GEOENVIRONMENTAL ASSESSMENT
GROVE HOUSE
SELLINDGE, KENT
GLADMAN
GEA-22653H-25-59
MARCH 2025

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Document Issue Record

Status	Final	Date of Issue	18/03/25

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Rev	Prepared	Approved	Date of Issue	Reason(s) for Revision
1	CMM	SAH	18/03/2025	Updated preliminary foundation zoning

TABLE OF CONTENTS

APPENDIX 8

- Groundwater Chemistry
- Laboratory Analysis Certificates

APPENDIX 9

- Field Monitoring Records
- Groundwater Level Data
- Hazardous Soil Gas Data

APPENDIX 10

- Gas Risk Assessment

EXECUTIVE SUMMARY

A Geoenvironmental Assessment was requested by Gladman. The purpose of the assessment was to identify any contaminative or geotechnical issues associated with former land use at *Grove House, Sellindge, Kent* which might impact on the sites redevelopment.

SITE DETAILS				
Approximate Area (ha)	**Centred on OSGB Eastings, Northings**	**Previous Use(s)**	**Current Use**	**Proposed Use**
2.95	609960, 138210	Open fields	Open fields for livestock grazing	Residential

PHASE 1 NON-INTRUSIVE INVESTIGATION							
Geology			**Groundwater Aquifer**		**Surface Water**	**Radon**	
Made Ground	**Superficial**	**Solid**	**Superficial**	**Solid**			
None present	Head	Sandgate & Hythe Formations	No SPZ	No SPZ – 1900m W for nearest abstraction	Ponds to south of site, no major surface water within 250m of site	Basic radon protection required – Majority of site in RnC4.	

PHASE 2 INTRUSIVE INVESTIGATION					
Geology			**Contamination**		**Waste Classification**
Made Ground	**Superficial**	**Solid**	**Source ► Pathway ► Receptor**	**Risk Rating**	
None encountered	Head	Sandgate Formation	No contamination was encountered above residential screening levels.	VERY LOW	Soils likely non-hazardous suitable for inert landfill.

Geotechnical				
Foundations	**Buried Concrete**	**Roads and Pavement**	**Earthworks**	**Soakaway**
Traditional strip footings at depths between 1.0 and 2.0 m bgl are suitable for allowable bearing pressures of 100 kN/m^2. Two zones remain low strength at 2.0 m where ground improvement or piles are recommended. Additional deepening is required within the zone of influence of trees.	DS-1, AC-1	CBR values range between 2.3 and 4.2 %	Not considered at this stage	Unlikely to be suitable.

RECOMMENDATIONS			
Remediation	**Waste / Re-use**	**Geotechnical**	**Other**
Basic radon protection required.	WAC tests for wastes destined for landfill	Ground improvement of soft soils. Additional investigation may be required to inform piled foundation design in the zone of influence of trees and untreated soft soils.	UXO supervision and non-intrusive magnetometer surveys required for intrusive works. Intrusive magnetometer surveys required for piling locations.

SECTION 1 INTRODUCTION

1.1 Gladman proposes to develop an area of land located at Grove House, Ashford Road, Sellindge, Kent TN25 6JX for residential development purposes. No proposed development plans were available at the time of writing. A Development Framework Plan is included in Appendix 1, along with a site location plan and topographic survey.

1.2 IDOM Merebrook Limited (IDOM) has been commissioned by Gladman to undertake preliminary site investigation works and to advise on the geo-environmental implications of the redevelopment of the site for the proposed end use.

1.3 The objectives of the investigation are to:

i. Assess surface and sub-surface ground conditions present at the site;

ii. Identify hazards associated with ground contamination which may place constraints on the site and the proposed development;

iii. Evaluate the risks associated with any identified hazards;

iv. Provide preliminary recommendations for the mitigation of any significant risks identified; and

v. Provide preliminary geotechnical recommendations.

1.4 A Tier 1 Preliminary Risk Assessment (Non-intrusive Investigation) and a Tier 2 Generic Quantitative Risk Assessment (Preliminary Exploratory Investigation) have been undertaken for the subject site.

1.5 This report presents the findings of the investigation and provides an interpretation of the geo-environmental conditions that exist at the site. The contaminative status of the site and the implications with respect to development have been interpreted in accordance with the current government guidance on source-pathway-receptor risk assessment. This report follows LCRM (Land Contamination Risk Management) guidance to appraise land contamination hazards associated with the site.

1.6 This report has been prepared for Gladman for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Gladman and IDOM as to the extent to which the findings may be appropriate for their use.

SECTION 2 TIER 1 (NON-INTRUSIVE INVESTIGATION)

2.1 INTRODUCTION

2.1.1 A non-intrusive investigation has been conducted by RSK in report 52109 R01(01) – Land to the south of Ashford Road, Sellindge (August 2019). The report has been summarised within the following sections and been used to inform the decisions of the IDOM site investigation and subsequent risk assessment. Section 2.2 was written based on the site as seen during the IDOM site investigation in January 2025.

2.1.2 The above report used authoritative sources, and it is believed that they are reasonably reliable. However, independent verification of the information supplied has not necessarily been carried out and IDOM cannot be held liable for inaccuracies or deficiencies in the information.

2.2 SITE LOCATION AND SETTING

2.2.1 The site is located to the south of Ashford Road, Sellindge, Kent TN25 6JX with the proposed development occupying open fields surrounding a residential property known as Grove House. The site is currently used for livestock grazing.

2.2.2 The site occupies an area of approximately 2.95 hectares located at National Grid Reference 609960, 138210 and indicated on drawing CSA-3256-114, presented in Appendix 1 of this report.

2.2.3 The site is bounded by Ashford Road to the north with residential properties, open fields and a public house beyond. To the west and south the site is bounded by the open fields of Potten Farm and to the east the site is bounded by Bulls Lane with residential properties beyond. Grove house and associated parking and landscaped areas are situated within the centre of the site but are not part of the proposed development area. The outer site boundaries consist of wire fences, with wooden panel fencing and brick walls bounding Grove House.

2.2.4 The site surface is grass covered. The site topography slopes gently from south to north with the slope becoming steeper for a short distance around the centre of the site, creating a terraced effect. The bank between the upper southern terrace and lower northern terrace runs from the centre of the western boundary with Potten Farm to the western boundary of Grove House. A pond is located a few metres to the south of the southeastern corner of site, within the grounds of Grove House. A ditch runs from Grove House and curves round to the southern boundary to the west, before running east along the southern boundary. Water was present within the ditch around the Grove House boundary.

2.2.5 No visual contamination was evident on site. Sparsely populated mature and semi mature trees line the boundaries of site and occur within the site.

2.3 SITE HISTORY

2.3.1 The site has remained as open fields with localised trees since 1873, with a tennis court in the east of the site between 1971 and 1989 which partially overlaps the subject site. Farmland and residential properties have surrounded the site since the 1800s.

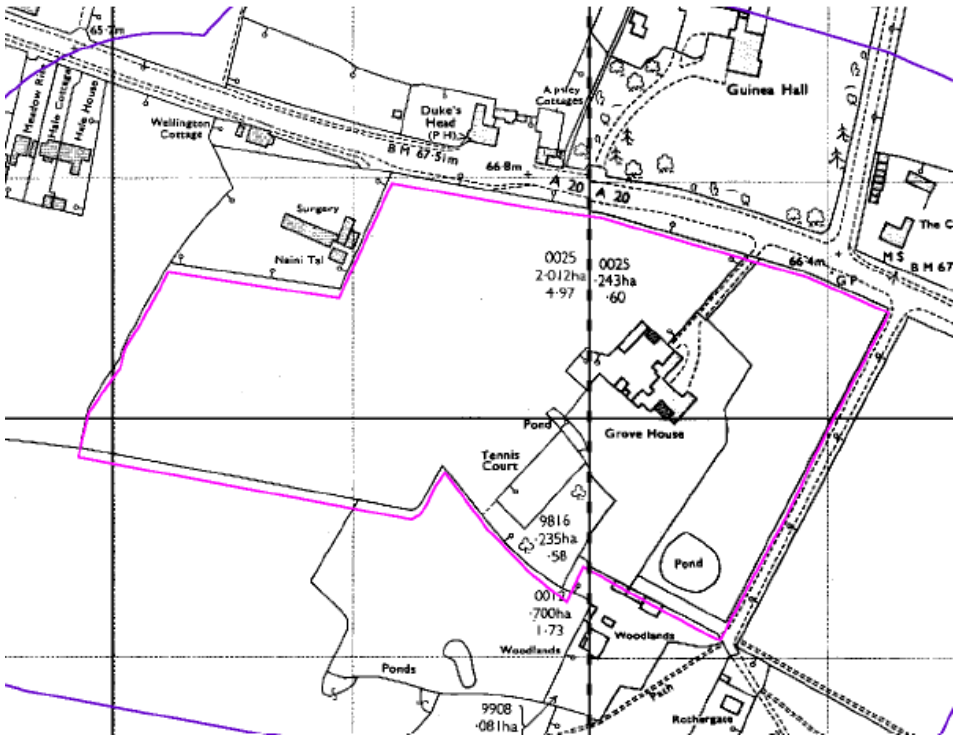


Figure 1: Extract from 1971 mapping (from RSK Desk Study). Note: Grove House and surrounds are excluded from the study area

2.4 GEOLOGY

2.4.1

2.4.2 Table 1 summarises British Geological Survey (BGS) mapping for the site:

Table 1: Summary of published geology

Geological Unit	Type	Description
Superficial	Head	Clay and silt,
Bedrock	Sandgate Formation	Fine sands, silts and silty clays, commonly glauconitic; some sands limonitic or calcareous; some soft sandstones.
Bedrock	Hythe Formation	Alternating sandy limestones ("Ragstone") and glauconitic sandy mudstones.

2.5 HYDROGEOLOGY

2.5.1 The aquifer status of groundwater held within the geological units, the presence Source Protection Zones and related potable abstractions are summarised in Table 2 below:

Table 2: Summary of published hydrogeology

Geological Unit	Aquifer Designation	Source Protection Zone	Location of Potable Abstraction
Head	Unproductive	No SPZ	1900 m W
Sandgate Formation	Secondary A aquifer		
Hythe Formation	Principal Aquifer		

2.6 HYDROLOGY

2.6.1 The nearest identified surface water features to the site are the ponds located within the grounds of Grove House. There are multiple land drains located to the NE, NW, and SW within 500m of the site including a medium sized lake with weirs located 300m N. The East Stour River is located 500m south – flowing NW to SE.

2.6.2 There are 3no. current licensed surface water abstractions within a 2 km radius of the site located 1700m and 1940m NE and used for general agriculture and spray irrigation.

2.7 FLOODING

2.7.1 The site has limited potential for groundwater flooding to occur in the SE and N of the site and predominantly low risk of flooding from surface water with a small area deemed high risk in the north of the site. A flood risk assessment (FRA) was outside the scope of the report.

2.8 CURRENT SITE ISSUES

2.8.1 Potentially significant environmental issues have been investigated within relevant distances of the site, based on the database of records supplied by Landmark as summarised in Table 3 below.

Table 3: Potentially significant environmental issues

Environmental Category	Description
Water discharge or pollution incidents within 250 m	Oil in ditch 200m E, 26th November 1997. Category 3 –Minor incident. This is unlikely to impact the site
Waste management sites within 250 m	None within 250m of the site.
Statutory authorisations within 50 m	None within 250m of the site.
Trades of possible contaminative use within 50 m	None within 250m of the site.
Special protection or conservation areas within 50 m	None within 250m of the site.

2.9 INDICATIVE GROUND STABILITY HAZARDS

2.9.1 Geotechnical hazards identified that could be present and affect the site include:

i. Sudden lateral changes in ground conditions;

ii. Shrinkable clay soils; and

iii. Silt rich soils susceptible to rapid loss of strength in wet conditions.

2.10 MINING, GROUND WORKINGS AND NATURAL CAVITIES

2.10.1 None within a radius that will affect the site.

2.11 RADON GAS

2.11.1 The licensed Radon Potential Dataset for the site has been consulted. The Radon Potential is shown in six discrete Radon Classes (RnC1 to RnC6) as set out in

2.11.2 Table 4. The Radon Class is defined as a percentage probability range of dwellings exceeding the Radon Action Level.

Table 4: Radon classes, risk and mitigation

Radon Class (probability range)	General Risk	Affected Area ?	Building Control Regulations (England and Wales)
1 (0 to <1%)	low	No	No *
2 (1 to <3%)	medium	Yes	No *
3 (3 to <5%)		Yes	Yes - Basic
4 (5 to <10%)		Yes	Yes - Basic
5 (10 to <30%)	high	Yes	Yes - Full
6 (30 to 100%)		Yes	Yes - Full

* Fitting radon protection in new buildings might be considered if there is a high risk location such as a routinely occupied basement

2.11.3 The licensed Radon Potential Dataset has been obtained from Groundsure which illustrates the 25 m tiled mapping and is provided in Appendix 2. The Radon Potential Dataset has changed since they were obtained by RSK in 2019. The Groundsure Radon Check provides the latest version as of February 2025. This data is the highest resolution radon dataset available for the UK, produced to a 50 m accuracy. This data has been pre-buffered to account for the relative accuracy and other uncertainties, so no additional buffering on site is required. Figure 1 below shows an insert of the Groundsure radon maps.

2.11.4 The site-specific Radon Potential Dataset and Guidance issued by the Buildings Research Establishment (BRE-211) indicates that:

i. The majority of the site lies within an area designated RnC4 and basic protection measures are required under the Building Control Regulations.

ii. Small areas in the north and west of the site lie within RnC2 where radon protection measures are not required.

2.11.5 Basic radon protection consists of a well-installed damp-proof membrane, modified and extended to form a gas-tight radon-proof barrier between the ground and the building. Subject to agreement with the Council and NHBC, there is a possibility the proposed development could be zoned with basic radon protection measures in structures within RnC4 only.

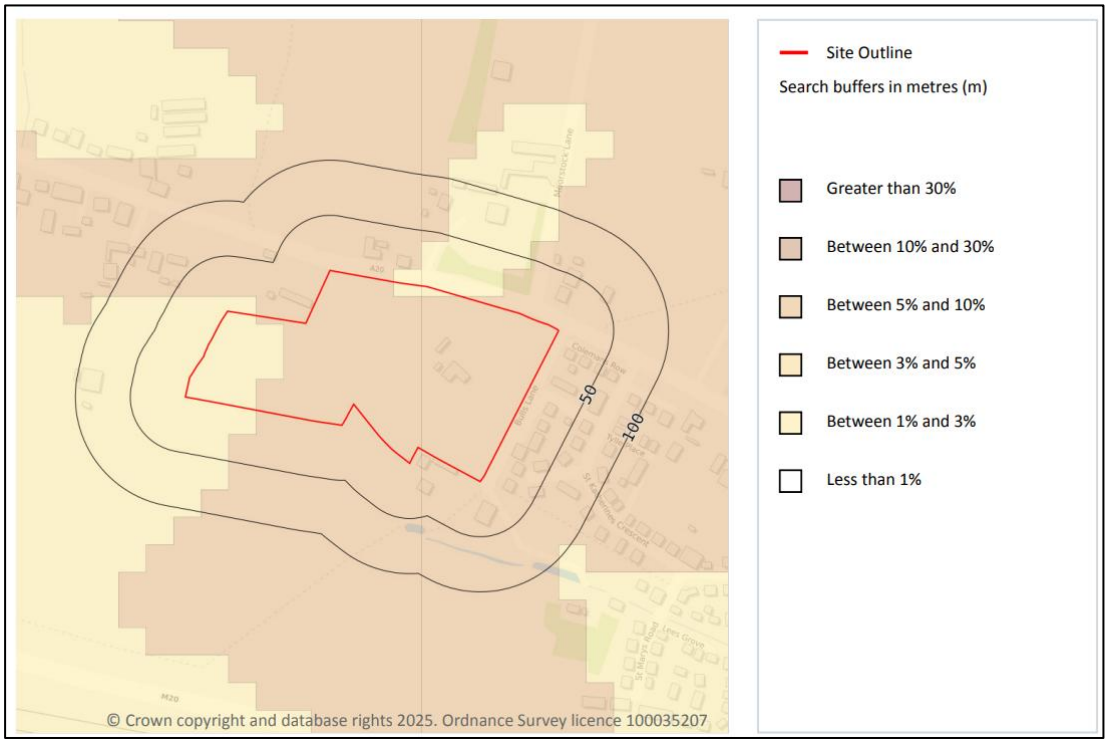


Figure 2: Groundsure radon maps.

2.11.6 Temporary site buildings can also be affected by radon. The Ionising Radiations Regulations 2017 apply where "*any work (other than a practice) is carried out in an atmosphere containing radon 222 gas at an annual average activity concentration in air exceeding 300 Bq.m^{-3}*." In accordance with HSE guidance, a site specific radon risk assessment for the workplace should be carried out where buildings are located in an area affected by radon (RnC2 and above).

2.12 UXO

2.12.1 A detailed UXO risk assessment was carried out by Brimstone (DRA-24-1799-IDOM121R-LandtotheSouthofAshfordRoad,Sellindge,Kent) which assessed the site as a moderate risk. UXO safety awareness briefings and EOD engineer supervision on all intrusive works, intrusive magnetometer probe surveys on piling positions and non-intrusive magnetometer surveys on open excavations were recommended.

SECTION 3 PRELIMINARY CONCEPTUAL SITE MODEL AND PRELIMINARY RISK ASSESSMENT

3.1 A preliminary conceptual site model (CSM) and Preliminary Risk Assessment have been developed by RSK from the findings of the desk study and site reconnaissance.

3.2 The desk study and site reconnaissance has identified the following potentially significant sources of contamination:

i. Potential localised made ground deposits associated with surrounding development and historic tennis courts which partially overlap the subject site;

ii. Hazardous ground gases from made ground; and

iii. Asbestos, herbicides and pesticides from farming activities.

3.3 The potential pollutant linkages with a risk of low/moderate or above that may drive site investigation works include:

i. Direct contact with potentially impacted soils by future site occupants;

ii. Chemical attack of potential hydrocarbon contamination on future potable water supply lines;

iii. Vertical and lateral migration of potential hydrocarbon contamination within underlying Controlled Waters; and,

iv. Inhalation of potentially hazardous soil vapours by future site users and adjacent site users.

