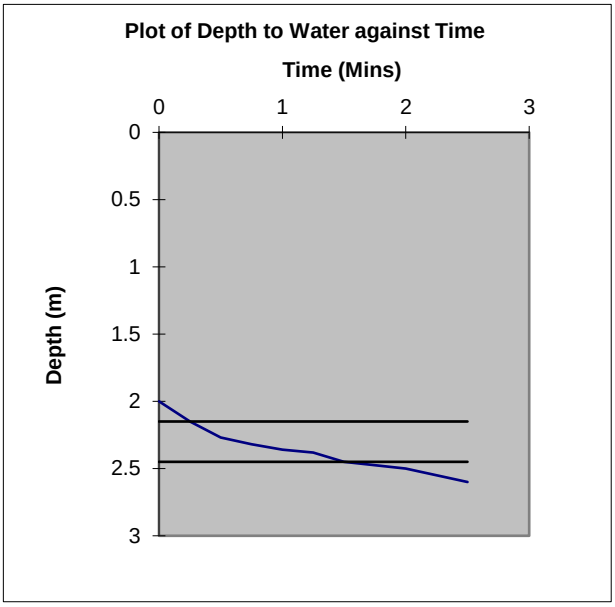
Date: 22/09/2021

Test Details

Length of Trial Pit **a** (m):	3
Width of Trial Pit **b** (m):	0.45
Depth of Trial Pit **D** (m):	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
Soil Infiltration rate ((f)m/s)	2.29E-03

Remarks: total of 1000 litres added to test location

Soakaway Test	**Project** **Stocking Lane**	**Contract** **21076J**
Discovery 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

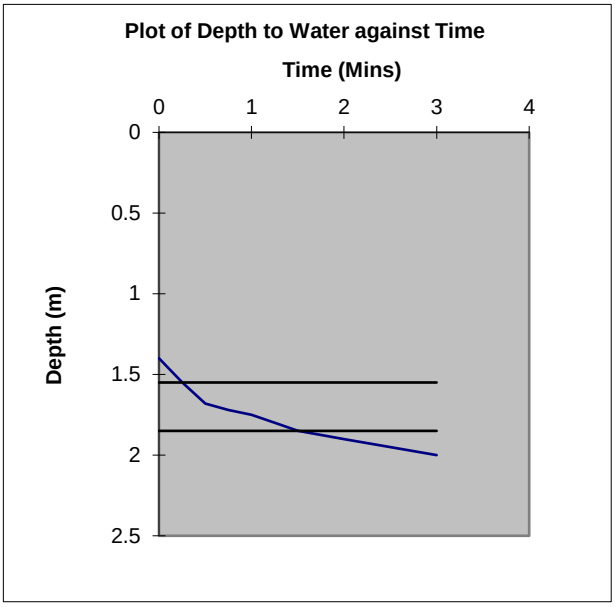
Date: 22/09/2021

Test Details

Length of Trial Pit **a** (m):	3
Width of Trial Pit **b** (m):	0.45
Depth of Trial Pit **D** (m):	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
Soil Infiltration rate ((f)m/s)	1.58E-03

Remarks: total of 1000 litres added to test location

Soakaway Test	**Project** **Stocking Lane**	**Contract** **21076J**
Discovery Geotechnical & Environmental Engineers	**Shenington**	**Figure** **A4**



Time Elapsed (t) mins	Depth below Ground level at time t (m)
0	1.4
0.25	1.55
0.5	1.68
0.75	1.72
1	1.75
1.25	1.8
1.5	1.85
2	1.9
2.5	1.95
3	2

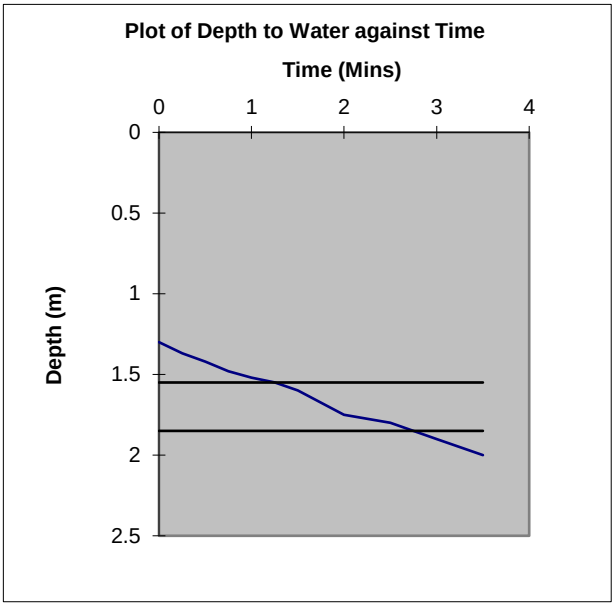
Trial Pit No:	TP105 Test 1
Date:	22/09/2021

Test Details

Length of Trial Pit **a** (m):	3
Width of Trial Pit **b** (m):	0.45
Depth of Trial Pit **D** (m):	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)	1.25
Outflow Area ((Ap50) m2)	3.42
Soil Infiltration rate ((f)m/s)	1.58E-03

Remarks: total of 1000 litres added to test location

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



Time Elapsed (t) mins	Depth below Ground level at time t (m)
0	1.3
0.25	1.37
0.5	1.42
0.75	1.48
1	1.52
1.25	1.55
1.5	1.6
2	1.75
2.5	1.8
3	1.9
3.5	2

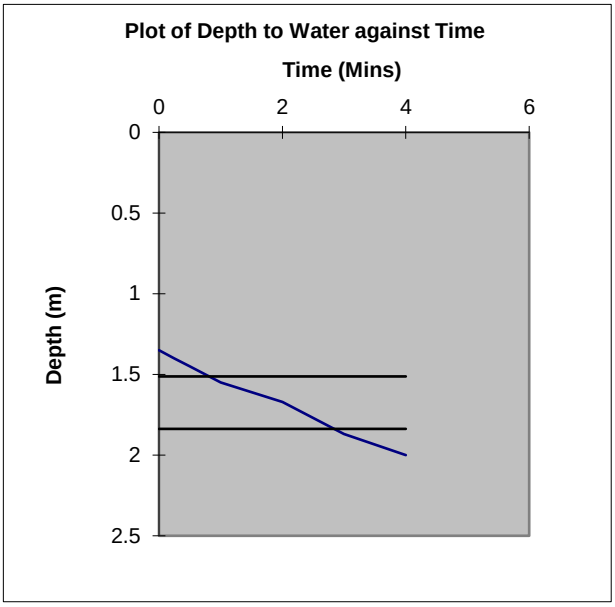
Trial Pit No:	TP105 Test 2
Date:	22/09/2021

Test Details

Length of Trial Pit **a** (m):	3
Width of Trial Pit **b** (m):	0.45
Depth of Trial Pit **D** (m):	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
Soil Infiltration rate ((f)m/s)	1.32E-03

Remarks: total of 1000 litres added to test location

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



Time Elapsed (t) mins	Depth below Ground level at time t (m)
0	1.35
0.25	1.4
0.5	1.45
1	1.55
2	1.67
3	1.87
4	2

Trial Pit No: TP105 Test 3

Date: 22/09/2021

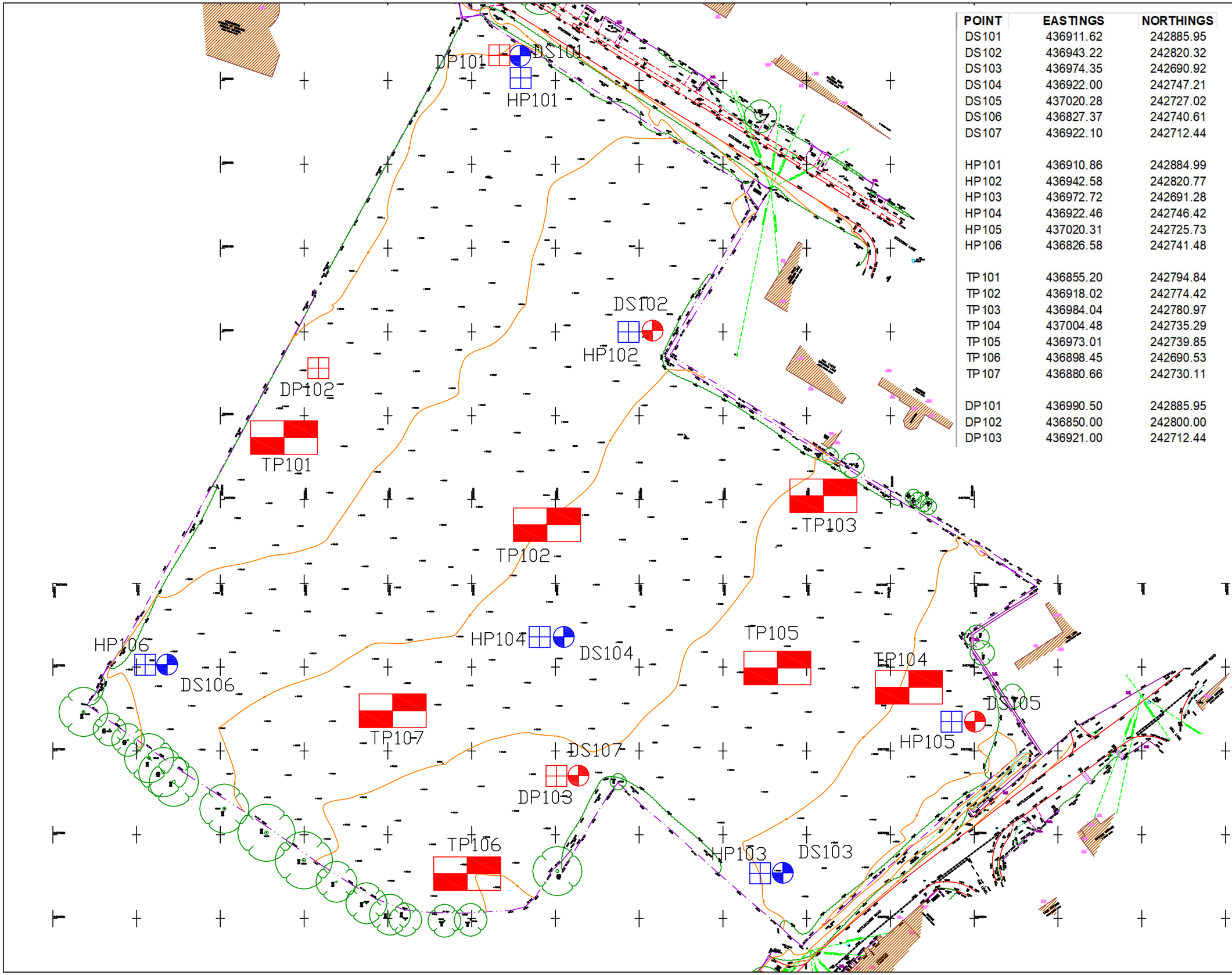
Test Details

Length of Trial Pit **a** (m):	3
Width of Trial Pit **b** (m):	0.45
Depth of Trial Pit **D** (m):	2
Test Strata:	
Maximum Effective Depth (m)	1.35
Volume Outflow between 75% and 25% effective depth ((Vp75-25)m3)	0.43875
Time for water to fall from 75% to 25% effective depth ((Tp75-25)mins)	2.025
Outflow Area ((Ap50) m2)	3.5925
Soil Infiltration rate ((f)m/s)	1.01E-03