SECTION 4 SITE INVESTIGATION RATIONALE

4.1 INTRODUCTION

4.1.1 A site investigation rationale has been devised in accordance with the findings of the Tier 1 Assessment and the resultant preliminary conceptual site model and risk assessment. Priority contaminants were identified as metals, PAHs, asbestos, herbicides, pesticides and ground gases.

4.1.2 Intrusive sampling locations were chosen on the basis of providing broad spatial coverage of the site.

4.2 SITE INVESTIGATION METHODS

4.2.1 An intrusive investigation was carried out by IDOM between 21 January and 28 January 2025 and comprised the following scope of work:

i. One rotary core borehole (MBH101) to 19.3m metres below ground level (m bgl);

ii. Eight shallow windowless sample probe holes (MWS101 to MWS108) to a depth of 3 to 4 m bgl;

iii. Six machine-dug trial holes (MTP101 to MTP106) to a depth of 2.2 to 3.5 m bgl; and

iv. Six CBRs (MCBR1 to MCBR6) on the surface of the natural soils below the topsoil.

4.2.2 Exploratory hole locations are indicated on drawing 22653-303-001 in Appendix 4. Logging of exploratory holes was undertaken by an IDOM Officer. Exploratory hole logs are contained in Appendix 5.

4.2.3 Rotary coring equipment was used to advance borehole MBH101. Standard Penetration Tests (SPTs) were performed at approximate 1 metre intervals. The tests involved driving a steel cone tipped series of rods into the ground over a distance of 450 mm using the repeated blows of a 63.5 kg weight allowed to free fall over a distance of 760 mm. The total number of blows required for the final 300 mm penetration (the 'N' value) is recorded on the window sample logs.

4.2.4 A tracked windowless sampling rig was used to advance MWS101 to MWS108. This comprised a rig-mounted drop hammer to drive a hollow steel barrel into the ground. The barrel is recovered along with a removable plastic sleeve, which lines the barrel and holds a core of soil which is retracted for logging and sampling. SPTs were performed at approximate 1 m intervals in all windowless sample holes.

4.2.5 Details of monitoring installations in boreholes are summarised in Table 5.

Table 5: Summary of gas and groundwater monitoring installations

Location Ref	Depth To Top of Response Zone (m bgl)	Depth To Base Of Response Zone (m bgl)	Strata
MWS101	1.0	3.0	Head Deposits / Sandgate Formation
MWS104	1.0	3.0	Sandgate Formation
MWS106	1.0	3.0	Head Deposits / Sandgate Formation

4.2.6 Representative soil samples were taken from various depths and strata to assess the contaminative status of the site. Soil samples were submitted to an MCERTS/ UKAS accredited laboratory for chemical analysis of a broad suite of potential contaminants. The results are provided in Appendix 6.

4.2.7 A programme of geotechnical laboratory testing was performed on selected soil samples obtained from the boreholes, comprising classification and strength tests. Chemical testing was also undertaken to assess the aggressiveness of the ground with respect to buried concrete. The results are provided in Appendix 7.

SECTION 5 GROUND CONDITIONS

5.1 SUMMARY

5.1.1 No surface treatment was present on site and the site surface consisted of grass covered topsoil.

5.1.2 The strata encountered were consistent with the published geology.

5.1.3 A summary of the ground conditions encountered is presented in Table 6, whilst a more detailed assessment of the strata is contained in the following sections of the report.

Table 6: Summary of sub-surface ground conditions

Strata	Depth to Top of Range (m bgl)	Thickness Range (m)
Topsoil	0.0	0.2 – 0.5
Head deposits	0.2 – 0.5	0.7 – 1.6
Sandgate Formation	0.2 – 2.2	Base not proven – rock head at 11.50m

5.2 TOPSOIL

5.2.1 Generally consisted of a dark brown slightly sandy slightly gravelly clay with gravels of flint and occasional brick.

5.2.2 No visual or olfactory evidence of contamination was encountered.

5.3 HEAD DEPOSITS

5.3.1 The Head deposits were encountered in all exploratory holes underlying the topsoil. The only exception is within MBH101, MTP104 and MTP105 where the Head deposits were not encountered. This stratum was typically encountered to a depth of between 1.0 and 1.5 m below ground level (bgl) although was notably deeper in MTP103 and MWS101 where this stratum was encountered to a depth of 2.2 and 1.90 m bgl, respectively.

5.3.2 The Head deposits generally consist of a soft to firm slightly sandy clay. The boundary between the Head deposits and Sandgate Formation was difficult to distinguish but generally was marked by a change from brown to grey colours and a noticeable increase in sand content.

5.3.3 No visual or olfactory evidence of contamination was encountered in the head deposits.

5.3.4 Groundwater was not generally encountered; however, a slight seepage was observed in MTP103 at a depth of 2.2 m bgl .

5.3.5 Hand shear vanes were carried out within the Head deposits at depths ranging between 1.60 and 2.0 m. Undrained shear strengths ranged between 30 and 60 kPa with a mean value of 41 kPa.

5.3.6 Due to its limited thickness, SPTs were only carried out at a depth of 1.0 m in windowless sample borehole numbers MWS101, MWS106 and MWS107 with corresponding N-values ranging between 7 and 13 indicative of soils of low to medium strength.

5.4 SANDGATE FORMATION

5.4.1 The Sandgate Formation generally consisted of sandy clays, sands and clayey sands interbedded to a depth of 11.50 m bgl. Rock head was encountered at 11.50 m bgl in MBH101 and consisted of a moderately weak greenish grey fine-grained sandstone with shell fragments. Fractures were very closely to closely spaced and undulating (Min = 5cm, Max = 63cm, Average 26cm) at 80 to 90 degrees. The strength of the rock increased with depth to strong or greater from 13.20 m and became grey in colour.

5.4.2 No visual or olfactory evidence of contamination was encountered in the Sandgate Formation.

5.4.3 Groundwater was encountered at 1.17 to 3.50 m bgl in MWS101 to MWS104 during drilling. Within Trial pits MTP101 and MTP102, fast ground water ingress was encountered at 2.90 m bgl and within MTP106 slight groundwater seepage was encountered at 1.0 m bgl.

5.4.4 No hand shear vanes were carried out in the Sandgate Formation due to its generally granular nature. SPT N-values generally increase with depth and are summarised in Table 7 below.

Table 7 – Summary of SPT N-values in the Sandgate Formation.

Depth	No. Tests	N-value range (mean)	Notes
1.0	5	2 – 10 (7)	Cohesive soils are empirically low to medium strength.
2.0	8	8 – 17 (13)	Clays are generally medium strength although locally high strength. One SPT in sand is medium dense.
3.0	8	7 – 38 (23)	Clays are medium to high strength (MWS104 remains low strength). Sands are medium dense.
4.0	6	14 – 50 (36)	Clays are high to very high strength (MWS104 remains medium strength). Sands are very dense. Refusal (N=50) achieved in three boreholes.
5.5m, 7m and 8.5	3 SPTs in MBH101 only	35, 47 and 49, respectively	Clays are high strength.
10 – 17.5 m	6 SPTs in MBH01 only	50 (refusal)	Sandstone recorded penetration between 75 and 225 mm.

SECTION 6 PRELIMINARY GEOTECHNICAL RECOMMENDATIONS

6.1 GEOTECHNICAL LABORATORY TESTING

6.1.1 Geotechnical classification and strength testing has been carried out on a number of samples. The results are contained in Appendix 7 and discussed below. The results of sulphate testing are summarised later in this report.

6.1.2 Atterberg limit classification was undertaken on nineteen samples from depths ranging between 0.50 and 9.0 m bgl. The modified plasticity index ranges between 12 and 34 % for all the samples indicating soils comprise low to medium plasticity clays. The volume change potential of these samples in accordance with NHBC standards is characterised for the site as medium-volume change potential.

6.1.3 In addition to the Atterberg limits classification, no sample was found to be significantly desiccated in line with Driscoll (1983)[1] when considering the natural moisture content in relation to 0.4x the liquid limit. The site appears to have historically been used for agriculture therefore the testing suggests no long-term risk associated with soil moisture deficit in relation to the historic agricultural usage. However, this does not preclude the risk of cyclic shrink/swelling from existing trees and foundations must still consider the effect existing trees may have on long-term differential settlements/heave.

6.1.4 Particle size distribution analysis was undertaken on two samples of the Sandgate Formation at depths ranging between 2.0 and 2.90 m bgl. These soils were described as sand in the exploratory hole logs although noted to be clayey are classified as Class 2A/B – general cohesive fill. In addition, one of the samples scheduled for Atterberg limits classification was also described as sand within the exploratory hole logs but were found to be of low plasticity clay.

6.1.5 Three samples of rock quality material were tested for point load strength index from MBH101 at depths ranging between 14.0 and 18.20 m bgl. Is(50) strength ranges between 2.86 and 6.06 MPa. Using a conversion factor of 24, these point load strengths indicate the rock stratum is of strong to very strong unconfined compressive strength.

6.2 FOUNDATIONS

6.2.1 The proposed development includes a new residential development, predominantly within the western half of the site. It appears from the development framework that the eastern half of the site will remain undeveloped. A children's play area is proposed along the centre of the southern boundary.

6.2.2 The ground investigation proved a general thickness of Head deposits across the majority of the site to depths ranging between 1.0 and 1.50 m bgl, only absent from

[1] Driscoll, R. (1983) *The influence of vegetation on the swelling and shrinking of clay soils in Britain.* Geotechnique 33(2) pp 93-105

three of the exploratory holes. The Sandgate Formation underlies the superficial deposits and topsoil comprising variable cohesive and granular soils.

6.2.3 The underling soils are typically of medium-volume change potential therefore a minimum foundation depth of 0.90 m bgl will apply to new footings outside the zone of influence of existing trees and 1.25 m applies where accounting for restricted new planting.

6.2.4 The soils at minimum foundation depth are variable and a preliminary foundation zoning plan is provided in Appendix 1. The preliminary foundation zoning plan includes the zone of influence from existing trees based on the Arboricultural Impact Assessment Report (Ref: CSA/4059/14, dated June 2024). It also includes areas of reasonably consistent strata with allowable bearing pressure recommendations. Within the zone of influence of trees, the foundations should be deepened in accordance with NHBC guidance.

6.2.5 A zone is defined in the southwest corner (MTP104, MTP105, MWS106 and MWS107). In these exploratory holes, undrained shear strengths range between 60 and 80 kPa at 1.0 m depth therefore considered suitable for traditional strip/trench footings with an allowable bearing pressure of 100 kN/m^2. Anticipated total settlements in this area is less than 25 mm for traditional footings up to 1.0 m wide.

6.2.6 Three yellow zones are highlighted on the plan in the north and around the southern and eastern site boundaries. In these areas the shallow soils are of very low to low strength; however, at 2.0 m depth the soils are reasonably consistent with undrained shear strengths of at least 55 kPa. Traditional strip/trench footings deepened to a depth of 2.0 m in these areas are calculated to have an allowable bearing pressure of 100 kN/m^2 with anticipated total settlements less than 25 mm for footings up to 1.0 m wide.

6.2.7 Two red zones are defined in the east and west where low strength soils persist at a depth of 2.0 m bgl. In these areas, 100 kN/m^2 will not be achievable at 2.0 m depth and it is recommended that an alternative foundation solution be adopted such as ground improvement or pile foundations.

6.2.8 It is considered that 100 kN/m^2 will be achievable at 1.0 m depth in ground improvement areas; however, the exploratory hole logs should be provided to a specialist contractor to confirm this. Additional deepening will still be required within the zone of influence of existing trees. Where additional deepening due to trees is anticipated to exceed 2.0 m then a piled foundation solution may be necessary.

6.2.9 Given the high variability of the soils, an allowance should be made for including mesh reinforcement in all traditional foundations.

6.3 EXCAVATIONS AND GROUNDWATER

6.3.1 Limited groundwater was encountered during the investigation, however fast groundwater ingress was noted in MTP101 and MTP102. At this stage it is

considered that only simple dewatering techniques such as sump pumping will be required.

6.3.2 Excavations generally remained stable in the short-term with the exception of MTP101 and MTP102 where collapses were noted at depths of 2.80 and 2.90 m bgl, respectively associated with the groundwater ingress. In the medium to long-term, excavations are likely to become unstable. In any case, construction workers must not enter excavations unless they are battered to a safe angle or shored, especially where groundwater is encountered.

6.4 FLOOR SLABS

6.4.1 The underlying soils are characterised as medium-volume change potential. Ground bearing floor slabs are unlikely to be feasible. At this stage an allowance should be made for cast-in-situ suspended slabs or precast suspended floors with void dimensions in accordance with NHBC standards.

6.5 BURIED CONCRETE

6.5.1 Recommendations given in BRE Special Digest 1:2005 *"Concrete in aggressive ground"* have been followed in order to give recommendations with respect to buried concrete.

6.5.2 Water soluble sulphate analysis was carried out on 10 soil samples obtained from depths of between 0.50 and 18.50 m bgl with soil pH determination also carried out on these samples. Water soluble sulphate contents ranged between 4 and 227 $mg.l^{-1}$. In accordance with BRE guidelines the characteristic value is calculated by determining the mean of the highest 20 % of results. In this case the characteristic value is 193.5 $mg.l^{-1}$. On this basis the Design Sulphate Class is DS-1.

6.5.3 The pH values in the soil samples varied between 5.4 and 8.5. The mean of the lowest 20 % of values is 5.75 which represents the characteristic value. Mobile groundwater conditions have been assumed and, on this basis, the Aggressive Chemical Environment for Concrete (ACEC) class for the site is AC-1.

6.6 ROADS AND PAVED AREAS

6.6.1 CBR testing was carried out at six locations using a CBR plunger. CBR values range between 2.3 and 4.2 %. The results of CBR testing should be provided to the designer for roadway and footway design.

6.7 EARTHWORKS

6.7.1 Proposed level changes have not been provided for the site. Limited testing of natural soils indicate they will be Class 2A/B – general cohesive fill and therefore geotechnically suitable for use. Once finished levels are known, cut/fill drawings, volume calculations and any necessary earthworks specification and material management plans can be produced by IDOM.

6.8 SOAKAWAYS

6.8.1 Soakaway testing was carried out in three trial excavations (MTP103 – MTP105). The testing did not record any change in water level in two of the tests (MTP104 and MTP105) and rose by 0.01 m in MTP103. On this basis, the soils are considered to be practically impervious and a soakaway drainage system will be unsuitable for the site.

SECTION 7 ENVIRONMENTAL ASSESSMENT – SOIL QUALITY

7.1 RESULTS

7.1.1 A total of seven soil samples were submitted to the laboratory for chemical analysis, including 1 sample from natural ground and six samples from topsoil The laboratory chemical analysis certificates are contained in Appendix 6. The results of the analysis are summarised in Table 8.

7.1.2 An initial screening exercise has been undertaken whereby contaminant concentrations recorded in soils have been assessed against *Suitable for Use Levels* (S4ULs) published in 2015 by LQM/CIEH[2]. These precautionary screening levels are designed to be representative of minimal risk to human health in a number of land use scenarios. In this report S4ULs have been selected for a residential land use where the possibility of consumption of homegrown produce exists and assuming a soil organic matter of 2.5 % (as soil SOM data ranged from 0.8 to 4.7%). For lead the DEFRA Category 4 Screening Level[3] has been used as this is based on updated toxicological data and a low risk to human health.

7.1.3 An additional set of phytotoxin screening levels have been adopted from 'The Code of Agricultural Practice for the Protection of Soil' Ministry of Agriculture, Fisheries and Food (MAFF), 1993, which are protective of healthy plant growth.

Table 8: Summary of soils chemical analysis results

CONTAMINANT	No of Tests	MAX ($mg.kg^{-1}$)	MEAN ($mg.kg^{-1}$)	SCREENING LEVEL (SL) ($mg.kg^{-1}$)	No > SL*
HUMAN HEALTH RISK ASSESSMENT					
Asbestos in soil	6	nd	nd	Detected	0
pH	7	9.0	6.5	5 – 9	0
Arsenic	7	9.3	8.0	37	0
Barium	7	55.0	40.6	1300	0
Cadmium	7	0.2	0.2	11	0
Chromium (III)	7	25.0	20.3	910	0

[2] Nathanail, C. P., McCaffrey, C., Gillett, A. G., Ogden, R. C. and Nathanail, J. F. 2015. *The LQM/CIEH S4ULs for Human Health Risk Assessment*. Land Quality Press, Nottingham. Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3100. All rights reserved. Including August 2015 nickel update.
[3] SP1010 *Development of Category 4 Screening Levels Main Report* (Dec 2013) and SP1010 *Policy Companion Document* (Mar 2014).