Remarks: total of 1000 litres added to test location
Note Test Data Extrapolated due to high infiltration rate

Soakaway Test Test 3	**Project** **Stocking Lane**	**Contract** **21076J**
Discovery Geotechnical & Environmental Engineers	**Shenington**	**Figure** **A7**

APPENDIX B - DRAWINGS



POINT	EASTINGS	NORTHINGS
DS101	436911.62	242885.95
DS102	436943.22	242820.32
DS103	436974.35	242690.92
DS104	436922.00	242747.21
DS105	437020.28	242727.02
DS106	436827.37	242740.61
DS107	436922.10	242712.44
HP101	436910.86	242884.99
HP102	436942.58	242820.77
HP103	436972.72	242691.28
HP104	436922.46	242746.42
HP105	437020.31	242725.73
HP106	436826.58	242741.48
TP101	436855.20	242794.84
TP102	436918.02	242774.42
TP103	436984.04	242780.97
TP104	437004.48	242735.29
TP105	436973.01	242739.85
TP106	436898.45	242690.53
TP107	436880.66	242730.11
DP101	436990.50	242885.95
DP102	436850.00	242800.00
DP103	436921.00	242712.44

General notes

Legend to symbols

- Dynamic Probe Location
- Dynamic Sampler Location
- Dynamic Sampler Location (monitoring point)
- Trial Pit Location
- Hand Dug Trial Pit Location

Revision	Description
IR1	

Title: Exploratory Hole Location Plan

Project: Stocking Lane, Shenington

Client: Elan Homes Limited

Discovery Geotechnical & Environmental Engineers

Date	Drawing No.	Scale
09-11-2021	21076J-DR02	NTS
Drawn By	**Checked by**	**Sheet Size**
ET	CG	A3

Z:\21076J Elan Shenington\Drawings\21076-DR02 Exploratory Hole Location Plan.dwg

APPENDIX C - FIELDWORK METHODOLOGY

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.

Table C1: Dynamic Probing Summary

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

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.

APPENDIX D - FIELDWORK RECORDS

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

DYNAMIC SAMPLING LOG

Discovery
Geotechnical & Environmental Engineers

Project				BOREHOLE No
Stocking Lane, Shenington				DS101
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	29-09-21 29-09-21	179.98	E 436,911.0 N 242,885.0	
Contractor				Sheet
Discovery CE				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	ES			179.38		(0.60) 0.60	Grass overlying firm light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter).		
0.75	ES						TOPSOIL		
1.00	D						Medium dense becoming very dense orange-brown slightly gravelly very clayey SAND. Gravel is orange-brown occasionally black sub-angular fine to medium sandstone with iron staining.		
1.00		N46 7,9/ 12,13,13,8							
1.50	B					(2.40)	MARLSTONE ROCK FORMATION		
2.00		N40 7,10/ 13,3,4,20		176.98		3.00			
3.00		N4 10,4/ 1,1,1,1					Loose and very loose becoming very dense orange-brown slightly gravelly clayey SAND. Gravel is orange-brown occasionally black sub-angular medium iron stained sandstone.		
4.00		N4 1,1/ 1,1,1,1				(3.45)	MARLSTONE ROCK FORMATION		
5.00	D								
5.00		N1 1,0/ 0,0,0,1							
5.80	D								
6.00		N50 3,2/ 3,15,17,15		173.53		6.45			

GENERAL REMARKS

No groundwater encountered. SPT refusal at 6.45 m. Installed with groundwater and ground gas standpipe to 5.0 m.

All dimensions in metres Scale 1:50	Client Elan Homes Limited	Method/ Plant Used Competitor DART	Logged By ET

AGS3 UK DS 21076J SHENINGTON LOGS - USE THIS ONE.GPJ GINT STD AGS 3_1.GDT 22/11/21

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

DYNAMIC SAMPLING LOG

Discovery
Geotechnical & Environmental Engineers

Project				BOREHOLE No
Stocking Lane, Shenington				DS102
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	29-09-21 29-09-21	179.17	E 436,943.0 N 242,820.0	
Contractor				Sheet
Discovery CE				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.30	ES			178.42		(0.75) 0.75	Grass overlying light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL		
1.00		N24 4,5/ 5,5,7,7		177.67		(0.75) 1.50	Stiff orange-brown slightly gravelly sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining.		
1.50	D			177.27		(0.40) 1.90	MARLSTONE ROCK FORMATION. Firm orange-brown very sandy CLAY.		
2.00 2.00	B	N14 8,5/ 3,3,3,5		176.17		(1.10) 3.00	MARLSTONE ROCK FORMATION Medium dense orange-brown slightly clayey gravelly SAND. Gravel is dark brown and brown angular and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION		
3.00		N1 10,2/ 1,0,0,0		175.37		(0.80) 3.80	NO RECOVERY Possibly very loose becoming very dense orange-brown clayey gravelly SAND. Gravel is angular and sub-angular medium sandstone with iron staining.		
3.80		N50/240mm 20,5/ 3,20,20,7		174.92		(0.45) 4.25	MARLSTONE ROCK FORMATION NO RECOVERY Very dense orange-brown clayey gravelly SAND. Gravel is angular and sub-angular medium snadstone with iron staining. MARLSTONE ROCK FORMATION		

GENERAL REMARKS

No groundwater encountered. Terminated early due to SPT refusal at 4.25 m. Backfilled with clean gravel.

All dimensions in metres Scale 1:50	Client Elan Homes Limited	Method/ Plant Used Competitor DART	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

DYNAMIC SAMPLING LOG

Discovery
Geotechnical & Environmental Engineers

Project				BOREHOLE No
Stocking Lane, Shenington				DS103
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	29-09-21 29-09-21	177.93	E 436,974.0 N 242,690.0	
Contractor				Sheet
Discovery CE				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.15	ES					(0.60)	Grass overlying light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter).		
0.50	D			177.33		0.60			
				177.03		0.90	TOPSOIL		
0.90	ES						Firm orange-brown slightly gravelly sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining.		
1.00	D					(0.55)			
1.00		N50/20mm 6,8/ 13,20,17		176.48		1.45	MARLSTONE ROCK FORMATION.		
							Very dense orange-brown-yellow sandy GRAVEL. Gravel is dark brown and orange angular and sub-angular medium to coarse sandstone with iron staining.		
							MARLSTONE ROCK FORMATION		

GENERAL REMARKS

No groundwater encountered. Terminated early due to SPT refusal at 1.45 m. Installed with groundwater and ground gas standpipe to 1.0 m.

All dimensions in metres Scale 1:50	Client Elan Homes Limited	Method/ Plant Used Competitor DART	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

DYNAMIC SAMPLING LOG

Discovery
Geotechnical & Environmental Engineers

Project				BOREHOLE No
Stocking Lane, Shenington				DS104
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	29-09-21 29-09-21	178.78	E 436,922.0 N 242,747.0	
Contractor				Sheet
Discovery CE				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.40	ES			178.28		(0.50) 0.50	Grass overlying light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL		
1.00		N60/225mm 6,10/ 15,16,29		177.78		(0.50) 1.00	Medium dense orange-brown clayey sandy GRAVEL. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.		
				177.33		(0.45) 1.45	Very dense yellow-brown-orange sandy GRAVEL. Gravel is angular medium to coarse sandstone with iron staining. MARLSTONE ROCK FORMATION		

GENERAL REMARKS

No groundwater encountered. Terminated early due to SPT refusal at 1.45 m. Backfilled with clean gravel.

All dimensions in metres Scale 1:50	Client Elan Homes Limited	Method/ Plant Used Competitor DART	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

DYNAMIC SAMPLING LOG

Discovery
Geotechnical & Environmental Engineers

Project				BOREHOLE No
Stocking Lane, Shenington				DS105
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	29-09-21 29-09-21	177.84	E 437,020.0 N 242,727.0	
Contractor				Sheet
Discovery CE				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.50	ES			177.19		(0.65) 0.65	Grass overlying light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL		
1.00		N20 4,3/ 5,5,5,5		176.84		1.00	Orange-brown slightly gravelly sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining.		
1.50	D			176.34		(0.50) 1.50	MARLSTONE ROCK FORMATION.		
1.90		N50/35mm 15,10/ 50		175.39		(0.95) 2.45	Stiff brown-orange slightly gravelly very sandy CLAY. Gravel is brown-orange angular fine and medium sandstone gravel. MARLSTONE ROCK FORMATION		
							Dense becoming very dense brown slightly clayey sandy GRAVEL. Gravel is orange-brown angular and sub-angular medium sandstone with iron staining. MARLSTONE ROCK FORMATION		

GENERAL REMARKS

No groudwater encountered. Terminated early due to SPT refusal at 2.45 m. Backfilled with clean gravel.

All dimensions in metres Scale 1:50	Client Elan Homes Limited	Method/ Plant Used Competitor DART	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

DYNAMIC SAMPLING LOG

Discovery
Geotechnical & Environmental Engineers

Project				BOREHOLE No
Stocking Lane, Shenington				DS106
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	29-09-21 29-09-21	179.34	E 436,827.0 N 242,740.0	
Contractor				Sheet
Discovery CE				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	ES					(0.65)	Grass overlying light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter).		
				178.69		0.65			
0.80	ES			178.39		0.95	TOPSOIL		
1.00		N33 10,10/ 12,12,6,3				(0.50)	Medium dense orange-brown clayey sandy GRAVEL. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining.		
				177.89		1.45			
1.40	D						MARLSTONE ROCK FORMATION.		
2.00		N20 13,5/ 11,3,3,3				(2.00)	Dense orange-yellow-brown slightly clayey sandy GRAVEL. Gravel is angular medium and coarse sandstone with iron staining and rare iron deposits. MARLSTONE ROCK FORMATION		
2.80	D						Medium dense becoming very dense orange-brown-yellow slightly gravelly clayey SAND. Gravel is orange-brown angular fine to medium sandstone with iron staining.		
3.00		N50/160mm 10,10/ 3,22,25					MARLSTONE ROCK FORMATION		
				175.89		3.45			

GENERAL REMARKS

No groundwater encountered. Terminated early due to SPT refusal at 3.45 m. Installed with groundwater and ground gas standpipe to 3.00 m.

All dimensions in metres Scale 1:50	Client Elan Homes Limited	Method/ Plant Used Competitor DART	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

DYNAMIC SAMPLING LOG

Discovery
Geotechnical & Environmental Engineers

Project				BOREHOLE No
Stocking Lane, Shenington				DS107
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	29-09-21 29-09-21	178.47	E 436,922.0 N 242,712.0	
Contractor				Sheet
Discovery CE				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	ES			178.17		0.30	Grass overlying orange-brown-yellow gravelly SAND. Gravel is orange-brown-yellow angular and sub-angular fine to medium sandstone with iron staining. TOPSOIL		
1.00		N50/295mm 5,6/ 6,14,15,15		177.02		(1.15) 1.45	Very dense orange-brown occasionally yellow sandy GRAVEL. Gravel is orange-dark brown angular and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION		

GENERAL REMARKS

No groundwater encountered. Terminated early due to SPT refusal at 1.45 m. Backfilled with clean gravel.

All dimensions in metres Scale 1:50	Client Elan Homes Limited	Method/ Plant Used Competitor DART	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

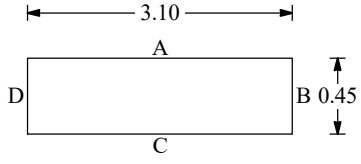
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				**TP101**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	22-09-21 22-09-21	179.86	E 436,855.0 N 242,794.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.25			Grass overlying light orange-brown slightly gravelly clayey SAND. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter).			
0.25-0.70			TOPSOIL Orange-brown gravelly very sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.			
0.70-0.80			Firm orange-brown slightly gravelly very sandy CLAY. Gravel is brown and dark brown angular medium sandstone with occasional iron staining.	0.70	ES	
0.80-1.50			MARLSTONE ROCK FORMATION. Orange-brown sandy cobbly GRAVEL. Gravel is dark brown angular occasionally tabular medium to coarse sandstone with iron staining. MARLSTONE ROCK FORMATION			
1.50-1.60			Firm orange-brown-yellow gravelly sandy CLAY. Gravel is dark brown angular and sub-angular fine to medium sandstone with iron staining.			
1.60-2.00			MARLSTONE ROCK FORMATION Orange-brown sandy cobbly GRAVEL. Gravel is dark brown angular occasionally tabular medium to coarse sandstone with iron staining.	1.60	ES	
2.00-2.50			MARLSTONE ROCK FORMATION Orange-brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand. MARLSTONE ROCK FORMATION.			

Shoring/Support: None
Stability: Stable



GENERAL REMARKS

No groundwater encountered. Terminated at 2.50 m bgl due to hard digging. Gas and groundwater monitoring pipe installed, response zone 0.00 - 2.50 m. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used JCB 3CX	Logged By ET

Discovery
Geotechnical & Environmental Engineers

THE GRANARY
BROADWELL HOUSE FARM
BROADWELL
WARWICKSHIRE
CV21 8HF
TEL: 01926 813909

Trial Pit No
TP101
Trial Pit Photos

Project Name Stocking Lane	Project No. 21076J	Co-ords: Level:	Date 22/09/2021
Location: Shenington		Dimensions: 3.10m Depth 2.50m 0.45m	Scale NTS
Client: Elan Homes Limited			Logged By ET

General Notes

No groundwater encountered. Terminated at 2.50 m due to hard digging. Gas and groundwater monitoring pipe installed, response zone 0.0 – 2.50 m. backfilled with arisings

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

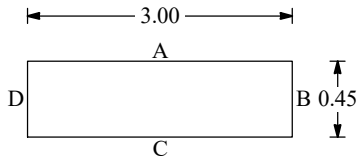
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				TP102
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	22-09-21 22-09-21	178.88	E 436,918.0 N 242,774.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.25			Grass overlying orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter).			
0.25-0.60			TOPSOIL	0.30	ES	
			Orange-brown gravelly very sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining.			
0.60-1.60			MARLSTONE ROCK FORMATION.			
			Orange-brown sandy GRAVEL. Gravel is brown and dark brown angular occasionally tabular medium to coarse sandstone with occasional iron staining and iron deposits. Occasional cobbles.	0.90	ES	
			MARLSTONE ROCK FORMATION.	1.00	ES	
				1.50	D	
1.60-2.00			Orange-brown sandy cobbly GRAVEL. Gravel is dark brown angular occasionally tabular medium to coarse sandstone with iron staining.			
			MARLSTONE ROCK FORMATION	1.80	B	
2.00-2.60			Orange-brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine to medium orange sand.			
			MARLSTONE ROCK FORMATION.			
				2.40	B	

Shoring/Support: None
Stability: Stable



GENERAL REMARKS

No groundwater encountered. Terminated at 2.60 m bgl due to hard digging. Used for infiltration testing. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used JCB 3CX	Logged By ET

AGS3 UK TP 21076J SHENINGTON LOGS - USE THIS ONE.GPJ GINT STD AGS 3_1.GDT 15/11/21

Discovery
Geotechnical & Environmental Engineers
THE GRANARY
BROADWELL HOUSE FARM
BROADWELL
WARWICKSHIRE
CV21 8HF
TEL: 01926 813909

Trial Pit No
TP102
Trial Pit Photos

Project Name Stocking Lane	Project No. 21076J	Co-ords: Level:	Date 22/09/2021
Location: Shenington		Dimensions: 3.00m Depth 2.40m 0.45m	Scale NTS
Client: Elan Homes Limited			Logged By ET

General Notes

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

Discovery CE Ltd
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Rugby, Warwickshire, CV23 8HF

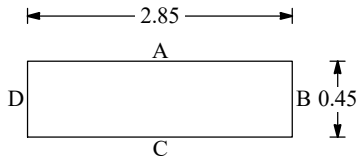
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				**TP103**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	22-09-21 22-09-21	178.49	E 436,984.0 N 242,780.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.35			Grass overlying light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sandstone. Fine rootlets (less than 5 mm diameter). TOPSOIL			
0.35-1.40			Orange-brown sandy GRAVEL. Gravel is brown and dark brown angular occasionally tabular medium to coarse angular sandstone with iron staining and rare iron deposits. Occasional cobbles. MARLSTONE ROCK FORMATION.	0.80	ES	
1.40-1.90			Orange-brown sandy cobbly GRAVEL. Gravel is dark brown angular occasionally tabular medium to coarse sandstone with iron staining. MARLSTONE ROCK FORMATION	1.50	D	
1.90-3.00			Orange-brown and dark brown occasionally very dark grey thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine to medium orange sand. MARLSTONE ROCK FORMATION.	2.10	B	

Shoring/Support: None
Stability: Stable



GENERAL REMARKS

No groundwater encountered. Terminated at 3.00 m bgl due to hard digging. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used JCB 3CX	Logged By ET

Discovery
Geotechnical & Environmental Engineers
THE GRANARY
BROADWELL HOUSE FARM
BROADWELL
WARWICKSHIRE
CV21 8HF
TEL: 01926 813909

Trial Pit No
TP103
Trial Pit Photos

Project Name Stocking Lane	Project No. 21076J	Co-ords: Level:	Date 22/09/2021
Location: Shenington		Dimensions: 2.85m Depth 3.00m 0.45m	Scale NTS
Client: Elan Homes Limited			Logged By ET

General Notes

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

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

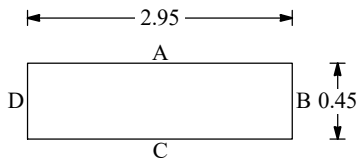
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				**TP104**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	22-09-21 22-09-21	178.02	E 437,004.0 N 242,735.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.35			Grass overlying light orange-brown slightly gravelly very sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL			
0.35-1.50			Orange-brown sandy GRAVEL. Gravel is brown becoming dark brown angular occasionally tabular medium to coarse sandstone with iron staining and rare iron deposits. Occasional cobbles. MARLSTONE ROCK FORMATION.	0.60 1.00	ES ES	
1.50-2.20			Orange-brown and dark brown gravelly COBBLES. Gravel is angular and tabular coarse sandstone. Cobbles are angular and tabular if sandstone. Occasional iron staining and occasional fine to medium orange sand. MARLSTONE ROCK FORMATION.	1.50	B	
2.20-2.40			Orange-brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand. MARLSTONE ROCK FORMATION.	2.30	D	

Shoring/Support: None
Stability: Stable



GENERAL REMARKS

No groundwater encountered. Terminated at 2.50 m bgl due to hard digging. Backfilled with arisings.