CONTAMINANT	No of Tests	MAX ($mg.kg^{-1}$)	MEAN ($mg.kg^{-1}$)	SCREENING LEVEL (SL) ($mg.kg^{-1}$)	No > SL*
Hexavalent Chromium	7	1.8	1.8	6	0
Lead	7	50.0	27.5	200	0
Mercury	7	0.3	0.3	40	0
Nickel	7	13.0	9.2	130	0
Selenium	7	1.0	1.0	250	0
Vanadium	7	32.0	28.1	410	0
TPH Aliphatic >EC_5 - EC_6	7	0.010	0.010	78	0
TPH Aliphatic >EC_6 - EC_8	7	0.010	0.010	230	0
TPH Aliphatic >EC_8 - EC_{10}	7	0.010	0.010	65	0
TPH Aliphatic >EC_{10} - EC_{12}	7	1.00	1.00	330	0
TPH Aliphatic >EC_{12} - EC_{16}	7	2.00	2.00	2400	0
TPH Aliphatic >EC_{16} - EC_{21}	7	8.00	8.00	92000	0
TPH Aliphatic >EC_{21} - EC_{35}	7	8.00	8.00	92000	0
TPH Aromatic >EC_5 - EC_7	7	0.010	0.010	140	0
TPH Aromatic >EC_7 - EC_8	7	0.010	0.010	290	0
TPH Aromatic >EC_8 - EC_{10}	7	0.020	0.020	83	0
TPH Aromatic >EC_{10} - EC_{12}	7	1.00	1.00	180	0
TPH Aromatic >EC_{12} - EC_{16}	7	2.00	2.00	330	0
TPH Aromatic >EC_{16} - EC_{21}	7	10.00	10.00	540	0
TPH Aromatic >EC_{21} - EC_{35}	7	10.00	10.00	1500	0
Benzene	7	0.005	0.005	0.17	0
Toluene	7	0.005	0.005	290	0
Ethylbenzene	7	0.005	0.005	110	0
Xylene	7	0.013	0.013	130	0
Naphthalene	7	0.05	0.05	5.6	0
Acenaphthylene	7	0.05	0.05	420	0
Acenaphthene	7	0.05	0.05	510	0
Fluorene	7	0.05	0.05	400	0
Phenanthrene	7	0.17	0.09	220	0
Anthracene	7	0.05	0.05	5400	0
Fluoranthene	7	0.50	0.21	560	0
Pyrene	7	0.45	0.18	1200	0
Benzo(a)anthracene	7	0.24	0.11	11	0
Chrysene	7	0.40	0.15	22	0
Benzo(b)fluoranthene	7	0.45	0.17	3.3	0
Benzo(k)fluoranthene	7	0.24	0.10	93	0
Benzo(a)pyrene	7	0.34	0.13	2.7	0
Indeno(1,2,3-c,d)pyrene	7	0.22	0.10	36	0

CONTAMINANT	No of Tests	MAX ($mg.kg^{-1}$)	MEAN ($mg.kg^{-1}$)	SCREENING LEVEL (SL) ($mg.kg^{-1}$)	No > SL*
Dibenzo(a,h)anthracene	7	0.05	0.05	0.28	0
Benzo(g,h,i)perylene	7	0.26	0.11	340	0
Phenol	7	1.0	1.0	200	0
Herbicides	2	nd	nd	-	0
Pesticides	2	nd	nd	-	0
PHYTOTOXICITY RISK ASSESSMENT					
Copper	7	13.0	9.3	200	0
Nickel	7	13.0	9.2	110	0
Zinc	7	55.0	41.3	300	0

Notes: * Number of samples exceeding screening level nd = not detected

7.2 SUMMARY

7.2.1.1 There was no contamination encountered above residential screening levels for any of the tested contaminants.

SECTION 8 ENVIRONMENTAL ASSESSMENT – GROUNDWATER QUALITY

8.1 RESULTS

8.1.1 Groundwater level monitoring and sampling was undertaken on one occasion. Resting waters levels were recorded at 0.84 – 2.17m bgl.

8.1.2 Groundwater flow is likely to follow the site topography to the north.

8.1.3 Samples were submitted to the laboratory for analysis of a typical contamination suite. Screening levels for groundwater have been derived from the maximum concentrations set out in the Water Supply (Water Quality) Regulations 2018 (England) where prescribed, or for those determinands not included, the 1989 regulations. The laboratory chemical analysis certificate is contained in Appendix 8 and groundwater level data is contained in Appendix 9. A summary of groundwater contaminant concentrations is contained in Table 9.

8.1.4 Table 9: Summary of groundwater chemical analysis results

Contaminant	Units	Max	Mean	No. Tests	Screen Level (SL)	No. > SL
pH	-	7.1	7.1	3	6.5**	0
Arsenic	$\mu g.l^{-1}$	0.48	0.4	3	10	0
Cadmium	$\mu g.l^{-1}$	0.02	0.02	3	5	0
Chromium (total)	$\mu g.l^{-1}$	1.6	0.8	3	50	0

Contaminant	Units	Max	Mean	No. Tests	Screen Level (SL)	No. > SL
Copper	$\mu g.l^{-1}$	2.6	2.0	3	2000	0
Lead	$\mu g.l^{-1}$	0.7	0.4	3	10	0
Mercury	$\mu g.l^{-1}$	0.05	0.05	3	1	0
Nickel	$\mu g.l^{-1}$	2.6	4.4	3	20	0
Selenium	$\mu g.l^{-1}$	2.3	1.4	3	10	0
Zinc	$\mu g.l^{-1}$	14	6.7	3	5000	0
Cyanide	$\mu g.l^{-1}$	10	10	3	50	0
Sulphate	$mg.l^{-1}$	47.5	19.8	3	250	0
TPH	$\mu g.l^{-1}$	<10	<10	3	10	0
BTEX	$\mu g.l^{-1}$	<3.0	<3.0	3	-	0
PAH (total)	$\mu g.l^{-1}$	0.16	0.16	3	-	0
PAH****	$\mu g.l^{-1}$	<0.01	<0.01	3	0.1	0
Benzo(a)pyrene	$\mu g.l^{-1}$	<0.01	<0.01	3	0.01	0
Naphthalene	$\mu g.l^{-1}$	<0.01	<0.01	3	-	0
Phenols	$\mu g.l^{-1}$	<10	<10	3	0.5	0

Notes: * Samples exceeding screen level
** Minimum value applies (i.e. most acid)
*** Not detected above screening level
**** sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene & indeno(1,2,3-cd)pyrene

8.2 DISCUSSION

8.2.1 No contaminants tested within waters were above the relevant screening levels. For phenols the laboratory limit of detection was above the screening level, however with no sources identified for these contaminants they are unlikely to be present at concentrations above screening levels.

SECTION 9 ENVIRONMENTAL ASSESSMENT - HAZARDOUS GAS

9.1 RESULTS

9.1.1 Gas monitoring has been undertaken on three occasions (with three rounds remaining) – 3rd February to 25th February 2025. The maximum and steady state levels of methane, carbon dioxide, oxygen, carbon monoxide and hydrogen sulphide were recorded in each standpipe, together with associated parameters including borehole flow and ambient air pressure. The time taken to reach steady state was also recorded. Data has been excluded from the assessment where the resting water level was above the top of the slotted pipe response zone in the well.

9.1.2 The full results are presented in Appendix 9 and a summary of key readings for each strata monitored are presented in **Error! Reference source not found.** Table 10**Error! Reference source not found.**.

Table 10: Summary of hazardous Gas Monitoring data with response zone within natural stratum

Monitoring Well Reference				MWS101		
Top of Response Zone (m bgl)				1.00		
Bottom of Response Zone (m bgl)				3.00		
Response Zone Stratum				-		
Round	**AP (mb)**	**Flow Max ($l.hr^{-1}$)**	**Flow Steady ($l.hr^{-1}$)**	**Methane Max (% v/v)**	**Carbon Dioxide Max (% v/v)**	**Dip to water (m bgl)**
1	-	-	-	-	-	0.84
2	-	-	-	-	-	0.85
3	1006	0.0	0.0	0.0	1.3	1.68
4	-	-	-	-	-	-
5	-	-	-	-	-	-
6	-	-	-	-	-	-

Monitoring Well Reference				MWS104		
Top of Response Zone (m bgl)				1.00		
Bottom of Response Zone (m bgl)				3.00		
Response Zone Stratum				-		
Round	**AP (mb)**	**Flow Max ($l.hr^{-1}$)**	**Flow Steady ($l.hr^{-1}$)**	**Methane Max (% v/v)**	**Carbon Dioxide Max (% v/v)**	**Dip to water (m bgl)**
1	1018	0.0	0.0	0.0	0.5	1.42
2	-	-	-	-	-	0.92
3	1005	0.0	0.0	0.0	0.7	1.77
4	-	-	-	-	-	-
5	-	-	-	-	-	-
6	-	-	-	-	-	-

Monitoring Well Reference				MWS106		
Top of Response Zone (m bgl)				1.00		
Bottom of Response Zone (m bgl)				3.00		
Response Zone Stratum				-		
Round	**AP (mb)**	**Flow Max ($l.hr^{-1}$)**	**Flow Steady ($l.hr^{-1}$)**	**Methane Max (% v/v)**	**Carbon Dioxide Max (% v/v)**	**Dip to water (m bgl)**
1	1017	0.0	0.0	0.0	0.8	1.30
2	1014	0.0	0.0	0.0	1.6	1.20
3	1004	0.0	0.0	0.0	1.1	2.17
4	-	-	-	-	-	-
5	-	-	-	-	-	-
6	-	-	-	-	-	-

9.1.3 The response zone was flooded in MWS101 for Round 1 and 2 and MWS104 for round 2 so these have been discounted form the risk assessment.

9.1.4 The monitoring rounds were undertaken at barometric pressures ranging from 1004 to 1018 mb. No positive flow was recorded. Over the three monitoring rounds methane (CH_4) was not detected, carbon dioxide (CO_2) was detected to a maximum of 1.6 % v/v with a corresponding depleted oxygen concentration of 17.5 % v/v.

SECTION 10 ENVIRONMENTAL ASSESSMENT - VAPOUR

10.1 RESULTS

10.1.1 Vapour monitoring has been undertaken on three occasions (3 rounds remaining) – 3rd February to 25th February 2025. The maximum and steady state levels of VOCs were recorded using a PID (photo-ionization device) in each standpipe. The time taken to reach steady state was also recorded. A maximum concentration of 0.0ppm was recorded within boreholes which were not discounted due to response zone flooding.

SECTION 11 WASTE CLASSIFICATION, OFF-SITE DISPOSAL OR RE-USE

11.1 WASTE CLASSIFICATION

11.1.1 Waste soils are classified into two main categories: Hazardous and Non-hazardous, based on Technical Guidance WM3: *Guidance on the classification and assessment of waste* (1st Edition v1.2.GB) published by Natural Resources Wales, Scottish Environment Protection Agency and the Environment Agency.

11.1.2 The soil chemical analysis results show that the soils are likely to be non-hazardous.

11.1.3 Whilst no asbestos has been identified by the investigations to date, it is the case that any soil that contains identifiable pieces of asbestos containing material (i.e. any

particle of a size that can be identified as potentially being asbestos by a competent person if examined by the naked eye), then the soil is regarded as hazardous waste. Soil with an asbestos content in excess of 0.1% by weight is classified as hazardous waste.

11.1.4 WAC tests are a supplementary set of tests that determine the acceptability of waste soils into the determined category of landfill based on the waste classification. For non-hazardous waste, WAC testing can determine whether soils could be accepted at inert landfill. For hazardous waste, WAC testing provides information whether soils can be disposed of a hazardous landfill or as Stable Non-reactive hazardous waste (SNRHW). Where hazardous soils fail these criteria, pre-treatment may be necessary.

11.1.5 Preliminary Waste Acceptance Criteria (WAC) testing suggests soils are suitable for disposal in an inert landfill. The results of the WAC testing are presented in Appendix 6.

11.1.6 Natural as-dug arisings (excluding topsoil) could be classed as inert waste without the requirement for WAC testing.

11.1.7 Materials, including waste soils which are not to be retained on site, should be removed and disposed of in accordance with all relevant statutes.

11.1.8 It is a requirement that waste sent to landfill should have been subject to measures to reduce the amount of waste, reduce harmful or hazardous properties and facilitate recycling. These requirements may be satisfied by measures such as segregation and screening of wastes to recover suitable fill and material for crushing, segregation of inert materials and putrescible wastes.

11.2 RE-USE CONSIDERATIONS

11.2.1 As a sustainable alternative to off-site disposal, it may be possible to re-use site-won soils provided the following criteria are met:

i. Use of the material will not create an unacceptable risk of pollution to the environment or harm to human health;

ii. The material must be chemically and geotechnically suitable without further treatment;

iii. There must be certainty of use within the scheme;

iv. Material should only be used in the quantity necessary for that use.

11.2.2 Provided these criteria are met, the re-use of site-won materials is unlikely to be deemed a waste activity. Production of a *Materials Management Plan* under the industry *CL:AIRE Code of Practice on the Definition of Waste* represents a robust method of demonstrating that the proposed re-use of material meets the criteria and is not liable for landfill tax.

11.2.3 During excavation and re-use of "*uncontaminated soil and other naturally occurring material*", an exclusion to waste legislation can apply under the Waste Framework Directive. To qualify for the exclusion, soils must be:

i. Uncontaminated;

ii. Excavated during the construction activities; and

iii. Certain to be used in its natural state for construction purposes on the same site.

11.2.4 Under this exclusion, the definition of uncontaminated soil and other naturally occurring material is as follows:

virgin soil or soil that is equivalent to virgin soil. Other naturally occurring material means soil, stones, gravel, rock, etc.

SECTION 12 GENERIC QUANTITATIVE RISK ASSESSMENT (TIER 2)

12.1 INTRODUCTION

12.1.1 The site investigation has not identified any significant sources of contamination and ground gas concentrations are low.

12.1.2 The site investigation has shown the following contaminant sources identified in the Tier 1 Assessment are either not present or unlikely to be significant:

i. Made ground

ii. Herbicides and pesticides from agricultural land uses.

12.1.3 The potential impacts of contamination sources have been considered with respect to the following receptors:

i. Present site users;

ii. Future residents;

iii. Construction workers;

iv. Plants used in landscaping;

v. Potable water supply pipework;

vi. The general public and adjacent site users;

vii. Controlled waters;

12.1.4 The potential sources of contamination at the site and the implications with respect to development have been interpreted in accordance with the current government guidance on source-pathway-receptor risk assessment.

12.1.5 In each case the existence of a pollutant linkage requires a pathway by which the receptor could be exposed to the source. A qualitative assessment of risk is thus considered in the first instance with respect to the site in its current condition and is summarised in the sections below.

12.1.6 The level of risk considers the likelihood of the risk occurring and the severity of the potential consequence of that risk using the approach outlined in Appendix 5. As illustrated in Table 11, this Tier 2 risk assessment combines the likelihood and severity of the risk using a Risk Assessment Matrix approach as recommended by CIRIA C552, 2001 and updated in *Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66* published by NHBC, EA and CIEH (2008).

Table 11: Risk assessment matrix (after CIRIA C552 and R&D66)

		MAGNITUDE OF POTENTIAL CONSEQUENCE (SEVERITY) OF RISK			
		SEVERE	**MEDIUM**	**MILD**	**MINOR**
LIKELIHOOD OF RISK	**HIGH LIKELIHOOD**	Very High Risk	High Risk	Moderate Risk	Low Risk
	LIKELY	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	LOW LIKELIHOOD	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	UNLIKELY	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

12.2 SOIL CONTAMINATION (HEAVY METALS, HYDROCARBONS, PESTICIDES AND HERBICIDES)

12.2.1 No soil contamination above residential screening levels was encountered and therefore the risk to receptors is considered to be very low to low.

12.2.2

12.2.3 Table 12 below summarises the level of risk assigned to each receptor from soil contamination:

Table 12: Risks from soil contamination (heavy metals, hydrocarbons pesticides and herbicides)

Receptor		Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
The general public and present site users		dust inhalation	unlikely	minor	VERY LOW
		direct ingestion	unlikely	minor	VERY LOW
		dermal exposure	unlikely	minor	VERY LOW
		ingestion of fruit / vegetables	unlikely	minor	VERY LOW
Residents of future development		dust inhalation	unlikely	mild	VERY LOW
		direct ingestion	unlikely	mild	VERY LOW
		dermal exposure	unlikely	mild	VERY LOW
		ingestion of fruit / vegetables	unlikely	mild	VERY LOW
Construction workers		dust inhalation	unlikely	minor	VERY LOW
		direct ingestion	unlikely	minor	VERY LOW
		dermal exposure	unlikely	minor	VERY LOW
Future planting		direct uptake of phytotoxic metals	unlikely	minor	VERY LOW
Water supply pipes		direct contact leading to corrosion / permeation	unlikely	minor	VERY LOW
Adjacent site users		fugitive dust inhalation	unlikely	minor	VERY LOW
Controlled waters	Aquifer	infiltration / leaching	unlikely	minor	VERY LOW
	Surface water	run-off from site	unlikely	minor	VERY LOW
Protected habitat		dust deposition (demolition / construction phase)	unlikely	minor	VERY LOW
		direct ingestion (fauna feeding / drinking)	unlikely	minor	VERY LOW
		dermal exposure (fauna)	unlikely	minor	VERY LOW

Receptor	Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
	direct contact (flora)	unlikely	minor	VERY LOW
	groundwater flow to hydrologically connected habitat	unlikely	minor	VERY LOW
	surface water / sediment run-off	unlikely	minor	VERY LOW

12.3 **SOIL CONTAMINATION (ASBESTOS)**

12.3.1 No asbestos was encountered.

12.3.2 Table 13 below summarises the level of risk assigned to each receptor from asbestos contamination:

Table 13: Risks from soil contamination (asbestos)

Receptor	Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
The general public and present site users	inhalation of airborne fibres generated from dry soils	unlikely	minor	VERY LOW
Residents of future development		unlikely	mild	VERY LOW
Construction workers		unlikely	minor	VERY LOW
Adjacent site users		unlikely	minor	VERY LOW

12.4 **CONTROLLED WATERS (GROUNDWATER)**

12.4.1 No contamination was encountered within groundwater therefore the risk to end users is considered very low.

12.4.2 Table 14 below summarises the level of risk to surface water receptors:

Table 14: Risks from groundwater contamination

Receptor	Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
Surface water	Aquifer forms basal flow of surface water	unlikely	minor	VERY LOW

12.5 HAZARDOUS GAS

12.5.1 The presence of potentially significant concentrations of carbon dioxide and methane have not been identified at the site.

12.5.2 It is proposed to develop the site for residential use. The primary cause of soil gas entering a building is the pressure difference that exists between inside and outside the building: this tends to draw soil gas into the building from the ground below. Typically, soil gases can enter buildings through:

i. gaps around service pipes;

ii. cracks in walls below ground and floor slabs;

iii. construction joints; and

iv. wall cavities.

12.5.3 The only potential source of ground gas identified by desk study was made ground which may contain putrescible materials. No significant made ground was encountered and as such, there is not considered to be a credible source of ground gas at the site. Nevertheless, confirmatory ground gas monitoring has been carried out with the results assessed in accordance with BS 8485:2015+A1:2019.

12.5.4 Borehole hazardous gas flow rates (Q_{hg}) for carbon dioxide and methane were calculated using the maximum concentration recorded during each monitoring event together with steady state values of gas flow.

12.5.5 Where no gas borehole flow was detected, the detection limit of the instrumentation was used for the purposes of calculating the Q_{hg}.

12.5.6 Gas Screening Values (GSV) for methane and carbon dioxide have been derived from:

i. The maximum Q_{hg} calculated for methane and carbon dioxide for all monitoring events.

12.5.7 The Q_{hg} values for methane and carbon dioxide across all monitoring events are presented in Table 15 and the implied Characteristic Situation for the maximum Q_{hg} values are presented in Table 16.

12.5.8 A worst-case check has been carried out using the maximum peak gas flow and maximum peak gas concentrations for carbon dioxide and methane. The data is presented in Table 17.

12.5.9 Given the current limited dataset, on the basis of the presented measurements, the site GSV is taken to be 0.0019 $L.h^{-1}$, which is the worst case for methane and carbon dioxide. As presented in Appendix 14, a GSV of 0.0019 $L.h^{-1}$ lies within the range of GSV values for CS1. Therefore, CS1 is taken as the design gas regime for the site.

12.5.10 The following information is presented in Appendix 14:

i. Wilson and Card Classifications;

ii. gas protection scores required for each Building Types and Characteristic Situation to achieve the appropriate level of protection; and

iii. gas protection elements that can be incorporated into building design with their associated assigned score.

12.5.11 No gas protection measures are considered necessary for the site in respect to carbon dioxide and methane.

Table 15: Borehole hazardous gas flow rates for all monitoring events

Monitoring Standpipe Reference	Gas	Borehole Hazardous Gas Flow Rate Calculated Using Peak Concentration and Steady State Flow					
		Round 1 Q_{hg}	Round 2 Q_{hg}	Round 3 Q_{hg}	Round 4 Q_{hg}	Round 5 Q_{hg}	Round 6 Q_{hg}
MWS101	methane	-	-	0.0001	-	-	-
	carbon dioxide	-	-	0.0013	-	-	-
MWS104	methane	0.0001	-	0.0001	-	-	-
	carbon dioxide	0.0005	-	0.0007	-	-	-
MWS106	methane	0.0001	0.0001	0.0001	-	-	-
	carbon dioxide	0.0008	0.0016	0.0011	-	-	-

Table 16: Maximum Q_{hg} for all individual events

Gas	Max Q_{hg} across individual events	Implied CS
methane	0.0001	1
carbon dioxide	0.0019	1

Table 17: Worst case check maximum Q_{hg} using maximum flow and maximum peak gas concentration

Gas	Max Q_{hg} events combined	Implied CS
methane	0.0001	1
carbon dioxide	0.0019	1

12.5.12 Table 18 below presents the Modified Wilson and Card Classifications and their corresponding hazard potentials as defined in BS 8485. The Modified Wilson and Card classification as presented in CIRIA C665 *Assessing risks posed by hazardous ground gases to buildings* instead defines this as the risk classification. The higher the classification the greater the risk posed by the presence of gas.

Table 18: Characteristic Situation and Risk

Characteristic Situation	Modified Wilson and Card Risk Classification
CS1	Very Low
CS2	Low
CS3	Moderate
CS4	Moderate to High
CS5	High
CS6	Very High

12.5.13 The risk classification for the site has been used to develop overall risk ratings for each identified receptor.

12.5.14 Table 19 below summarises the level of risk to each receptor from hazardous gas generation:

Table 19: Risks from hazardous gas

Receptor	Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
The general public and present site users	decomposition of putrescible made ground generating hazardous gas that can migrate by diffusion or advection via cracks in foundations / utility trenches / service penetrations. Outdoor inhalation in confined excavations.	unlikely	minor	VERY LOW
Residents of future development		unlikely	mild	VERY LOW
Construction workers		unlikely	minor	VERY LOW
Adjacent site users		unlikely	minor	VERY LOW

12.6 VAPOUR

12.6.1 The presence of potentially significant concentrations of Volatile Organic Compounds (VOCs) have not been identified at the site.

12.6.2 Table 20 and Table 21 below summarises the level of risk to each receptor from vapour generation:

Table 20: Risks from soil vapour

Receptor	Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
The general public and present site users	Volatilisation of VOCs from contaminated soil generating vapours that can migrate by diffusion or advection via cracks in foundations / utility trenches / service penetrations. Outdoor inhalation in confined excavations / localised spills.	unlikely	minor	VERY LOW
Residents of future development		unlikely	minor	VERY LOW
Construction workers		unlikely	minor	VERY LOW
Adjacent site users / general public		unlikely	minor	VERY LOW

Table 21: Risks from groundwater vapour

Receptor	Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
The general public and present site users	Volatilisation of VOCs from contaminated groundwater generating vapours that can migrate by diffusion or advection via cracks in foundations / utility trenches / service penetrations. Outdoor inhalation in confined excavations / localised spills.	unlikely	minor	VERY LOW
Residents of future development		unlikely	minor	VERY LOW
Construction workers		unlikely	minor	VERY LOW
Adjacent site users / general public		unlikely	minor	VERY LOW

12.7 **RADON**

12.7.1 Radon maps indicate a medium risk to receptors from radon gas.

Receptor	Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
The general public and present site users	Radon gas generated by decaying uranium	unlikely	minor	VERY LOW

Receptor	Pathway / Exposure	Likelihood of Risk	Severity of Risk	Overall Risk Rating
Residents of future development	within the underlying geology that can migrate by diffusion or advection via cracks in foundations / utility trenches / service penetrations into structures.	low likelihood	medium	MODERATE / LOW
Construction workers		unlikely	minor	VERY LOW

SECTION 13 UPDATED COMBINED CONCEPTUAL SITE MODEL AND RISK ASSESSMENT

13.1 Following completion of the Tier 2 generic quantitative risk assessment, the preliminary combined conceptual site model and risk assessment has been updated and is presented in Table 22.

Table 22: Combined Conceptual Site Model and Tier 2 Risk Assessment

POTENTIAL CONTAMINANT SOURCE	RELEASE MECHANISM	PATHWAY	EXPOSURE ROUTE	RECEPTOR								
				Present Site Users / General Public	Future Residents / Site Users	Construction Workers	On-Site Planting	Water Supply Pipes	Adjacent Site Users / General Public	Controlled Waters: Surface Water	Controlled Waters: Aquifer	Protected Habitat
SOIL (HEAVY METALS, HYDROCARBONS PESTICIDES, HERBICIDES)	DUST	AIR	INHALATION	VERY LOW	VERY LOW	VERY LOW			VERY LOW			
	DIRECT	DIRECT	INGESTION	VERY LOW	VERY LOW	VERY LOW						
	DIRECT	DIRECT	DERMAL EXPOSURE	VERY LOW	VERY LOW	VERY LOW						
	DIRECT	DIRECT	DIRECT CONTACT / UPTAKE				VERY LOW	VERY LOW				
	PLANT UPTAKE	GARDEN FRUIT AND VEGETABLES	INGESTION	VERY LOW	VERY LOW							
	INFILTRATION / LEACHING	GROUNDWATER FLOW	DIRECT								VERY LOW	
	RUNOFF	SURFACE WATER FLOW	DIRECT							VERY LOW		
MADE GROUND (ASBESTOS)	FIBRE RELEASE	AIR	INHALATION	VERY LOW	VERY LOW	VERY LOW			VERY LOW			
SOIL	GAS FROM DECOMPOSITION	AIR	INHALATION	VERY LOW	VERY LOW	VERY LOW			VERY LOW			
SOIL	VAPOUR FROM VOLATILISATION /	AIR	INHALATION	VERY LOW	VERY LOW	VERY LOW			VERY LOW			
GROUNDWATER (VOC)	VAPOUR FROM VOLATILISATION	AIR	INHALATION	VERY LOW	VERY LOW	VERY LOW			VERY LOW			
GROUNDWATER (DISSOLVED CONTAMINANTS)	DIRECT	BASEFLOW TO SURFACE WATER	DIRECT							VERY LOW		
URANIUM IN UNDERLYING STRATA	RADON FROM RADIOACTIVE DECAY	AIR	INHALATION	VERY LOW	MODERATE / LOW	VERY LOW						

X SOURCE►PATHWAY►RECEPTOR NOT COMPLETE AND NO FURTHER ACTION REQUIRED

SECTION 14 DETAILED QUANTITATIVE RISK ASSESSMENT (TIER 3)

14.1 No contaminant linkages requiring further supplementary site investigation and detailed quantitative risk assessment have been identified and no preliminary remediation strategy is required.

SECTION 15 PRELIMINARY REMEDIATION STRATEGY AND RECOMMENDATIONS

15.1 INTRODUCTION

15.1.1 The site is in an area where basic radon protection is required.

15.1.2 No other unacceptable risks have been identified and (other than radon protection) remedial action is unlikely to be required. However, the ground gas monitoring programme is in progress and risks from bulk ground gases will be subject to updated assessment upon completion of the monitoring programme.

15.1.3 Following guidance given on Land Contamination Risk Management (LCRM) available on www.gov.uk and last updated in July 2023 the following three procedures should be followed:

i. Identify feasible remediation options;

ii. Undertake a detailed evaluation of the options; and

iii. Select the final remediation option.

15.1.4 This report provides an initial high-level overview and recommends a remedial option considered to be appropriate for each relevant contamination linkage. A detailed remediation method statement, compliant with LCRM guidance will be required.

15.2 GAS / VAPOUR PROTECTION

15.2.1 Basic radon protection is required for the development. This consists of a well-installed damp-proof membrane, modified and extended to form a gas-tight radon-proof barrier between the ground and the building. Subject to agreement with the Council and NHBC, there is a possibility the proposed development could be zoned with basic radon protection measures in structures within RnC4 only.

15.2.2 On the basis of the initial rounds of monitoring, further gas and vapour protection measures are not considered necessary. This potentially could change on completion of the monitoring programme and updated risk assessment, however, the requirement for gas protection is considered unlikely given the lack of evidence for a source of ground gas. A revision to the report will be issued on completion of the monitoring.

15.3 PROTECTION OF CONSTRUCTION WORKERS

15.3.1 No potential risks to construction workers have been identified however the adoption of appropriate Health and Safety procedures will ensure that risks to operatives from

unidentified hazardous materials at the site are minimised. Operatives should not be allowed to eat, drink or smoke on site except in designated areas and should be required to wash all exposed skin at the end of each shift. Operatives should be informed of the potential hazards at the site and should be required to report any observations of suspect material.

15.4 **WATER SUPPLY PIPES**

15.4.1 No contamination with the potential to permeate polymeric services has been identified by this investigation, however it is recommended that the utility provider is consulted with respect to their requirements for water supply pipes. Utility companies apply strict guideline levels on use of polymeric pipes.

15.5 **WASTE**

15.5.1 Materials, including waste soils which are not to be retained on site, should be removed and disposed of in accordance with all relevant statutes.

15.6 **OTHER RECOMMENDATIONS**

15.6.1 It is recommended that this report is submitted to the regulators (Local Authority EHO and Planners, Environment Agency Planning Liaison and NHBC) for approval prior to commencement of the works.

15.6.2 Any observations of ground conditions atypical of those already described should be reported to IDOM immediately so that an assessment of appropriate action can be made.

SECTION 16 CONCLUSIONS

16.1 The ground conditions generally comprised superficial Head Deposits between 1.0 and 1.50 m bgl across the majority of the site. Underling the topsoil and superficial deposits are variable cohesive and granular deposits of the Sandgate Formation.

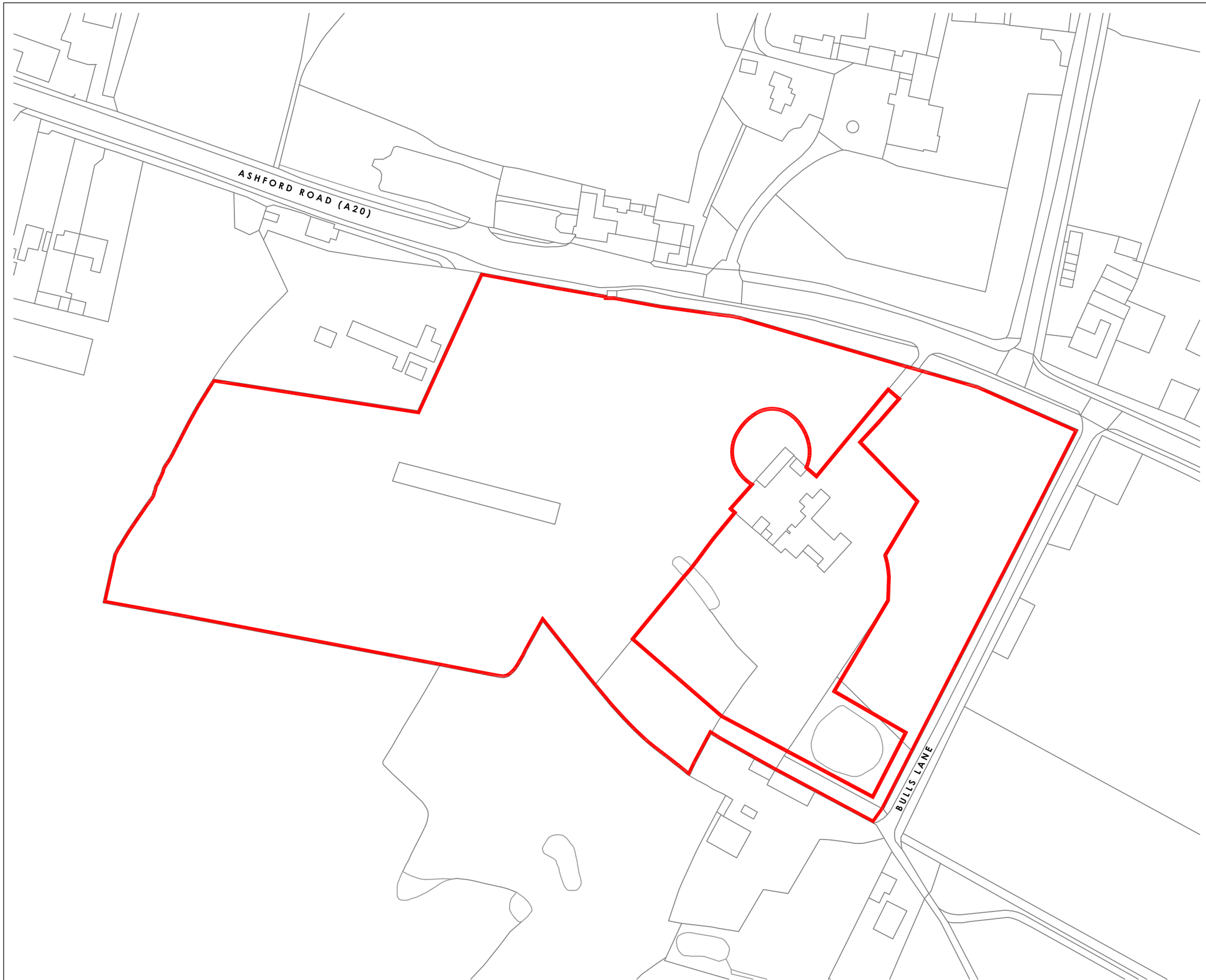
16.2 A foundation zone plan has been provided for the site. In summary the majority of the site will be suitable for traditional strip footings with an allowable bearing pressure of 100 kN/m^2 at depths ranging between 1.0 and 2.0 m bgl. Two zones are defined where an alternative solution such as ground improvement or piled foundations are recommended. Additional deepening is required due to the zone of influence from existing trees, where the anticipated depth exceeds 2.0 m then piled foundations are likely to be more cost-effective.

16.3 Basic radon protection measures are required for the development.

16.4 Soils are classed as non-hazardous and are likely to be suitable for an inert landfill.

APPENDIX 1

- Site Location Plan CSA-3256-114
- Topographic Survey 2019-070_Topo_01-04_2d_RevD
- Development Framework Plan CSA-5622-115



N

0 10 20 30 40 50 metres

Site Boundary: **2.95ha**

Rev	Date	By	Description
A	27.11.23	RC	Site boundary amended

CSA environmental

Dixies Barns, High Street,
Ashwell, Hertfordshire SG7 5NT

t 01462 743647
e ashwell@csaenvironmental.co.uk
w csaenvironmental.co.uk

Project	Land to the South of Ashford Road, Sellindge
Title	Site Location Plan
Client	Gladman Developments Ltd

Scale	1:1250 @ A3	Drawn	RC
Date	March 2020	Checked	RR
Drawing No.	CSA/3256/114	Rev	A

TREE SCHEDULE

No.	DIAM.	SPREAD Ø	HEIGHT
TE/1	2.10	14	9
TE/2	1.10	16	19
TE/3	0.75	16	25
TE/4	0.60	14	25
TE/5	0.40	8	10
TE/6	0.80	12	10
TE/7	0.60	15	15
TE/8	0.80	12	12
TE/9	0.70	4	7
TE/10	0.50	14	14
TE/11	0.50	14	14
TE/12	0.50	14	14
TE/13	0.55	14	14
TE/14	0.55	14	14
TE/15	0.80	10	14
TE/16	0.50	14	12
TE/17	1.00	16	14
TE/18	0.60	10	10
TE/19	0.30	6	4
TE/20	0.85	20	18
TE/21	0.40	4	4
TE/22	0.30	4	6
TE/23	0.30	4	6
TE/24	0.30	6	4
TE/25	0.40	6	6
TE/26	0.90	18	16
TE/27	1.10	12	16
TE/28	0.40	10	6
TE/29	0.40	10	6
TE/30	0.30	8	4
TE/31	0.40	8	6
TE/32	0.40	8	6
TE/33	1.00	16	14
TE/34	0.50	6	8
TE/35	0.50	6	8
TE/36	0.40	6	8
TE/37	0.30	6	8
TE/38	0.60	8	6
TE/39	0.50	12	12
TE/40	0.50	12	12
TE/41	1.85	16	18
TE/42	1.30	20	18
TE/43	0.20	6	5
TE/44	0.85	14	18
TE/45	0.60	8	8
TE/46	0.90	20	20
TE/47	0.70	14	16
TE/48	0.40	10	12
TE/49	0.40	10	12
TE/50	0.60	14	12
TE/51	0.50	16	16
TE/52	0.60	18	12
TE/53	0.40	8	8
TE/54	0.45	16	16
TE/55	0.30	10	12
TE/56	0.40	14	12
TE/57	0.40	16	12
TE/58	0.60	7	10
TE/59	0.40	10	14
TE/60	0.45	16	14
TE/61	0.25	10	10
TE/62	1.00	20	18
TE/63	0.60	17	18
TE/64	0.50	12	16
TE/65	0.50	8	12
TE/66	0.20	8	10
TE/67	1.20	14	18
TE/68	0.50	12	16
TE/69	0.50	12	16
TE/70	1.00	16	22
TE/71	0.40	10	12
TE/72	1.00	19	22
TE/73	0.80	24	22
TE/74	0.40	10	12
TE/75	0.80	18	18
TE/76	0.30	10	14
TE/77	0.60	14	16
TE/78	0.70	14	18
TE/79	0.70	14	18
TE/80	0.40	10	16
TE/81	0.20	8	8
TE/82	1.60	24	18
TE/83	0.35	12	18
TE/84	0.60	18	18
TE/85	0.50	18	16
TE/86	0.15	8	8
TE/87	0.45	16	18
TE/88	0.20	8	10
TE/89	0.40	16	16
TE/90	0.70	18	18
TE/91	0.40	16	16
TE/92	0.25	10	10
TE/93	1.20	20	20
TE/94	0.85	20	20
TE/95	1.20	20	18
TE/96	0.85	14	18
TE/97	0.70	18	18
TE/98	0.70	18	18
TE/99	0.60	16	16

TREE DIAMETER MEASURED APPROXIMATELY 1.5M ABOVE GROUND LEVEL. TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE GENERALISED CANOPY SIZE. TREE BOLE MAY NOT SIT CENTRALLY TO THE CANOPY. TREE HEIGHT ESTIMATED FROM GROUND LEVEL.