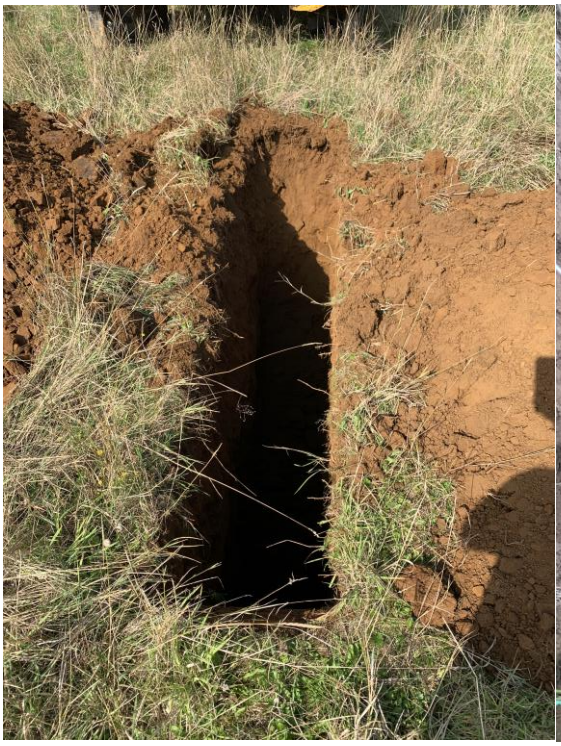
All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used JCB 3CX	Logged By ET

Discovery
Geotechnical & Environmental Engineers

THE GRANARY
BROADWELL HOUSE FARM
BROADWELL
WARWICKSHIRE
CV21 8HF
TEL: 01926 813909

Trial Pit No
TP104
Trial Pit Photos

Project Name Stocking Lane	Project No. 21076J	Co-ords: Level:	Date 22/09/2021
Location: Shenington		Dimensions: 2.95m Depth 2.50m 0.45m	Scale NTS
Client: Elan Homes Limited			Logged By ET



General Notes

No groundwater encountered. Terminated at 2.50 m. Backfilled with arisings.

Discovery CE Ltd
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Rugby, Warwickshire, CV23 8HF

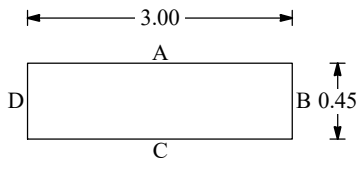
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				**TP105**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	22-09-21 22-09-21	178.30	E 436,973.0 N 242,739.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.20			Grass overlying light orange-brown slightly gravelly very sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone. Occasional fine rootlets (less than 5 mm diameter).			
0.20-1.60			TOPSOIL Orange-brown sandy GRAVEL. Gravel is angular occasionally tabular medium to coarse sandstone. Occasional cobbles.	0.50	ES	
			MARLSTONE ROCK FORMATION.	1.20	ES	
1.60-1.75			Orange-brown and dark brown angular occasionally tabular coarse sandstone GRAVEL with cobbles, occasional iron staining and occasional medium orange sand.			
1.75-2.00			MARLSTONE ROCK FORMATION.	1.80	D	
			Orange-brown and dark brown gravelly COBBLES. Gravel is angular and tabular coarse sandstone. Cobbles are angular and tabular if sandstone. Occasional iron staining and occasional fine to medium orange sand.	2.00 2.00	B D	
			MARLSTONE ROCK FORMATION.			

Shoring/Support: None
Stability: Stable



GENERAL REMARKS

No groundwater encountered. Terminated at 2.50 m bgl due to hard digging. Used for infiltration testing. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used JCB 3CX	Logged By ET

Discovery
Geotechnical & Environmental Engineers
THE GRANARY
BROADWELL HOUSE FARM
BROADWELL
WARWICKSHIRE
CV21 8HF
TEL: 01926 813909

Trial Pit No
TP105
Trial Pit Photos

Project Name Stocking Lane	Project No. 21076J	Co-ords: Level:	Date 22/09/2021
Location: Shenington		Dimensions: 3.00m Depth 2.40m 0.45m	Scale NTS
Client: Elan Homes Limited			Logged By ET

General Notes

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

Discovery CE Ltd
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Rugby, Warwickshire, CV23 8HF

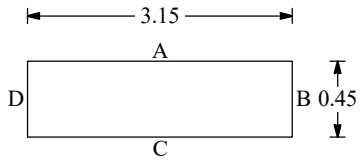
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				**TP106**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	22-09-21 22-09-21	178.10	E 436,898.0 N 242,690.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.15			Grass overlying light orange-brown slightly gravelly SAND. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining.			
0.15-0.50			Occasional fine rootlets (less than 5 mm diameter). TOPSOIL			
0.50-1.65			Orange-brown slightly gravelly very sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.			
			Orange-brown sandy GRAVEL. Gravel is brown becoming dark brown angular occasionally tabular medium to coarse sandstone with iron staining and rare iron deposits. Occasional cobbles.	0.70	ES	
			MARLSTONE ROCK FORMATION.	1.00	D	
				1.50	D	
1.65-2.10			Orange-brown and dark brown gravelly COBBLES. Gravel is angular and tabular coarse sandstone. Cobbles are angular and tabular if sandstone. Occasional iron staining and occasional fine to medium orange sand. MARLSTONE ROCK FORMATION.			
2.10-2.50			Orange-brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand. MARLSTONE ROCK FORMATION.	2.30	D	

Shoring/Support: None
Stability: Stable



GENERAL REMARKS

No groundwater encountered. Terminated at 2.50 m bgl due to hard digging. Gas and groundwater monitoring pipe installed, response zone 0.00 - 2.50 m.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used JCB 3CX	Logged By ET

Discovery
Geotechnical & Environmental Engineers
THE GRANARY
BROADWELL HOUSE FARM
BROADWELL
WARWICKSHIRE
CV21 8HF
TEL: 01926 813909

Trial Pit No
TP106
Trial Pit Photos

Project Name Stocking Lane	Project No. 21076J	Co-ords: Level:	Date 22/09/2021
Location: Shenington		Dimensions: 3.15m Depth 2.50m 0.45m	Scale NTS
Client: Elan Homes Limited			Logged By ET

General Notes

No groundwater encountered. Terminated at 2.50 m. Backfilled with arisings.

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

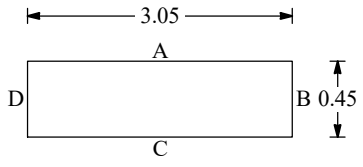
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				**TP107**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	22-09-21 22-09-21	178.90	E 436,880.0 N 242,730.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.30			Grass overlying light orangey-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone. Occasional fine rootlets (less than 5 mm diameter).			
0.30-0.80			TOPSOIL.			
			Orange-brown and dark brown slightly gravelly very sandy CLAY. Gravel is brown becoming dark brown sub-rounded and sub-angular fine to medium sandstone with rare iron staining.	0.40	ES	
			MARLSTONE ROCK FORMATION.			
0.80-1.75			Orange-brown sandy GRAVEL. Gravel is dark brown angular occasionally tabular medium to coarse sandstone. Occasional cobbles.			
			MARLSTONE ROCK FORMATION.	1.40	ES	
1.75-2.00			Orange-brown and dark brown gravelly COBBLES. Gravel is angular and tabular coarse sandstone. Cobbles are angular and tabular if sandstone. Occasional iron staining and occasional fine to medium orange sand.	1.80	B	
2.00-2.70			MARLSTONE ROCK FORMATION.	2.10	B	
			Orange-brown and dark brown thinly laminated SANDSTONE with regular iron staining and iron deposits. Occasional bands of fine orange sand.			
			MARLSTONE ROCK FORMATION.			

Shoring/Support: None
Stability: Minor collapse on eastern face



GENERAL REMARKS

No groundwater encountered. Terminated at 2.70 m bgl due to hard digging. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used JCB 3CX	Logged By ET

Discovery
Geotechnical & Environmental Engineers
THE GRANARY
BROADWELL HOUSE FARM
BROADWELL
WARWICKSHIRE
CV21 8HF
TEL: 01926 813909

Trial Pit No
TP107
Trial Pit Photos

Project Name Stocking Lane	Project No. 21076J	Co-ords: Level:	Date 22/09/2021
Location: Shenington		Dimensions: 3.05m Depth 2.70m 0.45m	Scale NTS
Client: Elan Homes Limited			Logged By ET

General Notes

No groundwater encountered. Terminated at 2.70 m. Backfilled with arisings.

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

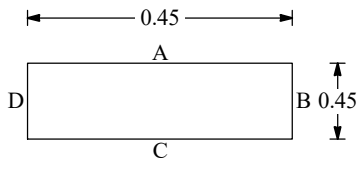
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				HP101
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	13-10-21 13-10-21	179.98	E 436,910.0 N 242,885.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.60			Grass overlying firm light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL	0.50	B	
0.60-0.75			Medium dense orange-brown slightly gravelly very clayey SAND. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.	0.75	D	

Shoring/Support:
Stability:



GENERAL REMARKS

No groundwater encountered. Hand dug trial pit. Terminated at 0.75 m bgl due to hard digging. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

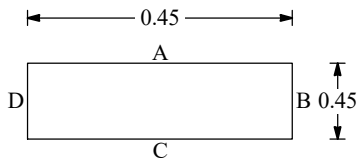
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				HP102
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	13-10-21 13-10-21	179.17	E 436,942.0 N 242,820.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.75			Grass overlying firm light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL	0.40	B	
0.75-1.00			Firm orange-brown slightly gravelly sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.	1.00	D	

Shoring/Support:
Stability:



GENERAL REMARKS

No groundwater encountered. Hand dug trial pit. Terminated at 1.00 m bgl due to hard digging. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

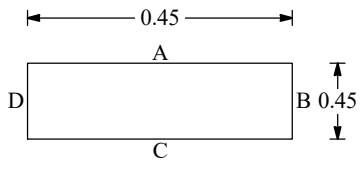
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				HP103
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	13-10-21 13-10-21	177.93	E 436,973.0 N 242,690.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.60			Grass overlying firm light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL	0.30	B	
0.60-0.90			Firm orange-brown slightly gravelly sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.	0.80	D	

Shoring/Support:
Stability:



GENERAL REMARKS

No groundwater encountered. Hand dug trial pit. Terminated at 0.90 m bgl due to hard digging. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

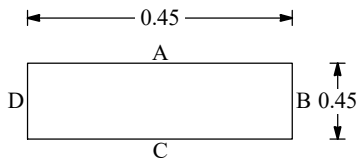
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				HP104
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	13-10-21 13-10-21	178.78	E 436,921.0 N 242,747.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.50			Grass overlying firm light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL			
0.50-1.00			Medium dense orange-brown clayey sandy GRAVEL. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.	0.60 0.60	B D	

Shoring/Support:
Stability:



GENERAL REMARKS

No groundwater encountered. Hand dug trial pit. Terminated at 1.00 m bgl due to hard digging. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

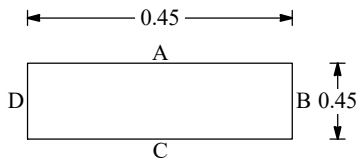
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				HP105
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	13-10-21 13-10-21	177.84	E 437,019.0 N 242,727.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.65			Grass overlying firm light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL	0.50	D	
0.65-1.00			Firm orange-brown gravelly sandy CLAY. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.	0.75	B	

Shoring/Support:
Stability:



GENERAL REMARKS

No groundwater encountered. Hand dug trial pit. Terminated at 1.00 m bgl due to hard digging. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used	Logged By ET

Discovery CE Ltd
The Granary, Broadwell House Farm
Rugby, Warwickshire, CV23 8HF

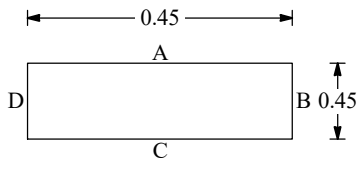
TRIAL PIT LOG

Discovery
Geotechnical & Environmental Engineers

Project				TRIAL PIT No
Stocking Lane, Shenington				HP106
Job No	Date	Ground Level (m)	Co-Ordinates ()	
21076J	13-10-21 13-10-21	179.34	E 436,826.0 N 242,740.0	
Contractor				Sheet
Discovery CE				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.65			Grass overlying firm light orange-brown slightly gravelly sandy CLAY. Gravel is brown sub-rounded fine to medium quartzite and sub-angular fine to medium sandstone with iron staining. Occasional fine rootlets (less than 5 mm diameter). TOPSOIL	0.40	D	
0.65-0.95			Orange-brown clayey sandy GRAVEL. Gravel is brown and dark brown sub-rounded and sub-angular fine to medium sandstone with iron staining. MARLSTONE ROCK FORMATION.	0.80	B	

Shoring/Support:
Stability:



GENERAL REMARKS

No groundwater encountered. Hand dug trial pit. Terminated at 0.95 m bgl due to hard digging. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Elan Homes Limited	Method/ Plant Used	Logged By ET

GAS AND GROUNDWATER MONITORING DATA

Discovery Geotechnical & Environmental Engineers

SITE	Shenington
PROJECT No.	21076J
Carried Out by:	SH
Date:	30-Sep-21
Instrument Details	GFM-430 & Dip Meter

Atmospheric & Ground Conditions

Atmospheric Pressure Variations During Visit	Ground Surface Conditions
994 -995 mb	Wet
Atmospheric Pressure Trend Over Previous 24hrs	**Weather Conditions**
/	Wind

Well No.	Cover Height (m agl)	Well Diameter (mm)	Flow Rate (l/hr) Initial	Differential Pressure (Pa) Initial	Flow Rate (l/hr) 15 s	Differential Pressure (Pa) 15 s	Flow Rate (l/hr) Steady	Differential Pressure (Pa) Steady	CH4 (% v/v)		CH4 Steady LEL (%)	CO2 (% v/v)		O2 (% v/v)		H2S (ppm)		CO (ppm)		Duration (secs)^	Flow Rate (l/hr)	Differential Pressure (Pa)	PID (ppm)		Atmospheric Pressure (mb)	Water Level (m bgl)	Depth of Pipe (m bgl)	COMMENTS
									Peak	Steady		Peak	Steady	Min	Steady	Peak	Steady	Peak	Steady				Peak	Steady				
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	2.00	
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	1.73	
DS101	0.44	42	0	0	0	0	0	0	0.0	0.0	0.0	0.1	0.0	19.9	20.1	0.0	0.0	2.0	0.0	180	0.0	0.0	NR	NR	994	DRY	4.26	
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	
DS104	0.42	42	0	0	0	0	0	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	NR	995	DRY	1.24	
DS106	0.40	42	0.5	1	0	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	

Notes: NR = Not Recorded ^ For measurement of gas concentrations > = Above LEL WST = Water Sample Taken GL = Ground Level

IMS 061

GAS AND GROUNDWATER MONITORING DATA

Discovery Geotechnical & Environmental Engineers

SITE	Shenington
PROJECT No.	21076J
Carried Out by:	EW
Date:	21-Oct-21
Instrument Details	GFM-430 & Dip Meter

Atmospheric & Ground Conditions

Atmospheric Pressure Variations During Visit: Ranged from 987-990mb during visit

Ground Surface Conditions: Dry

Atmospheric Pressure Trend Over Previous 24hrs: /

Weather Conditions: Cloudy and sunny

Well No.	Cover Height (m agl)	Well Diameter (mm)	Flow Rate (l/hr) Initial	Differential Pressure (Pa) Initial	Flow Rate (l/hr) 15 s	Differential Pressure (Pa) 15 s	Flow Rate (l/hr) Steady	Differential Pressure (Pa) Steady	CH4 (% v/v)		CH4 Steady LEL (%)	CO2 (% v/v)		O2 (% v/v)		H2S (ppm)		CO (ppm)		Duration (secs)^	Flow Rate (l/hr)	Differential Pressure (Pa)	PID (ppm)		Atmospheric Pressure (mb)	Water Level (m bgl)	Depth of Pipe (m bgl)	COMMENTS
									Peak	Steady		Peak	Steady	Min	Steady	Peak	Steady	Peak	Steady				Peak	Steady				
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	NR	NR	
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	NR	NR	
DS101	0.44	42	0	0	0	0	0	0	0.0	0.0	0.0	0.7	0.6	20.4	20.2	0.0	0.0	0.0	0.0	180	0.0	0.0	0.0	0.0	990	Dry	5.04	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
DS104	0.42	42	0	0	0	0	0	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	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	Dry

Notes: NR = Not Recorded ^ For measurement of gas concentrations > = Above LEL WST = Water Sample Taken GL = Ground Level

GAS AND GROUNDWATER MONITORING DATA

Discovery Geotechnical & Environmental Engineers

SITE	Shenington
PROJECT No.	21076J
Carried Out by:	EW
Date:	28-Oct-21
Instrument Details	GFM-430 & Dip Meter

Atmospheric & Ground Conditions

Atmospheric Pressure Variations During Visit	Ground Surface Conditions
Ranged from 984-986	Dry
Atmospheric Pressure Trend Over Previous 24hrs	**Weather Conditions**
Varies from 1003 to 968 over the last 24hrs	Overcast, Dry, Windy

Well No.	Cover Height (m agl)	Well Diameter (mm)	Flow Rate (l/hr) Initial	Differential Pressure (Pa) Initial	Flow Rate (l/hr) 15 s	Differential Pressure (Pa) 15 s	Flow Rate (l/hr) Steady	Differential Pressure (Pa) Steady	CH4 (% v/v)		CH4 Steady LEL (%)	CO2 (% v/v)		O2 (% v/v)		H2S (ppm)		CO (ppm)		Duration (secs)^	Flow Rate (l/hr)	Differential Pressure (Pa)	PID (ppm)		Atmospheric Pressure (mb)	Water Level (m bgl)	Depth of Pipe (m bgl)	COMMENTS
									Peak	Steady		Peak	Steady	Min	Steady	Peak	Steady	Peak	Steady				Peak	Steady				
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	/	2.91	Dry- No bung
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	/	2.89	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	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

Notes: NR = Not Recorded ^ For measurement of gas concentrations > = Above LEL WST = Water Sample Taken GL = Ground Level

GAS AND GROUNDWATER MONITORING DATA

Discovery Geotechnical & Environmental Engineers

SITE	Shenington
PROJECT No.	21076J
Carried Out by:	CT
Date:	11-Nov-21
Instrument Details	GFM-430 & Dip Meter

Atmospheric & Ground Conditions

Atmospheric Pressure Variations During Visit: Falling from 999 - 997 mb

Ground Surface Conditions: Wet open field

Atmospheric Pressure Trend Over Previous 24hrs

Weather Conditions: Light rain

Well No.	Cover Height (m agl)	Well Diameter (mm)	Flow Rate (l/hr) Initial	Differential Pressure (Pa) Initial	Flow Rate (l/hr) 15 s	Differential Pressure (Pa) 15 s	Flow Rate (l/hr) Steady	Differential Pressure (Pa) Steady	CH4 (% v/v)		CH4 Steady LEL (%)	CO2 (% v/v)		O2 (% v/v)		H2S (ppm)		CO (ppm)		Duration (secs)^	Flow Rate (l/hr)	Differential Pressure (Pa)	PID (ppm)		Atmospheric Pressure (mb)	Water Level (m bgl)	Depth of Pipe (m bgl)	COMMENTS
									Peak	Steady		Peak	Steady	Min	Steady	Peak	Steady	Peak	Steady				Peak	Steady				
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	

Notes: NR = Not Recorded ^ For measurement of gas concentrations > = Above LEL WST = Water Sample Taken GL = Ground Level

APPENDIX E - GEOTECHNICAL TEST RESULTS

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 56235

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

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	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	3
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	3
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	3
Samples Received - @ Non Accredited Test	3
Disposal of samples for job	1