TREE SCHEDULE

No.	DIAM.	SPREAD Ø	HEIGHT
TE/100	0.70	16	16
TE/101	0.50	16	16
TE/102	0.70	16	16
TE/103	0.50	16	16
TE/104	0.55	16	16
TE/105	0.40	16	16
TE/106	0.50	12	14
TE/107	0.70	6	10
TE/108	0.70	6	10
TE/109	0.30	6	8
TE/110	0.30	6	8
TE/111	1.30	18	20
TE/112	0.90	16	22
TE/113	1.10	16	16
TE/114	0.50	10	16
TE/115	0.50	10	16
TE/116	0.70	12	18
TE/117	0.50	10	12
TE/118	1.20	20	24
TE/119	0.90	18	24
TE/120	0.90	22	24
TE/121	0.50	10	12
TE/122	0.90	22	16
TE/123	0.75	14	16
TE/124	0.80	22	16
TE/125	0.90	22	16
TE/126	0.40	6	6
TE/127	1.30	20	11
TE/128	1.30	20	20
TE/129	0.40	8	8
TE/130	0.50	12	10
TE/131	0.60	16	14
TE/132	0.75	18	16
TE/133	0.90	20	14
TE/134	0.30	10	10
TE/135	0.20	6	8
TE/136	0.30	8	8
TE/137	2.00	20	16
TE/138	1.30	20	16
TE/139	1.50	18	12
TE/140	0.35	12	5
TE/141	1.00	14	7
TE/142	0.65	16	14
TE/143	0.35	12	12
TE/144	0.40	14	12
TE/145	0.40	14	18
TE/146	0.40	8	8
TE/147	0.30	10	10
TE/148	0.45	16	18
TE/149	0.30	8	10
TE/150	0.30	8	10
TE/151	0.60	18	18
TE/152	0.60	18	18
TE/153	0.20	6	6
TE/154	0.70	20	20
TE/155	0.50	10	18
TE/156	0.90	14	12
TE/157	0.30	8	10
TE/158	0.40	8	10
TE/159	0.90	16	18
TE/160	0.30	8	10
TE/161	0.45	12	18
TE/162	0.40	8	12
TE/163	0.80	20	20
TE/164	0.60	16	18
TE/165	0.30	8	8
TE/166	0.30	8	8
TE/167	0.40	8	8
TE/168	0.30	8	10
TE/169	0.15	6	8
TE/170	0.15	6	8
TE/171	0.30	16	18
TE/172	0.55	20	16
TE/173	0.40	8	8
TE/174	0.80	16	16
TE/175	0.80	24	18
TE/176	0.50	16	18
TE/177	0.40	16	18
TE/178	0.20	8	16
TE/179	0.20	8	16
TE/180	0.20	8	16
TE/181	0.30	12	16
TE/182	0.30	12	16
TE/183	0.30	12	16
TE/184	0.20	12	16
TE/185	0.40	14	16
TE/186	0.50	16	16
TE/187	1.00	22	22
TE/188	0.75	18	18
TE/189	0.45	16	16
TE/190	0.30	10	10
TE/191	0.20	6	6
TE/192	0.30	8	8
TE/193	0.20	6	8

N

NOTES

THIS SURVEY IS ORIENTATED TO ORDNANCE SURVEY GRID NORTH. THE SURVEY IS TO A PLANE GRID. HORIZONTAL MEASUREMENTS TAKEN FROM THIS SURVEY WILL BE GROUND DISTANCES.

SITE CENTRE: E 609984.295, N 138216.109

LOCAL SCALE FACTOR: 1.0001428

ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM GENERATED BY ACTIVE GPS NETWORK.

DRAINAGE:-

NO ALLOWANCE HAS BEEN MADE FOR SUB SURFACE ACCESS TO MANHOLES OR CHAMBERS. ANY PIPE SIZES, DEPTHS OR BELOW GROUND DIMENSIONS ARE TAKEN FROM THE SURFACE AND THUS WILL ONLY BE APPROXIMATE. ANY FLOW TYPES (FOUL WATER, SURFACE WATER OR COMBINED) ARE ASSUMED AND THEREFORE REQUIRE VERIFICATION.

ROAD MARKINGS:-

ROAD MARKINGS DISPLAYED ARE SYMBOLIC. LENGTH, SPACING AND THICKNESS ETC. ARE INDICATIVE ONLY.

LEGEND

30.29 SPOT LEVEL
SURVEY STATION
SAPLING
BUSHES/SHRUB
TREE (INDICATIVE ONLY)
HEDGE/AREA OF UNDERGROWTH
99.90 CONTOUR
GATE
OVERHEAD CABLE
FENCE
1 PHOTOGRAPH LOCATION AND NUMBER
APPROXIMATE CULVERT/BRIDGE OPENING

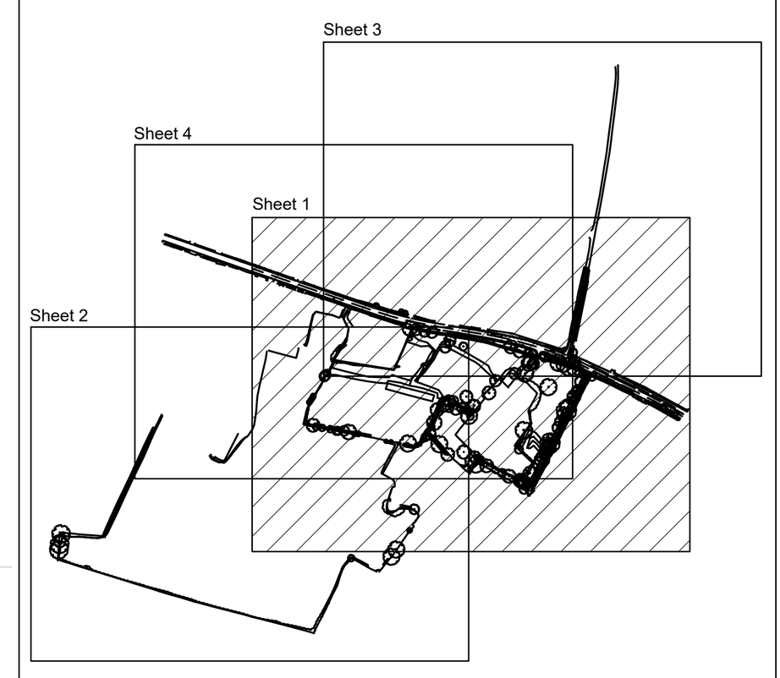
ABBREVIATIONS

ArL	ARCH LEVEL	LB	LETTER BOX
AV	AIR VALVE	LP	LAMPOST
B	BOLLARD	MH	MANHOLE
BB	BELISHA BEACON	MKR	MARKER
BH	BOREHOLE	OHC	OVERHEAD CABLE
BL	BED LEVEL	OpL	OPENING LEVEL
BS	BUS STOP	OSBM	OS BENCHMARK
BT	BT COVER	P	POST
C/B	CLOSED BOARD FENCE	P/R	POST AND RAIL FENCE
C/L	CHAIN LINK FENCE	P/W	POST AND WIRE FENCE
CATV	CABLE TELEVISION COVER	PEC	PEDESTRIAN CROSSING
CC	CONTROL CABIN	PM	PARKING METER
COL	COLUMN	RE	RODDING EYE
Conc/p	CONCRETE PANEL FENCE	RWL	RETAINING WALL
CPY	CANOPY	SAP	SAPLING
CrL	CROWN LEVEL	SEC	SECURITY CAMERA
Csty	CABLE STAY	SGY	STRIP GULLY
CTV	CABLE TELEVISION POINT	SoL	SOFFIT LEVEL
CYR	CYCLE RACK	SP	SIGNPOST
DK	DROPPED KERB	SpL	SPRINGING LEVEL
DP	DOWNPIPE	SV	STOP VALVE
EiP	ELECTRIC INLET POINT	Tac	TACTILE PAVING
EL	ELECTRIC INSPECTION COVER	TCB	TELEPHONE BOX
EP	ELECTRICITY SUPPLY POLE	TE/?	TREE + NUMBER
ER	EARTH ROD	THL	THRESHOLD LEVEL
FH	FIRE HYDRANT	TL	TRAFFIC LIGHT
G	GULLY	ToF	TOP OF FENCE
G/DP	GULLY AND DOWNPIPE	ToW	TOP OF WALL
GP	GATE POST	TP	TELEPHONE POLE
Gpi	GAS PIPE	W/M	WIRE MESH FENCE
GV	GAS VALVE	W/P	WOODEN PANEL FENCE
IC	INSPECTION CHAMBER	WLV	WATER LEVEL
IL	INVERT LEVEL	WM	WATER METER
I/R	IRON RAILING FENCE	WO	WASH OUT
KO	KERB OUTLET		

STATION CO-ORDINATES

STATION	EASTING	NORTHING	LEVEL	DESCRIPTION
STN/2	609929.00	138309.51	66.88	Survey Nail
STN/9	610054.05	138106.91	68.00	Survey Nail
STN/10	610068.78	138119.44	67.69	Survey Nail
STN/50	609821.87	138332.51	66.04	Survey Nail
STN/51	610074.31	138270.07	66.92	Survey Nail
STN/52	610103.82	138257.47	66.70	Survey Nail
STN/53	610135.52	138253.17	66.67	Survey Nail
STN/200	610132.85	138385.70	65.11	Survey Nail
STN/201	610150.75	138503.50	63.62	Survey Nail
STN/203	609792.05	138352.94	65.83	Survey Nail
STN/300	609618.79	138412.96	64.48	Survey Nail
STN/301	609525.44	138445.14	63.93	Survey Nail

PLOT LOCATIONS



*	*	*	*
D	24.06.24	Pond and ditch measured.	JW
C	24.05.23	Extend Ashford Rd to the west.	JW
B	02.11.22	Moorstock Lane north to stream	JW
A	16.06.21	Additional field surveyed.	JW
Rev	Date	Revision notes	By

DO NOT SCALE

Status

INFORMATION

Project

Ashford Road, Sellindge.

Title

TOPOGRAPHICAL SURVEY
AS OF 22.08.19
SHEET 1 OF 4

GLADMAN
Gladman House, Alexandria Way
Congleton Business Park
Congleton, Cheshire
CW12 1LB
Tel: 01260 288800
Fax: 01260 288801
www.gladman.co.uk

Drawn By	Publish Date	Scale(s)	Sheet Size
JW/JH	03.09.19	1:500	A0

Project no.	Drawing no.	Revision
2019-070	Topo_01_2D	D

TREE SCHEDULE

No.	DIAM.	SPREAD Ø	HEIGHT
TE/1	2.10	14	9
TE/2	1.10	16	19
TE/3	0.75	16	25
TE/4	0.60	14	25
TE/5	0.40	8	10
TE/6	0.80	12	10
TE/7	0.60	15	15
TE/8	0.80	12	12
TE/9	0.70	4	7
TE/10	0.50	14	14
TE/11	0.50	14	14
TE/12	0.50	14	14
TE/13	0.55	14	14
TE/14	0.55	14	14
TE/15	0.80	10	14
TE/16	0.50	14	12
TE/17	1.00	16	14
TE/18	0.60	10	10
TE/19	0.30	6	4
TE/20	0.85	20	18
TE/21	0.40	4	4
TE/22	0.30	4	6
TE/23	0.30	4	6
TE/24	0.30	6	4
TE/25	0.40	6	6
TE/26	0.90	18	16
TE/27	1.10	12	16
TE/28	0.40	10	6
TE/29	0.40	10	6
TE/30	0.30	8	4
TE/31	0.40	8	6
TE/32	0.40	8	6
TE/33	1.00	16	14
TE/34	0.50	6	8
TE/35	0.50	6	8
TE/36	0.40	6	8
TE/37	0.30	6	8
TE/38	0.60	8	6
TE/39	0.50	12	12
TE/40	0.50	12	12
TE/41	1.85	16	18
TE/42	1.30	20	18
TE/43	0.20	6	5
TE/44	0.85	14	18
TE/45	0.60	8	8
TE/46	0.90	20	20
TE/47	0.70	14	16
TE/48	0.40	10	12
TE/49	0.40	10	12
TE/50	0.60	14	12
TE/51	0.50	16	16
TE/52	0.60	18	12
TE/53	0.40	8	8
TE/54	0.45	16	16
TE/55	0.30	10	12
TE/56	0.40	14	12
TE/57	0.40	16	12
TE/58	0.60	7	10
TE/59	0.40	10	14
TE/60	0.45	16	14
TE/61	0.25	10	10
TE/62	1.00	20	18
TE/63	0.60	17	18
TE/64	0.50	12	16
TE/65	0.50	8	12
TE/66	0.20	8	10
TE/67	1.20	14	18
TE/68	0.50	12	16
TE/69	0.50	12	16
TE/70	1.00	16	22
TE/71	0.40	10	12
TE/72	1.00	19	22
TE/73	0.80	24	22
TE/74	0.40	10	12
TE/75	0.80	18	18
TE/76	0.30	10	14
TE/77	0.60	14	16
TE/78	0.70	14	18
TE/79	0.70	14	18
TE/80	0.40	10	16
TE/81	0.20	8	8
TE/82	1.60	24	18
TE/83	0.35	12	18
TE/84	0.60	18	18
TE/85	0.50	18	16
TE/86	0.15	8	8
TE/87	0.45	16	18
TE/88	0.20	8	10
TE/89	0.40	16	16
TE/90	0.70	18	18
TE/91	0.40	16	16
TE/92	0.25	10	10
TE/93	1.20	20	20
TE/94	0.85	20	20
TE/95	1.20	20	18
TE/96	0.85	14	18
TE/97	0.70	18	18
TE/98	0.70	18	18
TE/99	0.60	16	16

TREE DIAMETER MEASURED APPROXIMATELY 1.5M ABOVE GROUND LEVEL. TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE GENERALISED CANOPY SIZE. TREE BOLE MAY NOT SIT CENTRALLY TO THE CANOPY. TREE HEIGHT ESTIMATED FROM GROUND LEVEL.

TREE SCHEDULE

No.	DIAM.	SPREAD Ø	HEIGHT
TE/100	0.70	16	16
TE/101	0.50	16	16
TE/102	0.70	16	16
TE/103	0.50	16	16
TE/104	0.55	16	16
TE/105	0.40	16	16
TE/106	0.50	12	14
TE/107	0.70	6	10
TE/108	0.70	6	10
TE/109	0.30	6	8
TE/110	0.30	6	8
TE/111	1.30	18	20
TE/112	0.90	16	22
TE/113	1.10	16	16
TE/114	0.50	10	16
TE/115	0.50	10	16
TE/116	0.70	12	18
TE/117	0.50	10	12
TE/118	1.20	20	24
TE/119	0.90	18	24
TE/120	0.90	22	24
TE/121	0.50	10	12
TE/122	0.90	22	16
TE/123	0.75	14	16
TE/124	0.80	22	16
TE/125	0.90	22	16
TE/126	0.40	6	6
TE/127	1.30	20	11
TE/128	1.30	20	20
TE/129	0.40	8	8
TE/130	0.50	12	10
TE/131	0.60	16	14
TE/132	0.75	18	16
TE/133	0.90	20	14
TE/134	0.30	10	10
TE/135	0.20	6	8
TE/136	0.30	8	8
TE/137	2.00	20	16
TE/138	1.30	20	16
TE/139	1.50	18	12
TE/140	0.35	12	5
TE/141	1.00	14	7
TE/142	0.65	16	14
TE/143	0.35	12	12
TE/144	0.40	14	12
TE/145	0.40	14	18
TE/146	0.40	8	8
TE/147	0.30	10	10
TE/148	0.45	16	18
TE/149	0.30	8	10
TE/150	0.30	8	10
TE/151	0.60	18	18
TE/152	0.60	18	18
TE/153	0.20	6	6
TE/154	0.70	20	20
TE/155	0.50	10	18
TE/156	0.90	14	12
TE/157	0.30	8	10
TE/158	0.40	8	10
TE/159	0.90	16	18
TE/160	0.30	8	10
TE/161	0.45	12	18
TE/162	0.40	8	12
TE/163	0.80	20	20
TE/164	0.60	16	18
TE/165	0.30	8	8
TE/166	0.30	8	8
TE/167	0.40	8	8
TE/168	0.30	8	10
TE/169	0.15	6	8
TE/170	0.15	6	8
TE/171	0.30	16	18
TE/172	0.55	20	16
TE/173	0.40	8	8
TE/174	0.80	16	16
TE/175	0.80	24	18
TE/176	0.50	16	18
TE/177	0.40	16	18
TE/178	0.20	8	16
TE/179	0.20	8	16
TE/180	0.20	8	16
TE/181	0.30	12	16
TE/182	0.30	12	16
TE/183	0.30	12	16
TE/184	0.20	12	16
TE/185	0.40	14	16
TE/186	0.50	16	16
TE/187	1.00	22	22
TE/188	0.75	18	18
TE/189	0.45	16	16
TE/190	0.30	10	10
TE/191	0.20	6	6
TE/192	0.30	8	8
TE/193	0.20	6	8

N

NOTES

THIS SURVEY IS ORIENTATED TO ORDNANCE SURVEY GRID NORTH. THE SURVEY IS TO A PLANE GRID. HORIZONTAL MEASUREMENTS TAKEN FROM THIS SURVEY WILL BE GROUND DISTANCES.

SITE CENTRE: E 609984.295, N 138216.109

LOCAL SCALE FACTOR: 1.0001428

ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM GENERATED BY ACTIVE GPS NETWORK.

DRAINAGE:-

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ROAD MARKINGS:-

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LEGEND

- 30.29 SPOT LEVEL
- SURVEY STATION
- SAPLING
- BUSHES/SHRUB
- TREE (INDICATIVE ONLY)
- HEDGE/AREA OF UNDERGROWTH
- 99.90 CONTOUR
- GATE
- OVERHEAD CABLE
- FENCE
- 1 PHOTOGRAPH LOCATION AND NUMBER
- APPROXIMATE CULVERT/BRIDGE OPENING

ABBREVIATIONS

ArL	ARCH LEVEL	LB	LETTER BOX
AV	AIR VALVE	LP	LAMPOST
B	BOLLARD	MH	MANHOLE
BB	BELISHA BEACON	MKR	MARKER
BH	BOREHOLE	OHC	OVERHEAD CABLE
BL	BED LEVEL	OpL	OPENING LEVEL
BS	BUS STOP	OSBM	OS BENCHMARK
BT	BT COVER	P	POST
C/B	CLOSED BOARD FENCE	P/R	POST AND RAIL FENCE
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CATV	CABLE TELEVISION COVER	PEC	PEDESTRIAN CROSSING
CC	CONTROL CABIN	PM	PARKING METER
COL	COLUMN	RE	RODDING EYE
Conc/p	CONCRETE PANEL FENCE	RWL	RETAINING WALL
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ER	EARTH ROD	THL	THRESHOLD LEVEL
FH	FIRE HYDRANT	TL	TRAFFIC LIGHT
G	GULLY	ToF	TOP OF FENCE
G/DP	GULLY AND DOWNPIPE	ToW	TOP OF WALL
GP	GATE POST	TP	TELEPHONE POLE
Gpi	GAS PIPE	W/M	WIRE MESH FENCE
GV	GAS VALVE	W/P	WOODEN PANEL FENCE
IC	INSPECTION CHAMBER	WLV	WATER LEVEL
IL	INVERT LEVEL	WM	WATER METER
I/R	IRON RAILING FENCE	WO	WASH OUT
KO	KERB OUTLET		

STATION CO-ORDINATES

STATION	EASTING	NORTHING	LEVEL	DESCRIPTION
STN/2	609929.00	138309.51	66.88	Survey Nail
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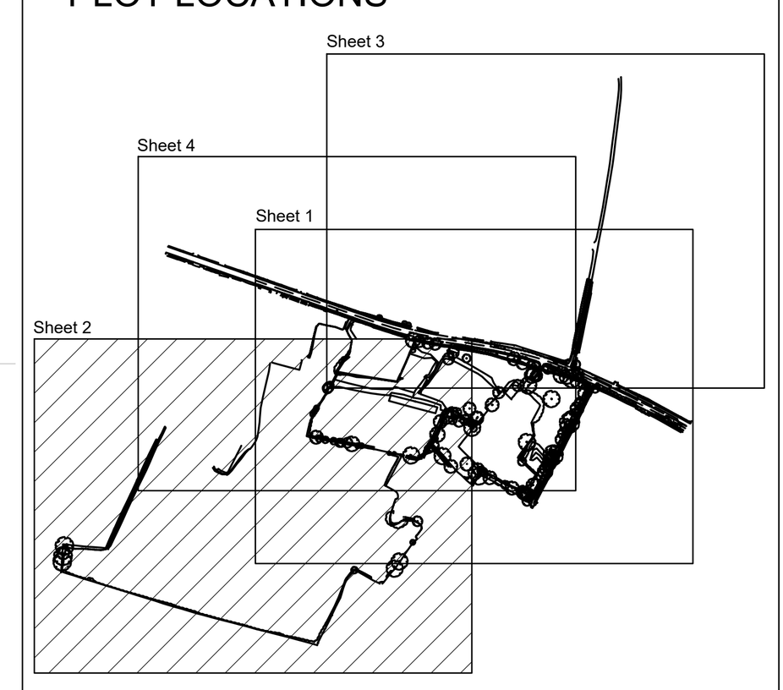
STN/10	610068.78	138119.44	67.69	Survey Nail
STN/50	609821.87	138332.51	66.04	Survey Nail
STN/51	610074.31	138270.07	66.92	Survey Nail
STN/52	610103.82	138257.47	66.70	Survey Nail
STN/53	610135.52	138253.17	66.67	Survey Nail
STN/200	610132.85	138385.70	65.11	Survey Nail
STN/201	610150.75	138503.50	63.62	Survey Nail
STN/203	609792.05	138352.94	65.83	Survey Nail
STN/300	609618.79	138412.96	64.48	Survey Nail
STN/301	609525.44	138445.14	63.93	Survey Nail

PLOT LOCATIONS



Rev	Date	Revision notes	By
*	*	*	*
D	24.06.24	Pond and ditch measured.	JW
C	24.05.23	Extend Ashford Rd to the west.	JW
B	02.11.22	Moorstock Lane north to stream	JW
A	16.06.21	Additional field surveyed.	JW

DO NOT SCALE

Status

INFORMATION

Project

Ashford Road, Sellindge.

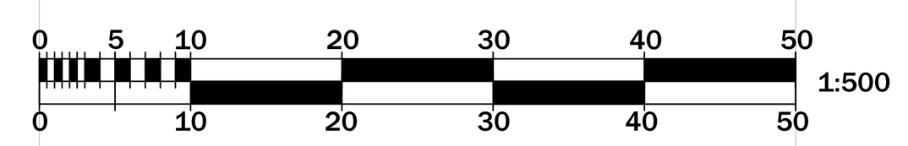
Title

TOPOGRAPHICAL SURVEY AS OF 22.08.19 SHEET 2 OF 4

GLADMAN
Gladman House, Alexandria Way
Congleton Business Park
Congleton, Cheshire
CW12 1LB
Tel: 01260 288800
Fax: 01260 288801
www.gladman.co.uk

Drawn By	Publish Date	Scale(s)	Sheet Size
JW/JH	03.09.19	1:500	A0

Project no.	Drawing no.	Revision
2019-070	Topo_02_2D	D



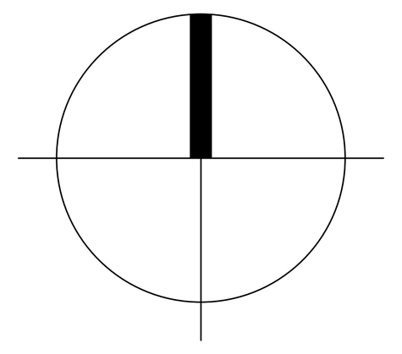
TREE SCHEDULE

No.	DIAM.	SPREAD Ø	HEIGHT
TE/1	2.10	14	9
TE/2	1.10	16	19
TE/3	0.75	16	25
TE/4	0.60	14	25
TE/5	0.40	8	10
TE/6	0.80	12	10
TE/7	0.60	15	15
TE/8	0.80	12	12
TE/9	0.70	4	7
TE/10	0.50	14	14
TE/11	0.50	14	14
TE/12	0.50	14	14
TE/13	0.55	14	14
TE/14	0.55	14	14
TE/15	0.80	10	14
TE/16	0.50	14	12
TE/17	1.00	16	14
TE/18	0.60	10	10
TE/19	0.30	6	4
TE/20	0.85	20	18
TE/21	0.40	4	4
TE/22	0.30	4	6
TE/23	0.30	4	6
TE/24	0.30	6	4
TE/25	0.40	6	6
TE/26	0.90	18	16
TE/27	1.10	12	16
TE/28	0.40	10	6
TE/29	0.40	10	6
TE/30	0.30	8	4
TE/31	0.40	8	6
TE/32	0.40	8	6
TE/33	1.00	16	14
TE/34	0.50	6	8
TE/35	0.50	6	8
TE/36	0.40	6	8
TE/37	0.30	6	8
TE/38	0.60	8	6
TE/39	0.50	12	12
TE/40	0.50	12	12
TE/41	1.85	16	18
TE/42	1.30	20	18
TE/43	0.20	6	5
TE/44	0.85	14	18
TE/45	0.60	8	8
TE/46	0.90	20	20
TE/47	0.70	14	16
TE/48	0.40	10	12
TE/49	0.40	10	12
TE/50	0.60	14	12
TE/51	0.50	16	16
TE/52	0.60	18	12
TE/53	0.40	8	8
TE/54	0.45	16	16
TE/55	0.30	10	12
TE/56	0.40	14	12
TE/57	0.40	16	12
TE/58	0.60	7	10
TE/59	0.40	10	14
TE/60	0.45	16	14
TE/61	0.25	10	10
TE/62	1.00	20	18
TE/63	0.60	17	18
TE/64	0.50	12	16
TE/65	0.50	8	12
TE/66	0.20	8	10
TE/67	1.20	14	18
TE/68	0.50	12	16
TE/69	0.50	12	16
TE/70	1.00	16	22
TE/71	0.40	10	12
TE/72	1.00	19	22
TE/73	0.80	24	22
TE/74	0.40	10	12
TE/75	0.80	18	18
TE/76	0.30	10	14
TE/77	0.60	14	16
TE/78	0.70	14	18
TE/79	0.70	14	18
TE/80	0.40	10	16
TE/81	0.20	8	8
TE/82	1.60	24	18
TE/83	0.35	12	18
TE/84	0.60	18	18
TE/85	0.50	18	16
TE/86	0.15	8	8
TE/87	0.45	16	18
TE/88	0.20	8	10
TE/89	0.40	16	16
TE/90	0.70	18	18
TE/91	0.40	16	16
TE/92	0.25	10	10
TE/93	1.20	20	20
TE/94	0.85	20	20
TE/95	1.20	20	18
TE/96	0.85	14	18
TE/97	0.70	18	18
TE/98	0.70	18	18
TE/99	0.60	16	16

TREE SCHEDULE

No.	DIAM.	SPREAD Ø	HEIGHT
TE/100	0.70	16	16
TE/101	0.50	16	16
TE/102	0.70	16	16
TE/103	0.50	16	16
TE/104	0.55	16	16
TE/105	0.40	16	16
TE/106	0.50	12	14
TE/107	0.70	6	10
TE/108	0.70	6	10
TE/109	0.30	6	8
TE/110	0.30	6	8
TE/111	1.30	18	20
TE/112	0.90	16	22
TE/113	1.10	16	16
TE/114	0.50	10	16
TE/115	0.50	10	16
TE/116	0.70	12	18
TE/117	0.50	10	12
TE/118	1.20	20	24
TE/119	0.90	18	24
TE/120	0.90	22	24
TE/121	0.50	10	12
TE/122	0.90	22	16
TE/123	0.75	14	16
TE/124	0.80	22	16
TE/125	0.90	22	16
TE/126	0.40	6	6
TE/127	1.30	20	11
TE/128	1.30	20	20
TE/129	0.40	8	8
TE/130	0.50	12	10
TE/131	0.60	16	14
TE/132	0.75	18	16
TE/133	0.90	20	14
TE/134	0.30	10	10
TE/135	0.20	6	8
TE/136	0.30	8	8
TE/137	2.00	20	16
TE/138	1.30	20	16
TE/139	1.50	18	12
TE/140	0.35	12	5
TE/141	1.00	14	7
TE/142	0.65	16	14
TE/143	0.35	12	12
TE/144	0.40	14	12
TE/145	0.40	14	18
TE/146	0.40	8	8
TE/147	0.30	10	10
TE/148	0.45	16	18
TE/149	0.30	8	10
TE/150	0.30	8	10
TE/151	0.60	18	18
TE/152	0.60	18	18
TE/153	0.20	6	6
TE/154	0.70	20	20
TE/155	0.50	10	18
TE/156	0.90	14	12
TE/157	0.30	8	10
TE/158	0.40	8	10
TE/159	0.90	16	18
TE/160	0.30	8	10
TE/161	0.45	12	18
TE/162	0.40	8	12
TE/163	0.80	20	20
TE/164	0.60	16	18
TE/165	0.30	8	8
TE/166	0.30	8	8
TE/167	0.40	8	8
TE/168	0.30	8	10
TE/169	0.15	6	8
TE/170	0.15	6	8
TE/171	0.30	16	18
TE/172	0.55	20	16
TE/173	0.40	8	8
TE/174	0.80	16	16
TE/175	0.80	24	18
TE/176	0.50	16	18
TE/177	0.40	16	18
TE/178	0.20	8	16
TE/179	0.20	8	16
TE/180	0.20	8	16
TE/181	0.30	12	16
TE/182	0.30	12	16
TE/183	0.30	12	16
TE/184	0.20	12	16
TE/185	0.40	14	16
TE/186	0.50	16	16
TE/187	1.00	22	22
TE/188	0.75	18	18
TE/189	0.45	16	16
TE/190	0.30	10	10
TE/191	0.20	6	6
TE/192	0.30	8	8
TE/193	0.20	6	8

TREE DIAMETER MEASURED APPROXIMATELY 1.5M ABOVE GROUND LEVEL. TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE GENERALISED CANOPY SIZE. TREE BOLE MAY NOT SIT CENTRALLY TO THE CANOPY. TREE HEIGHT ESTIMATED FROM GROUND LEVEL.



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TREE (INDICATIVE ONLY)
HEDGE/AREA OF UNDERGROWTH
99.90 CONTOUR
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FENCE
1 PHOTOGRAPH LOCATION AND NUMBER
APPROXIMATE CULVERT/BRIDGE OPENING

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STATION CO-ORDINATES

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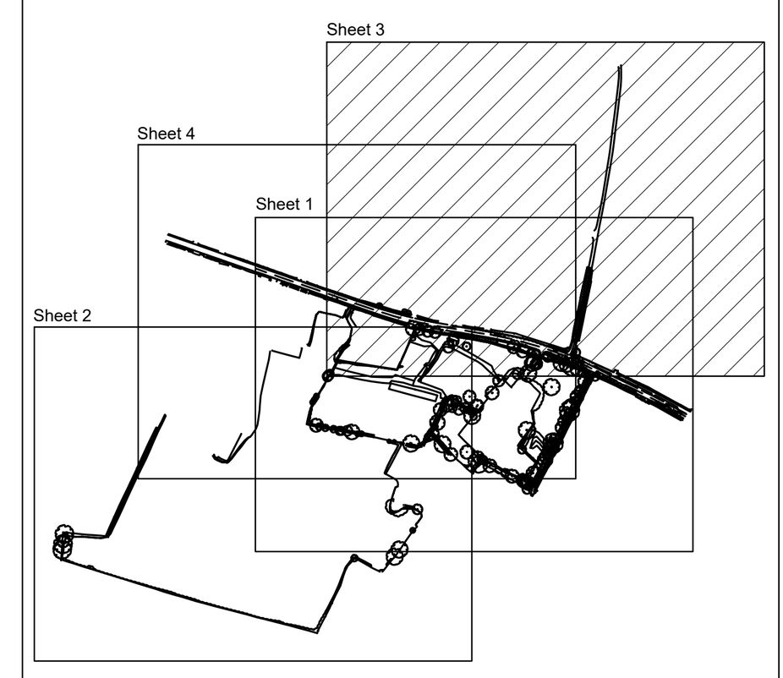
PLOT LOCATIONS



*	*	*	*
D	24.06.24	Pond and ditch measured.	JW
C	24.05.23	Extend Ashford Rd to the west.	JW
B	02.11.22	Moorstock Lane north to stream	JW
A	16.06.21	Additional field surveyed.	JW
Rev	Date	Revision notes	By

DO NOT SCALE

Status

INFORMATION

Project

Ashford Road, Sellindge.

Title

TOPOGRAPHICAL SURVEY
AS OF 22.08.19
SHEET 3 OF 4

GLADMAN
Gladman House, Alexandria Way
Congleton Business Park
Congleton, Cheshire
CW12 1LB
Tel: 01260 288800
Fax: 01260 288801
www.gladman.co.uk

Drawn By	Publish Date	Scale(s)	Sheet Size
JW/JH	03.09.19	1:500	A0

Project no.	Drawing no.	Revision
2019-070	Topo_03_2D	D

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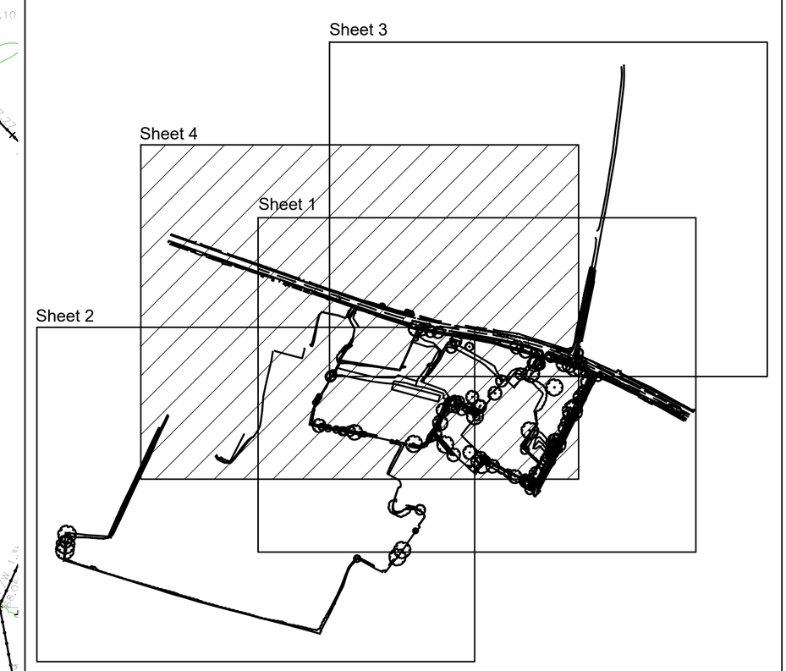
DK	DROPPED KERB	SpL	SPRINGING LEVEL
DP	DOWNPIPE	SV	STOP VALVE
EiP	ELECTRIC INLET POINT	Tac	TACTILE PAVING
EL	ELECTRIC INSPECTION COVER	TCB	TELEPHONE BOX
EP	ELECTRICITY SUPPLY POLE	TE/?	TREE + NUMBER
ER	EARTH ROD	THL	THRESHOLD LEVEL
FH	FIRE HYDRANT	TL	TRAFFIC LIGHT
G	GULLY	ToF	TOP OF FENCE
G/DP	GULLY AND DOWNPIPE	ToW	TOP OF WALL
GP	GATE POST	TP	TELEPHONE POLE
Gpi	GAS PIPE	W/M	WIRE MESH FENCE
GV	GAS VALVE	W/P	WOODEN PANEL FENCE
IC	INSPECTION CHAMBER	WLV	WATER LEVEL
IL	INVERT LEVEL	WM	WATER METER
I/R	IRON RAILING FENCE	WO	WASH OUT
KO	KERB OUTLET		

STATION CO-ORDINATES

STATION	EASTING	NORTHING	LEVEL	DESCRIPTION
STN/2	609929.00	138309.51	66.88	Survey Nail
STN/9	610054.05	138106.91	68.00	Survey Nail
STN/10	610068.78	138119.44	67.69	Survey Nail
STN/50	609821.87	138332.51	66.04	Survey Nail
STN/51	610074.31	138270.07	66.92	Survey Nail
STN/52	610103.82	138257.47	66.70	Survey Nail
STN/53	610135.52	138253.17	66.67	Survey Nail
STN/200	610132.85	138385.70	65.11	Survey Nail
STN/201	610150.75	138503.50	63.62	Survey Nail
STN/203	609792.05	138352.94	65.83	Survey Nail
STN/300	609618.79	138412.96	64.48	Survey Nail
STN/301	609525.44	138445.14	63.93	Survey Nail

PLOT LOCATIONS



*	*	*	*
D	24.06.24	Pond and ditch measured.	JW
C	24.05.23	Extend Ashford Rd to the west.	JW
B	02.11.22	Moorstock Lane north to stream	JW
A	16.06.21	Additional field surveyed.	JW
Rev	Date	Revision notes	By

DO NOT SCALE

Status

INFORMATION

Project

Ashford Road, Sellindge.