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

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

GSTL	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	56235	
Project Location	Shenington - Hand Pits	
Date Tested	21/10/2021	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
HP101		B	0.50	-		17	79	37	42	44	MV Very High Plasticity
HP103		B	0.30	-		20	57	42	15	26	MH High Plasticity
HP106		B	0.80	-		26	57	37	20	26	MH High Plasticity
				-							
				-							
				-							
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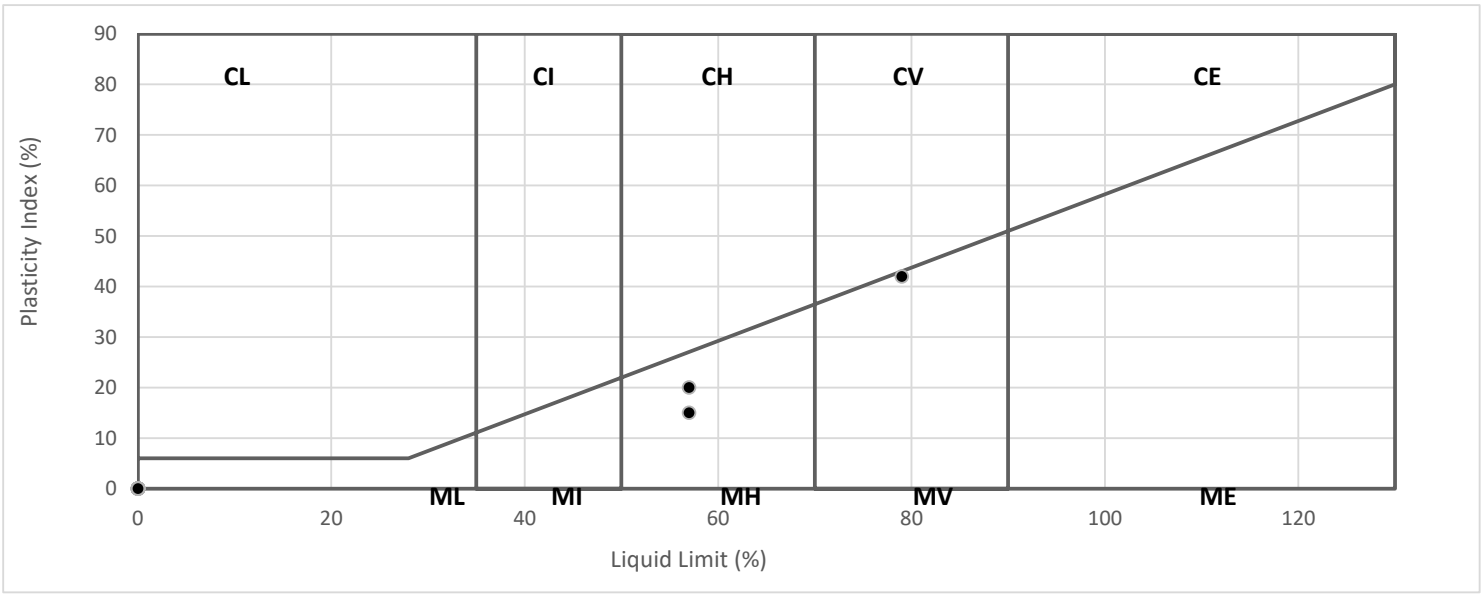
Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

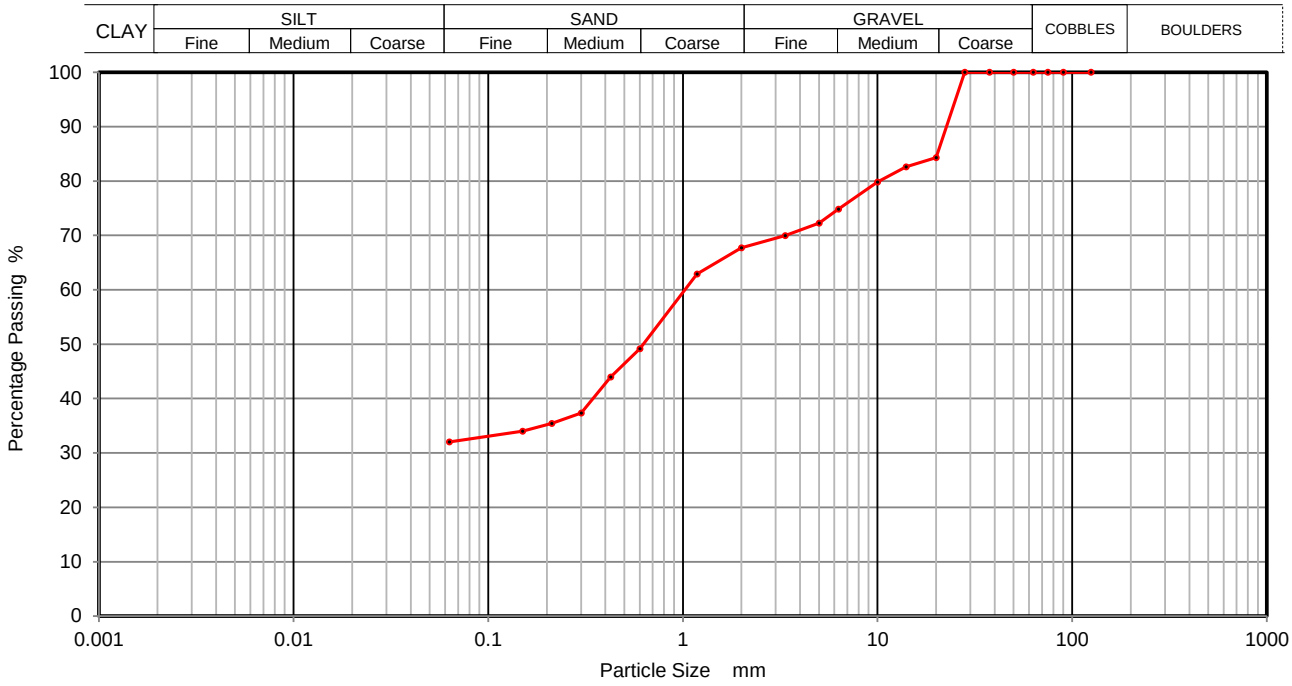
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	29/10/2021	Richard John (Advanced Testing Manager)
Jordan Williams	Approved	29/10/2021	Paul Evans (Quality/Technical Manager)

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	56235
		Borehole/Pit No.	HP101
Site Name	Shenington - Hand Pits	Sample No.	
Soil Description	Brown silty clayey fine to coarse gravelly fine to coarse SAND	Depth Top	0.50
		Depth Base	
Date Tested	27/10/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	84		
14	83		
10	80		
6.3	75		
5	72		
3.35	70		
2	68		
1.18	63		
0.6	49		
0.425	44		
0.3	37		
0.212	35		
0.15	34		
0.063	32		

Sample Proportions	% dry mass
Cobbles	0
Gravel	32
Sand	36
Silt and Clay	32

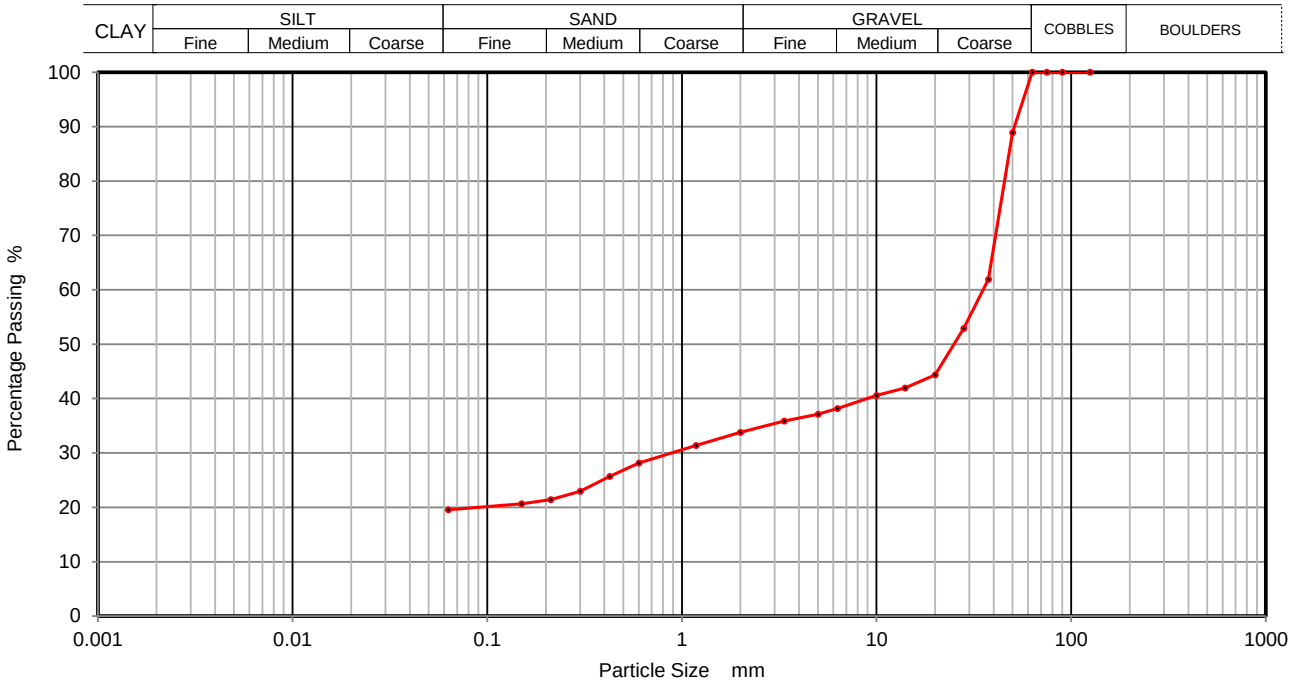
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	28/10/2021	Richard John	
David	Approved	29/10/2021	Paul Evans	

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	56235
		Borehole/Pit No.	HP103
Site Name	Shenington - Hand Pits	Sample No.	
Soil Description	Brown fine to coarse sandy silty clayey fine to coarse GRAVEL	Depth Top	0.30
		Depth Base	
Date Tested	27/10/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	89		
37.5	62		
28	53		
20	44		
14	42		
10	41		
6.3	38		
5	37		
3.35	36		
2	34		
1.18	31		
0.6	28		
0.425	26		
0.3	23		
0.212	21		
0.15	21		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	66
Sand	14
Silt and Clay	20