Title

TOPOGRAPHICAL SURVEY
AS OF 22.08.19
SHEET 4 OF 4

GLADMAN
Gladman House, Alexandria Way
Congleton Business Park
Congleton, Cheshire
CW12 1LB
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Drawn By	Publish Date	Scale(s)	Sheet Size
JW/JH	03.09.19	1:500	A0

Project no.	Drawing no.	Revision
2019-070	Topo_04_2D	D

Rev	Date	By	Description
N	13.03.24	RC	DRAINAGE AMENDMENTS
M	08.11.23	RC	MINOR TEXT AMENDMENTS

CSA environmental

Dixies Barns, High Street,
Ashwell, Hertfordshire SG7 5NT

t 01462 743647
e ashwell@csaenvironmental.co.uk
w csaenvironmental.co.uk

Project	Land at Potten Farm, Sellindge
Title	Development Framework Plan
Client	Gladman Developments Ltd

Scale	1:2000 @ A2	Drawn	RC
Date	Nov 2022	Checked	RR
Drawing No.	CSA/5622/115	Rev	N

Legend

Minimum Foundation Depths due to Existing Tree Influence

- Max ZOI
- 1.0m
- 1.5m
- 2.0m
- 2.5m

Foundation Zones

- 100 kPa at 1.0 m bgl.
- 100 kPa at 2.0 m bgl.
- Foundations >2.0 m bgl (pile).

Notes
Additional deepening will be required for new foundations within the zone of influence of existing trees.

Zone of Influence from trees based on the Arboricultural Impact Assessment Report (Ref: CSA/4509/14 dated June 2024. IDOM takes no responsibility for inaccuracies in this preliminary plan as a result of errors in third-party reports. Where tree heights are recorded to be 0 m, these have not been included as part of the tree influence assessment. Where the tree species is ambiguous i.e. "Chestnut-leaved oak" or "Zelkova" judgement has been made to base the tree species and water demand from the most likely worst-case species identified in Table 3 of NHBC Standards Chapter 4.2. Individual Trees and Tree Groups are based on the mature height or actual height of imature species in accordance with Table 3a of NHBC Standards Chapter 4.2; however, the mature tree height has been assumed for hedgerows because these the may have been cut.

Rev A: Tree influence and update to allowable bearing pressures	17/03/2025		-
	CMM	CMM	CMM
First Issue	05/03/2025		-
	CMM	CMM	CMM
Issue Details	Dwn	Chd	App'd

Client
GLADMAN

Project
Grove House

Dwg Title
Preliminary Foundation Zone Plan

Drawing No. 22653h-311-001		Revision A
Scale 1:1,000	Date 17/03/2025	Frame dimension mm (A3) 392 x 277
Drawn CMM	Checked CMM	Approved CMM

IDOM
Cromford Mills, Mill Lane, Matlock, Derbyshire DE4 3RQ
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APPENDIX 2 ▪ Radon Potential Dataset Mapping

Groundsure
LOCATION INTELLIGENCE

Radon Check

Grove House, Ashford Road, Sellindge, Kent

Professional opinion

POTENTIAL RISK

Site plan

Search results

In a radon affected area

The property is in a radon affected area. This could mean that inhabitants are at risk from the harmful effects of radon.

The percentage of homes estimated to be affected by radon in your local area is between 5% and 10%.

Please see **page 3 >**

Useful contacts

UK Health Security Agency (UKHSA) / UKRadon
Radon Survey
Chemical, Radiation and Environmental Hazards
Chilton, Didcot
Oxon
OX11 0RQ
https://www.ukradon.org/ ↗

UK Radon Association
http://www.radonassociation.co.uk/ ↗

Overview of findings and recommendations

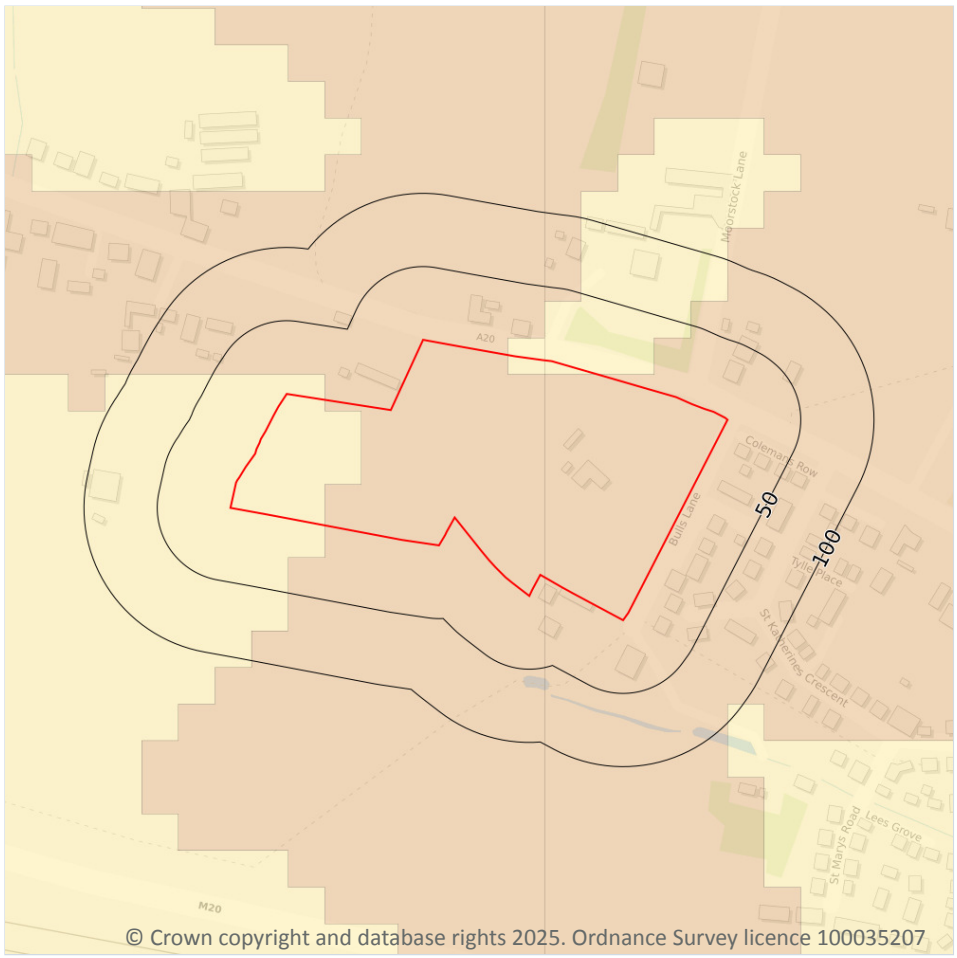
Radon

The property is in an area where elevated radon levels are expected to be found in 5-10% of properties.

Next steps for consideration:

- If the property was constructed after 2008 radon protection measures may have been installed during construction. We recommend checking with the Building Control department at the local authority to determine this;
- Enquire with the seller if they have completed a 3 month radon test and what the results were. If they have not had one completed, carry out a radon test at the property. The most accurate testing kits run for 3 months and can be obtained from UK Radon https://www.ukradon.org/services/orderdomestic ↗;
- Further information is available here https://knowledge.groundsure.com/searches-radon ↗.

Radon



The property is in a radon affected area, meaning there is an increased risk that properties will contain elevated levels of radon.

In order to determine if there is a problem at your property, a radon measurement in the building must be taken. Access to a testing service and further information on radon is available from UK Health Security Agency (UKHSA) or www.ukradon.org ↗.

Radon is a colourless, odourless radioactive gas present in all areas of the United Kingdom, usually at levels that pose a negligible risk. However, the property is situated in an area where levels of radon can be much higher and pose a health risk. High levels of radon can cause lung cancer, particularly for smokers and ex-smokers. The higher the level and the longer the period of exposure, the greater the risk.

Please see **page 2 >** for further advice.

This data is sourced from the British Geological Survey/UK Health Security Agency.

Methodologies and limitations

Groundsure's methodologies and limitations are available here: knowledge.groundsure.com/methodologies-and-limitations ↗.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information in your Radon Check report. To find out who they are and their areas of expertise see www.groundsure.com/sources-reference ↗.

Conveyancing Information Executive and our terms & conditions

IMPORTANT CONSUMER PROTECTION INFORMATION

This search has been produced by Groundsure Ltd. Groundsure adheres to the Conveyancing Information Executive Standards.

In addition to The Property Ombudsman (TPO) redress scheme covering consumers, TPO will also provide redress to small businesses (including Charities and Trusts) and where the customer meets the following criteria:

- a small business (or group of companies) with an annual turnover of less than £3 million;
- a charity with an annual income of less than £3 million;
- a Trust with a net asset value of less than £3 million.

Complaints Advice

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure.

If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Standards.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs.

COMPLAINTS PROCEDURE: If you want to make a complaint, we will:

- acknowledge it within 5 working days of receipt
- normally deal with it fully and provide a final response, in writing, within 20 working days of receipt
- liaise, at your request, with anyone acting formally on your behalf

Complaints should be sent to:
Operations Director, Groundsure Ltd, Nile House, Nile Street, Brighton, BN1 1HW. Tel: 01273 257 755. Email: info@groundsure.com ↗ If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk ↗ We will co-operate fully with the Ombudsman during an investigation and comply with their final decision.

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APPENDIX 3 ▪ Risk Assessment Methodology

RISK ASSESSMENT METHODOLOGY (FOLLOWING CIRIA C552, 2001)

The potential sources of contamination at the site and the implications with respect to development have been interpreted in accordance with the current government guidance on source-pathway-receptor risk assessment.

The existence of a pollutant linkage requires a pathway by which the receptor could be exposed to the source.

Where a complete pollutant linkage is deemed to be present, the level of *risk* is then determined taking into account the *likelihood* of significant impact and the *severity* of potential impact using the following classification tables which broadly follow the method set out in CIRIA C552.

Table A1: Classification of Severity (or Consequence)

CLASSIFICATION	DEFINITION
Severe	Short term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short term risk of sensitive water resource. Catastrophic damage to buildings/property. A short term risk to a particular ecosystem or organism forming part of such ecosystem (note: the definitions of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources, significant change in a particular ecosystem or organism forming part of such ecosystem.
Mild	Pollution of non sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.
Minor	Harm, although not necessarily significant harm, which may result in a financial loss or expenditure to resolve. Non permanent health effects to human health (easily prevented by means such as personal protective clothing, etc). Easily repairable effects of damage to buildings, structures and services.

Table A2: Classification of Likelihood (Probability)

CLASSIFICATION	DEFINITION
High Likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

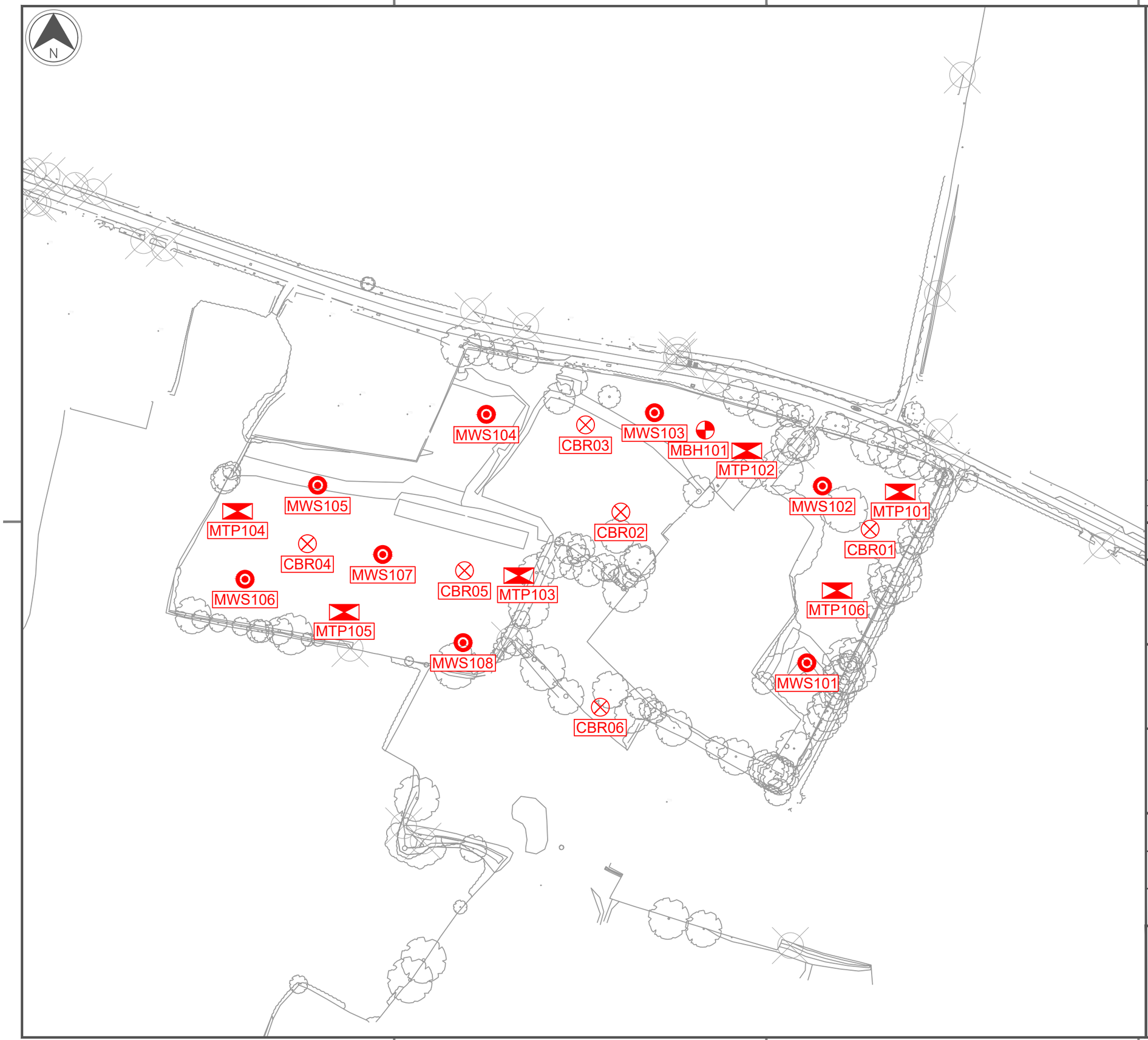
Table A3: Risk Estimation – Combination of Consequence and Probability(after CIRIA C552 and R&D66)

		MAGNITUDE OF POTENTIAL CONSEQUENCE (SEVERITY) OF RISK			
		SEVERE	**MEDIUM**	**MILD**	**MINOR**
LIKELIHOOD OF RISK	**HIGH LIKELIHOOD**	Very High Risk	High Risk	Moderate Risk	Low Risk
	LIKELY	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	LOW LIKELIHOOD	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	UNLIKELY	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table A4: Description of the Classified Risks and Likely Reaction Required

CLASSIFICATION	DEFINITION
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the long term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

APPENDIX 4 ▪ Site Investigation Location Plan



NOTES

MBHref — Merebrook borehole with location reference

MTPref — Merebrook trial pit with location reference

MWSref — Merebrook window sample with location reference

CBRref — Californian bearing ratio test with location reference

DESCRIPTION	DATE	DWN	CHD	APP'D	REV
FIRST ISSUE	06/02/25	CW	AB	AB	-

ISSUE PURPOSE: PRELIMINARY

CLIENT: GLADMAN

PROJECT: GROVE HOUSE

DWG TITLE: EXPLORATORY HOLE LOCATION PLAN

DWG NO.: 22653h-303-001

SCALE	DATE	FRAME DIMS (mm)
N.T.S	FEBRUARY 2025	(A3) 420 x 297

DRAWN	CHECKED	APPROVED
CW	AB	AB

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Registered Office: Cromford Mills, Mill Lane, Matlock, Derbyshire, DE4 3RQ
Website: www.merebrook.co.uk **t**: +44(0)1773 829 988 **e**: info.derbyshire@idom.com

\\derby\projects\Jobs 22500-22999\22653 Gladman General\22653h Grove House\4.0 Project Documents\4.1 Drawings\Merebrook\22653-303-001.dwg

APPENDIX 5 ▪ Exploratory Hole Logs

Rotary Core Log

Project Name: Grove House	Client: Gladman	Date: 24/01/2025 - 28/01/2025
Location: Main Road, Sellindge, Kent	Contractor:	Co-ords: E610020.77 N138263.43
Project No. : 22653H	Crew Name: Marshall Drilling	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
MBH101	CP+RC		Ben Alexander	1:50	Sheet 1 of 2