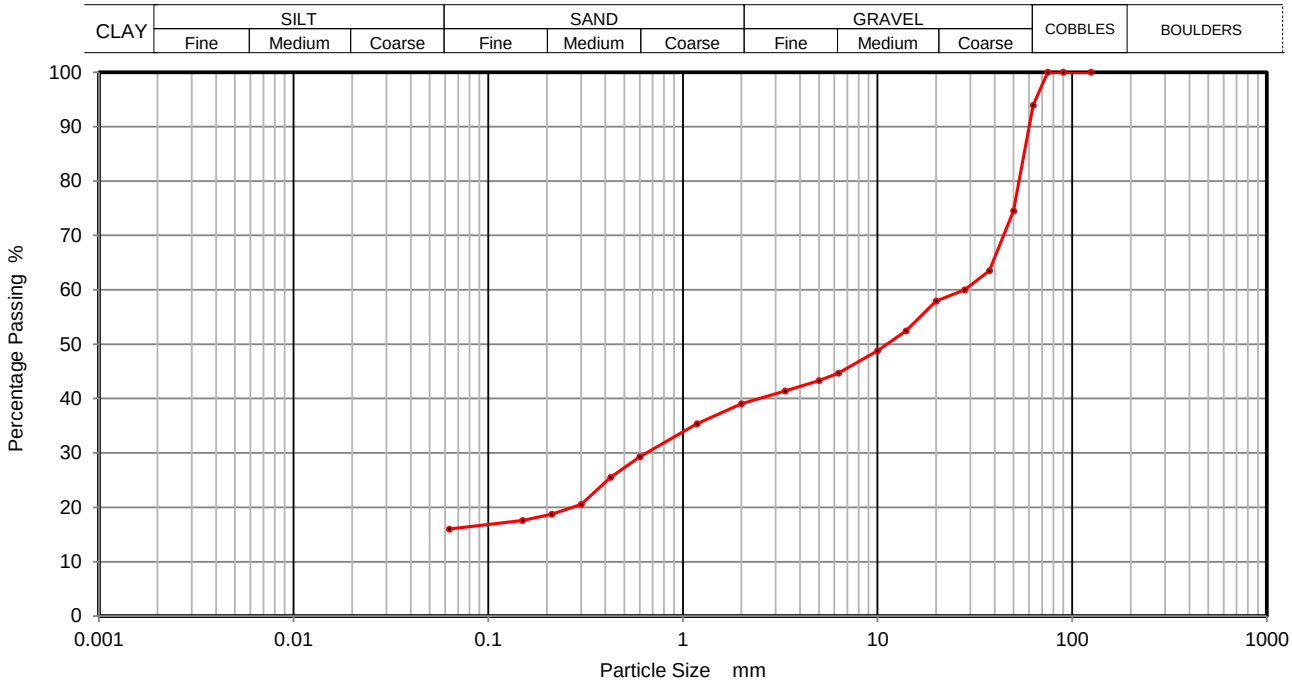
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	28/10/2021	Richard John	
David	Approved	29/10/2021	Paul Evans	

UKAS TESTING
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	56235
		Borehole/Pit No.	HP106
Site Name	Shenington - Hand Pits	Sample No.	
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL with cobbles	Depth Top	0.80
		Depth Base	
Date Tested	27/10/2021	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	94		
50	75		
37.5	64		
28	60		
20	58		
14	52		
10	49		
6.3	45		
5	43		
3.35	41		
2	39		
1.18	35		
0.6	29		
0.425	26		
0.3	21		
0.212	19		
0.15	18		
0.063	16		

Sample Proportions	% dry mass
Cobbles	6
Gravel	55
Sand	23
Silt and Clay	16

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	28/10/2021	Richard John	
David	Approved	29/10/2021	Paul Evans	

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APPENDIX F - CHEMICAL TEST RESULTS

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

Final Report

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.:	
Order No.:	
No. of Samples:	21
Turnaround (Wkdays):	5
Date Approved:	04-Oct-2021
Approved By:	[redacted]
Details:	Glynn Harvey, Technical Manager

Date Received:	29-Sep-2021
Date Instructed:	29-Sep-2021
Results Due:	05-Oct-2021

Results - Soil

Project: 21076J Shenington

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.:				**Chemtest Sample ID.:**	1288356	1288357	1288358	1288359	1288360	1288361	1288362	1288363	1288364
				Sample Location:	TP101	TP101	TP102	TP102	TP102	TP103	TP104	TP104	TP105
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.70	1.60	0.30	0.90	1.00	0.80	0.60	1.00	0.50
				Bottom Depth (m):	0.70	1.60	0.30	0.90	1.00	0.80	0.60	1.00	0.50
				Date Sampled:	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	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH	M	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)	M	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	M	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	17	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
Vanadium	U	2450	mg/kg	5.0	280	180	270	340	240	380	350	370	530
Zinc	M	2450	mg/kg	0.50	210	120	230	200	150	180	260	160	420
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Phenanthrene	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
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10		< 0.10					< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0		< 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						

Results - Soil

Project: 21076J Shenington

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.:					**Chemtest Sample ID.:**	1288356	1288357	1288358	1288359	1288360	1288361	1288362	1288363	1288364
					Sample Location:	TP101	TP101	TP102	TP102	TP102	TP103	TP104	TP104	TP105
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.70	1.60	0.30	0.90	1.00	0.80	0.60	1.00	0.50
					Bottom Depth (m):	0.70	1.60	0.30	0.90	1.00	0.80	0.60	1.00	0.50
					Date Sampled:	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	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							

Results - Soil

Project: 21076J Shenington

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.:					**Chemtest Sample ID.:**	1288365	1288366	1288367	1288368	1288369	1288370	1288371	1288372	1288373
					Sample Location:	TP105	TP106	TP107	TP107	TP102	TP103	TP104	TP105	TP105
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.20	0.70	0.40	1.40	1.50	1.50	2.30	1.80	2.00
					Bottom Depth (m):	1.20	0.70	0.40	1.40	1.50	1.50	2.30	1.80	2.00
					Date Sampled:	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	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A		Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A		Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH	M	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)	M	2120	mg/kg	0.40		< 0.40	< 0.40	< 0.40	< 0.40					
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010						< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Arsenic	M	2450	mg/kg	1.0		210	150	290	200					
Cadmium	M	2450	mg/kg	0.10		< 0.10	< 0.10	0.13	< 0.10					
Chromium	M	2450	mg/kg	1.0		210	340	280	330					
Copper	M	2450	mg/kg	0.50		12	6.3	15	6.8					
Mercury	M	2450	mg/kg	0.10		< 0.10	< 0.10	< 0.10	< 0.10					
Nickel	M	2450	mg/kg	0.50		110	160	160	150					
Lead	M	2450	mg/kg	0.50		42	35	58	32					
Selenium	M	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	M	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	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Acenaphthylene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Acenaphthene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Fluorene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Phenanthrene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Anthracene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Fluoranthene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Pyrene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Benzo[a]anthracene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Chrysene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Benzo[b]fluoranthene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Benzo[k]fluoranthene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Benzo[a]pyrene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10			< 0.10		< 0.10					
Total Of 16 PAH's	M	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						

Results - Soil

Project: 21076J Shenington

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.:			**Chemtest Sample ID.:**		1288365	1288366	1288367	1288368	1288369	1288370	1288371	1288372	1288373
			Sample Location:		TP105	TP106	TP107	TP107	TP102	TP103	TP104	TP105	TP105
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.20	0.70	0.40	1.40	1.50	1.50	2.30	1.80	2.00
			Bottom Depth (m):		1.20	0.70	0.40	1.40	1.50	1.50	2.30	1.80	2.00
			Date Sampled:		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	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						

Results - Soil

Project: 21076J Shenington

Client: Discovery CE Ltd			**Chemtest Job No.:**		21-33783	21-33783	21-33783
Quotation No.:			**Chemtest Sample ID.:**		1288374	1288375	1288376
			Sample Location:		TP106	TP106	TP106
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.00	1.50	2.30
			Bottom Depth (m):		1.00	1.50	2.30
			Date Sampled:		22-Sep-2021	22-Sep-2021	22-Sep-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Moisture	N	2030	%	0.020	18	16	13
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH	M	2010		4.0	8.1	8.0	8.1
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40			
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010
Arsenic	M	2450	mg/kg	1.0			
Cadmium	M	2450	mg/kg	0.10			
Chromium	M	2450	mg/kg	1.0			
Copper	M	2450	mg/kg	0.50			
Mercury	M	2450	mg/kg	0.10			
Nickel	M	2450	mg/kg	0.50			
Lead	M	2450	mg/kg	0.50			
Selenium	M	2450	mg/kg	0.20			
Vanadium	U	2450	mg/kg	5.0			
Zinc	M	2450	mg/kg	0.50			
Chromium (Hexavalent)	N	2490	mg/kg	0.50			
Naphthalene	M	2700	mg/kg	0.10			
Acenaphthylene	M	2700	mg/kg	0.10			
Acenaphthene	M	2700	mg/kg	0.10			
Fluorene	M	2700	mg/kg	0.10			
Phenanthrene	M	2700	mg/kg	0.10			
Anthracene	M	2700	mg/kg	0.10			
Fluoranthene	M	2700	mg/kg	0.10			
Pyrene	M	2700	mg/kg	0.10			
Benzo[a]anthracene	M	2700	mg/kg	0.10			
Chrysene	M	2700	mg/kg	0.10			
Benzo[b]fluoranthene	M	2700	mg/kg	0.10			
Benzo[k]fluoranthene	M	2700	mg/kg	0.10			
Benzo[a]pyrene	M	2700	mg/kg	0.10			
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10			
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10			
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10			
Total Of 16 PAH's	M	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			

Results - Soil

Project: 21076J Shenington

Client: Discovery CE Ltd			**Chemtest Job No.:**		21-33783	21-33783	21-33783
Quotation No.:			**Chemtest Sample ID.:**		1288374	1288375	1288376
			Sample Location:		TP106	TP106	TP106
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		1.00	1.50	2.30
			Bottom Depth (m):		1.00	1.50	2.30
			Date Sampled:		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	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
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

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

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
Order No.:		**Date Instructed:**	04-Oct-2021
No. of Samples:	15		
Turnaround (Wkdays):	10	**Results Due:**	15-Oct-2021
Date Approved:	15-Oct-2021		
Approved By:	[redacted]		
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: 21076J Shennington

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.:		**Chemtest Sample ID.:**			1291437	1291438	1291440	1291441	1291442	1291444	1291445	1291446	1291447
Order No.:		Client Sample Ref.:			ES1	ES2	D2	D3	ES1	ES1	ES2	D1	D2
		Sample Location:			DS101	DS101	DS101	DS101	DS102	DS103	DS103	DS103	DS103
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.20	0.75	5.00	5.80	0.30	0.15	0.90	0.50	1.00
		Bottom Depth (m):			0.20	0.75	5.00	6.00	0.30	0.15	0.90	0.50	1.00
		Date Sampled:			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	Brown	Brown	Brown	Brown	Brown	Brown	Brown	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
pH	M	2010		4.0	7.8	8.2	8.3	7.4	7.8	8.1	7.6		7.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	2.5	1.5			2.1	2.1	1.0		
Sulphate (2:1 Extract)	M	2120	mg/kg	20			< 20	< 20					< 20
Arsenic	M	2450	mg/kg	1.0	250	500			320	320	480		
Cadmium	M	2450	mg/kg	0.10	0.35	0.21			0.40	0.37	0.25		
Chromium	M	2450	mg/kg	1.0	210	240			290	270	400		
Copper	M	2450	mg/kg	0.50	17	10			17	18	12		
Mercury	M	2450	mg/kg	0.10	0.12	< 0.10			0.11	0.12	< 0.10		
Nickel	M	2450	mg/kg	0.50	130	170			160	150	230		
Lead	M	2450	mg/kg	0.50	52	37			120	77	58		
Selenium	M	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	M	2450	mg/kg	0.50	290	120			370	360	390		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50			< 0.50	< 0.50	< 0.50		
Organic Matter	M	2625	%	0.40	3.6					5.3	1.7		
As Stomach Bioaccessibility	N	2630	mg/kg	0.20		3.8							
As Intestinal Bioaccessibility 1	N	2630	mg/kg	0.20		6.6							
As Intestinal Bioaccessibility 2	N	2630	mg/kg	0.20		7.4							
As Bioaccessible Fraction	N	2630	%	0.10		1.5							
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0						< 1.0	< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0						< 5.0	< 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0						< 1.0	< 1.0		

Results - Soil

Project: 21076J Shennington

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.:		**Chemtest Sample ID.:**			1291437	1291438	1291440	1291441	1291442	1291444	1291445	1291446	1291447
Order No.:		Client Sample Ref.:			ES1	ES2	D2	D3	ES1	ES1	ES2	D1	D2
		Sample Location:			DS101	DS101	DS101	DS101	DS102	DS103	DS103	DS103	DS103
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.20	0.75	5.00	5.80	0.30	0.15	0.90	0.50	1.00
		Bottom Depth (m):			0.20	0.75	5.00	6.00	0.30	0.15	0.90	0.50	1.00
		Date Sampled:			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	M	2680	mg/kg	1.0						< 1.0	< 1.0		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0						< 1.0	< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0						< 5.0	< 5.0		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0						< 10	< 10		
Naphthalene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Acenaphthene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Fluorene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Phenanthrene	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		
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Chrysene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10				< 0.10	< 0.10	< 0.10		
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0				< 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	
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	

Results - Soil

Project: 21076J Shennington

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.:		**Chemtest Sample ID.:**			1291437	1291438	1291440	1291441	1291442	1291444	1291445	1291446	1291447
Order No.:		Client Sample Ref.:			ES1	ES2	D2	D3	ES1	ES1	ES2	D1	D2
		Sample Location:			DS101	DS101	DS101	DS101	DS102	DS103	DS103	DS103	DS103
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.20	0.75	5.00	5.80	0.30	0.15	0.90	0.50	1.00
		Bottom Depth (m):			0.20	0.75	5.00	6.00	0.30	0.15	0.90	0.50	1.00
		Date Sampled:			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	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	

Results - Soil

Project: 21076J Shennington

Client: Discovery CE Ltd		**Chemtest Job No.:**			21-34396	21-34396	21-34396	21-34396	21-34396	21-34396
Quotation No.:		**Chemtest Sample ID.:**			1291448	1291449	1291451	1291452	1291453	1291454
Order No.:			Client Sample Ref.:		ES1	ES1	ES1	ES2	D1	D2
			Sample Location:		DS104	DS105	DS106	DS106	DS106	DS106
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.40	0.50	0.10	0.80	1.40	2.80
			Bottom Depth (m):		0.40	0.50	0.10	0.80	2.80	1.40
			Date Sampled:		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	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
pH	M	2010		4.0	7.4	7.4	7.9	7.8	8.4	8.4
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.6	1.6	1.7	0.94		
Sulphate (2:1 Extract)	M	2120	mg/kg	20					< 20	< 20
Arsenic	M	2450	mg/kg	1.0	470	500	550	430		
Cadmium	M	2450	mg/kg	0.10	0.11	0.10	0.37	0.12		
Chromium	M	2450	mg/kg	1.0	420	500	470	500		
Copper	M	2450	mg/kg	0.50	17	18	25	10		
Mercury	M	2450	mg/kg	0.10	0.16	0.11	0.19	< 0.10		
Nickel	M	2450	mg/kg	0.50	240	290	270	260		
Lead	M	2450	mg/kg	0.50	83	74	110	47		
Selenium	M	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	M	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	M	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	M	2680	mg/kg	1.0						
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0						
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0						
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0						
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0						
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0						
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0						
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0						
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0						
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0						
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0						
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0						
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0						

Results - Soil

Project: 21076J Shennington

Client: Discovery CE Ltd		**Chemtest Job No.:**			21-34396	21-34396	21-34396	21-34396	21-34396	21-34396
Quotation No.:		**Chemtest Sample ID.:**			1291448	1291449	1291451	1291452	1291453	1291454
Order No.:		Client Sample Ref.:			ES1	ES1	ES1	ES2	D1	D2
		Sample Location:			DS104	DS105	DS106	DS106	DS106	DS106
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.40	0.50	0.10	0.80	1.40	2.80
		Bottom Depth (m):			0.40	0.50	0.10	0.80	2.80	1.40
		Date Sampled:			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	M	2680	mg/kg	1.0						
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0						
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0						
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0						
Naphthalene	M	2700	mg/kg	0.10			< 0.10			
Acenaphthylene	M	2700	mg/kg	0.10			< 0.10			
Acenaphthene	M	2700	mg/kg	0.10			< 0.10			
Fluorene	M	2700	mg/kg	0.10			< 0.10			
Phenanthrene	M	2700	mg/kg	0.10			< 0.10			
Anthracene	M	2700	mg/kg	0.10			< 0.10			
Fluoranthene	M	2700	mg/kg	0.10			< 0.10			
Pyrene	M	2700	mg/kg	0.10			< 0.10			
Benzo[a]anthracene	M	2700	mg/kg	0.10			< 0.10			
Chrysene	M	2700	mg/kg	0.10			< 0.10			
Benzo[b]fluoranthene	M	2700	mg/kg	0.10			< 0.10			
Benzo[k]fluoranthene	M	2700	mg/kg	0.10			< 0.10			
Benzo[a]pyrene	M	2700	mg/kg	0.10			< 0.10			
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10			< 0.10			
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10			< 0.10			
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10			< 0.10			
Total Of 16 PAH's	M	2700	mg/kg	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			
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			

Results - Soil

Project: 21076J Shennington

Client: Discovery CE Ltd		**Chemtest Job No.:**			21-34396	21-34396	21-34396	21-34396	21-34396	21-34396
Quotation No.:		**Chemtest Sample ID.:**			1291448	1291449	1291451	1291452	1291453	1291454
Order No.:		Client Sample Ref.:			ES1	ES1	ES1	ES2	D1	D2
		Sample Location:			DS104	DS105	DS106	DS106	DS106	DS106
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.40	0.50	0.10	0.80	1.40	2.80
		Bottom Depth (m):			0.40	0.50	0.10	0.80	2.80	1.40
		Date Sampled:			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	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
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	PBET	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

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

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

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

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	S4UL
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	S4UL Aliphatic EC >16-35
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	70	S4UL
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	130	S4UL
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	34	S4UL
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	74	S4UL
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	140	S4UL
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	260	S4UL
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	1100	S4UL

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	Type	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		170	S4UL	0
Phenanthrene	mg/kg	0.1	0.1	0.1	11		95	S4UL	0
Anthracene	mg/kg	0.1	0.1	0.1	11		2400	S4UL	0
Fluoranthene	mg/kg	0.1	0.1	0.1	11		280	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
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.1	0.1	11		27	S4UL	0
Dibenz(a,h)anthracene	mg/kg	0.1	0.1	0.1	11		0.24	S4UL	0
Benzo(ghi)perylene	mg/kg	0.1	0.1	0.1	11		320	S4UL	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	0
Lead	mg/kg	17	53.182	120	22		200	C4SL	0
Mercury	mg/kg	0.1	0.1095	0.19	22		40	S4UL	0
Nickel	mg/kg	83	166.05	290	22		180	S4UL	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
Ethylbenzene	µg/kg	0	0	0	0		47000	S4UL	0
p & m-xylene	µg/kg	0	0	0	0		56000	S4UL	0
o-xylene	µg/kg	0	0	0	0		60000	S4UL	0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	0	0	0	0		49000	EIC/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
Aliphatic >EC21 - EC35	mg/kg	0	0	0	0		65000	S4UL	0
Aromatic >EC5 - EC7	mg/kg	0	0	0	0		70	S4UL	0
Aromatic >EC7 - EC8	mg/kg	0	0	0	0		130	S4UL	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 >EC6 - EC8	mg/kg	1	1	1	2		100	S4UL	0
Aliphatic >EC8 - EC10	mg/kg	1	1	1	2		27	S4UL	0
Aliphatic >EC10 - EC12	mg/kg	1	1	1	2		130	S4UL	0
Aliphatic >EC12 - EC16	mg/kg	1	1	1	2		1100	S4UL	0
Aliphatic >EC16 - EC21	mg/kg	1	1	1	2		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		70	S4UL	0
Aromatic >EC7 - EC8	mg/kg	1	1	1	2		130	S4UL	0
Aromatic >EC8 - EC10	mg/kg	1	1	1	2		34	S4UL	0
Aromatic >EC10 - EC12	mg/kg	1	1	1	2		74	S4UL	0
Aromatic >EC12 - EC16	mg/kg	1	1	1	2		140	S4UL	0
Aromatic >EC16 - EC21	mg/kg	1	1	1	2		260	S4UL	0
Aromatic >EC21 - EC35	mg/kg	1	1	1	2		1100	S4UL	0
Aromatic >EC35 - EC44	mg/kg	1	1	1	2		1100	S4UL	0

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

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.