Well	Depth (m)	Type / FI	Coring TCR	Coring SCR	Coring RQD	Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	D					0.20			[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
						(2)				Soft brown mottled grey slightly sandy silty CLAY. Sand is fine [Sandgate Formation]
	1.50	D	100	0	0					*Becomes grey mottled brown and orange brown from 0.4m.*
			100	0	0		2.00			Greenish grey mottled orange brown clayey SAND with occasional sandy clay lenses. Sand is fine [Sandgate Formation]
	2.50	D					2.60			Stiff grey sandy CLAY [Sandgate Formation]
			90	0	0	(36)	3.20			Very dense, grey clayey fine SAND [Sandgate Formation]
						(50)				
	4.00	D								
			73	0	0		4.90			Stiff grey silty slightly sandy CLAY with clayey and silty fine sand lenses. Sand is fine [Sandgate Formation]
	5.00	D								
						(35)				
	6.00	D	73	0	0					
						(47)				*No recovery from 7.0 to 7.80m, likely washed out sand.*
			47	0	0					
	8.00	D								
						(49)				
	9.00	D	100	0	0					
	10.00	D								

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

Rotary Core Log

Project Name: Grove House	Client: Gladman	Date: 24/01/2025 - 28/01/2025
Location: Main Road, Sellindge, Kent	Contractor:	Co-ords: E610020.77 N138263.43
Project No. : 22653H	Crew Name: Marshall Drilling	Drilling Equipment:

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
MBH101	CP+RC		Ben Alexander	1:50	Sheet 2 of 2

Well	Depth (m)	Type / FI	Coring TCR	Coring SCR	Coring RQD	Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description
			60	0	0					Stiff grey silty slightly sandy CLAY with clayey and silty fine sand lenses. Sand is fine [Sandgate Formation]
	11.50 - 12.30	B	75	58	58		11.50			Moderately weak greenish grey fine grained SANDSTONE with shell fragments. Very closely to closely spaced undulating fractures (Min = 5cm, Max = 63cm, Average 26cm) at 80 to 90 degrees [Sandgate Formation]
										Strong grey shelly LIMESTONE from 12.90 to 13.0m.
										Becomes grey and strong or greater from 13.20m.
	14.00 - 14.40	U	87	76	67					*Infilled fracture with soft grey slightly sandy clay at 13.80 to 13.90m.*
	15.20 - 15.50	U	95	89	89					
										Infilled fracture with soft grey slightly sandy clay at 16.1 to 16.2m.
	16.80 - 17.20	U	90	73	66					
	17.50 - 18.50	B	100	47	30					*Fractured and non intact zone from 17.5 to 18.6m.*
			97	97	72		19.30			End of Borehole at 19.30m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)

Remarks

Trial Pit Log

Project Name: Grove House	Client: Gladman	Date: 23/01/2025
Location: Main Road, Sellindge, Kent	Contractor:	Co-ords: E609998.60 N138271.33
Project No. : 22653H	Crew Name: Tara Plant Hire	Equipment: JCB

Location Number	Location Type	Level	Logged By	Scale	Page Number
MTP101	TP		Ben Alexander	1:20	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
					0.30			Soft orange brown mottled grey slightly sandy CLAY. Sand is fine to medium [Head deposits]
		1.00 1.00	B HV	HVP=30 kPa				
					1.50			Soft orange brown mottled grey sandy CLAY. Sand is fine to medium [Sandgate Formation]
					1.80			Orange brown mottled grey clayey fine to medium SAND [Sandgate Formation]
		2.00	B					*Becomes greyish brown and no longer clayey from 2.1m.*
	▼	2.90	B					
					3.00			End of Borehole at 3.00m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.40	0.45	Collapsing at 2.80m					

Remarks

Trial Pit Log

Project Name: Grove House	Client: Gladman	Date: 23/01/2025
Location: Main Road, Sellindge, Kent	Contractor:	Co-ords: E609925.82 N138270.84
Project No. : 22653H	Crew Name:	Equipment: JCB

Location Number	Location Type	Level	Logged By	Scale	Page Number
MTP102	TP		Ben Alexander	1:20	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
		0.60	HV	HVP=40 kPa				Soft orange brown slightly sandy CLAY [Head deposits]
		1.00	B					
		1.00	HV	HVP=60 kPa				
					1.40			Very soft greenish grey sandy CLAY with clayey sand horizons. Sand is fine to medium [Sandgate Formation]
					2.10			Firm grey mottled orange brown sandy silty CLAY. Sand is fine to medium [Sandgate Formation]
		2.20	B					
		2.30	HV	HVP=75 kPa				
					2.60			Greyish brown fine to medium SAND [Sandgate Formation]
	▼	2.80	B					
					3.00			End of Borehole at 3.00m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.50	0.45	Collasing at 2.9					

Remarks

Trial Pit Log

Project Name: Grove House	Client: Gladman	Date: 23/01/2025
Location: Main Road, Sellindge, Kent	Contractor:	Co-ords: E609853.00 N138240.10
Project No. : 22653H	Crew Name: Tara Plant Hire	Equipment: JCB

Location Number	Location Type	Level	Logged By	Scale	Page Number
MTP103	TP		Ben Alexander	1:20	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
					0.50			Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to medium, sub angular of flint [Head deposits]
		1.00 1.00	B HV	HVP=30 kPa				
	▼	2.00 2.00	B HV	HVP=35 kPa				
					2.20			End of Borehole at 2.20m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.50	0.45	Stable					

Remarks

Trial Pit Log

Project Name: Grove House	Client: Gladman	Date: 23/01/2025
Location: Main Road, Sellindge, Kent	Contractor:	Co-ords: E609821.39 N138199.47
Project No. : 22653H	Crew Name: Tara Plant Hire	Equipment: JCB

Location Number	Location Type	Level	Logged By	Scale	Page Number
MTP104	TP		Ben Alexander	1:20	Sheet 1 of 1

Well	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.40			[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
	0.80	HV	HVP=60 kPa				Firm grey mottled orange brown slightly sandy CLAY with clayey sand and sandy clay horizons. Sand is fine to medium [Sandgate Formation]
	1.20	B					
	1.20	HV	HVP=80 kPa				
	2.20	B					
	2.30	HV	HVP=70 kPa	2.30			End of Borehole at 2.30m

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.50	0.45	Stable					

Remarks

Trial Pit Log

Project Name: Grove House	Client: Gladman	Date: 23/01/2025
Location: Main Road, Sellindge, Kent	Contractor:	Co-ords: E609880.78 N138210.09
Project No. : 22653H	Crew Name: Tara Plant Hire	Equipment: JCB

Location Number	Location Type	Level	Logged By	Scale	Page Number
MTP105	TP		Ben Alexander	1:20	Sheet 1 of 1

Well	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.40			[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
	0.80	HV	HVP=70 kPa				Firm grey mottled orange brown slightly sandy silty CLAY. Sand is fine to medium [Sandgate Formation]
	1.30	B					
	2.20	HV	HVP=80 kPa				
	2.30	B					
				2.70			Stiff friable grey sandy CLAY with clayey sand horizons. Sand is fine to medium [Sandgate Formation]
	3.00	B					
				3.10			End of Borehole at 3.10m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.60	0.45	Stable					

Remarks

Trial Pit Log

Project Name: Grove House	Client: Gladman	Date: 23/01/2025
Location: Main Road, Sellindge, Kent	Contractor:	Co-ords: E609915.60 N138172.14
Project No. : 22653H	Crew Name: Tara Plant Hire	Equipment: JCB

Location Number	Location Type	Level	Logged By	Scale	Page Number
MTP106	TP		Ben Alexander	1:20	Sheet 1 of 1

Well	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.30			[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
	0.80	HV	HVP=35 kPa				Soft grey mottled orange brown slightly sandy CLAY. Sand is fine to medium [Head deposits]
	1.20	B					
	1.30	HV	HVP=60 kPa				
				1.40			Soft greenish grey sandy CLAY with clayey sand horizons. Sand is fine to medium [Sandgate Formation]
				1.60			Soft brown mottled orange brown sandy CLAY. Sand is fine to medium [Sandgate Formation]
	2.40	B					
	2.40	HV	HVP=50 kPa				
				2.80			Orange brown mottled grey fine to medium clayey SAND.
	2.90	B					
							Becomes greeish grey from 3.3m.
	3.40	B					
				3.50			End of Borehole at 3.50m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.60	0.45	Stable					

Remarks

IDOM

Borehole Log

Borehole No. MWS101

Project Name: Grove House	Client: Gladman	Date: 21/01/2025
Location: Main Road, Sellindge, Kent	Contractor: 3D Drilling	Co-ords: E610104.98 N138236.91
Project No: 22653H	Weather:	Drilling Equipment:

Logged By	Checked By	Level	Hole Type	Scale	Page Number
Ben Alexander	CMM		WLS	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
					0.30			
		0.40	ES					Soft brown mottled orange brown slightly sandy CLAY. Sand is fine to medium. [Head deposits]
		0.50	D					
		1.00	SPT	N=7 (1,1/2,1,2,2)				
		1.50	D					
	▼				1.90			
		2.00	SPT	N=13 (2,3/4,3,3,3)				Medium dense, greyish brown and orange brown fine to medium SAND [Sandgate Formation]
								Becomes clayey sand from 2.0m.
		2.50	D					
					2.60			Soft brown and greyish brown sandy CLAY. Sand is fine to medium [Sandgate Formation]
					2.90			
		3.00	SPT	N=17 (5,5/5,4,4,4)				Medium dense, greenish grey fine to medium SAND [Sandgate Formation]
		3.50	D					
					3.80			Firm brown sandy CLAY. Sand is fine to medium [Sandgate Formation].
		4.00	SPT	N=30 (15 for 75mm/7,7,8,8)	4.00			End of Borehole at 4.00m

1 2 3 4 5 6

Casing Details		
Diameter	Top (m bgl)	Base (m bgl)

Chiselling Details		
Top (m bgl)	Base (m bgl)	Duration (mins)

Legend

HVP = Hand Vane Peak (kPa)
PP = Pocket Penetrometer (kg cm2)
PID = Photoionisation detector (ppm)
D = Small Disturbed Sample (tub)
J = Organic Sample (amber glass jar)
V = Volatile Sample (amber glass vial)
B = Bulk Bag Sample
SPT(C) = Standard Penetration Test (cone)
SPT(S) = Standard Penetration Test (split spoon)
U = Undisturbed Sample

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Groundwater Details		
Depth Strike (m bgl)	Depth Rose (m bgl)	Time Elapsed (mins)

IDOM

Borehole Log

Borehole No. MWS102

Project Name: Grove House	Client: Gladman	Date: 21/01/2025
Location: Main Road, Sellindge, Kent	Contractor: 3D Drilling	Co-ords: E610038.32 N138254.71
Project No: 22653H	Weather:	Drilling Equipment:

Logged By	Checked By	Level	Hole Type	Scale	Page Number
Ben Alexander	CMM		WLS	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
		0.30	ES		0.25			Soft Brown mottled orange brown CLAY [Head deposits]
		0.50	D					
		1.00	SPT	N=9 (2,1/1,3,2,3)				
					1.20			Soft to firm greenish grey and orange brown sandy CLAY [Sandgate Formation]
		1.50	ES					
		2.00	SPT	N=14 (0,2/2,3,4,5)	2.00			Firm grey and orange brown slightly sandy CLAY. Sand is fine to medium [Sandgate Formation]
	▼	2.50	D					
					2.70			Grey and orange brown fine to medium SAND [Sandgate Formation]
		3.00	SPT	N=20 (3,4/5,4,5,6)				
					3.10			Firm grey slightly sandy CLAY. Sand is fine to medium [Sandgate Formation]
					3.30			Very dense brown clayey fine to medium SAND [Sandgate Formation]
		3.50	D					
		3.70	SPT	N=50 (9,10/50 for 295mm)	3.70			End of Borehole at 3.70m

1 2 3 4 5 6

Casing Details		
Diameter	Top (m bgl)	Base (m bgl)

Chiselling Details		
Top (m bgl)	Base (m bgl)	Duration (mins)

Legend

HVP = Hand Vane Peak (kPa)
PP = Pocket Penetrometer (kg cm2)
PID = Photoionisation detector (ppm)
D = Small Disturbed Sample (tub)
J = Organic Sample (amber glass jar)
V = Volatile Sample (amber glass vial)
B = Bulk Bag Sample
SPT(C) = Standard Penetration Test (cone)
SPT(S) = Standard Penetration Test (split spoon)
U = Undisturbed Sample

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Groundwater Details		
Depth Strike (m bgl)	Depth Rose (m bgl)	Time Elapsed (mins)

IDOM

Borehole Log

Borehole No. MWS103

Project Name: Grove House	Client: Gladman	Date: 21/01/2025
Location: Main Road, Sellindge, Kent	Contractor: 3D Drilling	Co-ords: E609939.69 N138200.88
Project No: 22653H	Weather:	Drilling Equipment:

Logged By	Checked By	Level	Hole Type	Scale	Page Number
Ben Alexander	CMM		WLS	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
		0.40	ES		0.30			Soft orange brown and grey slightly sandy CLAY. Sand is fine to medium [Head deposits].
	▼	1.00	SPT	N=0 (0,0/0,0,0,0)	1.00			Soft greenish grey and orange brown sandy CLAY [Sandgate Formation]
		1.50	D					
		2.00	SPT	N=12 (2,2/2,3,3,4)				
		2.50	D					
		3.00	SPT	N=22 (3,4/5,5,7,5)	2.80			Medium dense, grey and brown fine to medium clayey SAND
		3.50	D		3.40			Firm grey and brown CLAY [Sandgate Formation]
		3.70	SPT	N=50 (25 for 85mm/50 for 145mm)	3.70			End of Borehole at 3.70m

1 2 3 4 5 6

Casing Details		
Diameter	Top (m bgl)	Base (m bgl)

Chiselling Details		
Top (m bgl)	Base (m bgl)	Duration (mins)

Legend

HVP = Hand Vane Peak (kPa)
PP = Pocket Penetrometer (kg cm2)
PID = Photoionisation detector (ppm)
D = Small Disturbed Sample (tub)
J = Organic Sample (amber glass jar)
V = Volatile Sample (amber glass vial)
B = Bulk Bag Sample
SPT(C) = Standard Penetration Test (cone)
SPT(S) = Standard Penetration Test (split spoon)
U = Undisturbed Sample

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Groundwater Details		
Depth Strike (m bgl)	Depth Rose (m bgl)	Time Elapsed (mins)

IDOM

Borehole Log

Borehole No. MWS104

Project Name: Grove House	Client: Gladman	Date: 21/01/2025
Location: Main Road, Sellindge, Kent	Contractor: 3D Drilling	Co-ords: E609818.32 N138228.79
Project No: 22653H	Weather:	Drilling Equipment:

Logged By	Checked By	Level	Hole Type	Scale	Page Number
Ben Alexander	CMM		WLS	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.10	ES					[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
					0.30			Brown slightly sandy CLAY [Head deposits]
		0.60	ES					
		1.00	D		1.00			Soft to firm brown mottled orange brown slightly sandy CLAY. Sand is fine to medium [Sandgate Formation]
		1.00	SPT	N=6 (0,0/2,1,2,1)				
		2.00	D					
		2.00	SPT	N=12 (2,2/3,2,3,4)				
		3.00	D					
		3.00	SPT	N=7 (2,1/2,2,1,2)				
		4.00	SPT	N=14 (4,4/4,3,3,4)	4.00			End of Borehole at 4.00m

1 2 3 4 5 6

Casing Details		
Diameter	Top (m bgl)	Base (m bgl)

Chiselling Details		
Top (m bgl)	Base (m bgl)	Duration (mins)

Legend

HVP = Hand Vane Peak (kPa)
PP = Pocket Penetrometer (kg cm2)
PID = Photoionisation detector (ppm)
D = Small Disturbed Sample (tub)
J = Organic Sample (amber glass jar)
V = Volatile Sample (amber glass vial)
B = Bulk Bag Sample
SPT(C) = Standard Penetration Test (cone)
SPT(S) = Standard Penetration Test (split spoon)
U = Undisturbed Sample

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Groundwater Details		
Depth Strike (m bgl)	Depth Rose (m bgl)	Time Elapsed (mins)

IDOM

Borehole Log

Borehole No. MWS105

Project Name: Grove House	Client: Gladman	Date: 21/01/2025
Location: Main Road, Sellindge, Kent	Contractor: 3D Drilling	Co-ords: E609864.25 N138185.19
Project No: 22653H	Weather:	Drilling Equipment:

Logged By	Checked By	Level	Hole Type	Scale	Page Number
Ben Alexander	CMM		WLS	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
					0.30			Soft brown mottled orange brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium of flint and sandstone [Head deposits]
		0.50	D					
		1.00	SPT	N=10 (2,1/1,3,3,3)				*Becomes gravelly from 0.9 to 1.2m.* *Becomes firm from 1.0m.*
					1.20			Firm grey mottled orange brown sandy CLAY. Sand is fine to medium. [Sandgate Formation]
		1.50	D					
		2.00	SPT	N=8 (1,2/1,2,2,3)				*Becomes from to stiff from 2.0m.*
		2.50	D					*Disturbed sample at 2.5m is clayey SAND.*
		3.00	SPT	N=24 (7,6/4,5,8,7)				
		3.50	D					
		4.00	SPT	N=20 (3,4/4,5,5,6)	4.00			End of Borehole at 4.00m

1 2 3 4 5 6

Casing Details		
Diameter	Top (m bgl)	Base (m bgl)

Chiselling Details		
Top (m bgl)	Base (m bgl)	Duration (mins)

Legend

HVP = Hand Vane Peak (kPa)
PP = Pocket Penetrometer (kg cm2)
PID = Photoionisation detector (ppm)
D = Small Disturbed Sample (tub)
J = Organic Sample (amber glass jar)
V = Volatile Sample (amber glass vial)
B = Bulk Bag Sample
SPT(C) = Standard Penetration Test (cone)
SPT(S) = Standard Penetration Test (split spoon)
U = Undisturbed Sample

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Groundwater Details		
Depth Strike (m bgl)	Depth Rose (m bgl)	Time Elapsed (mins)

IDOM

Borehole Log

Borehole No. MWS106

Project Name: Grove House	Client: Gladman	Date: 21/01/2025
Location: Main Road, Sellindge, Kent	Contractor: 3D Drilling	Co-ords: E610077.19 N138194.18
Project No: 22653H	Weather:	Drilling Equipment:

Logged By	Checked By	Level	Hole Type	Scale	Page Number
Ben Alexander	CMM		WLS	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of brick and flint.
					0.25			
		0.40	ES					Soft grey mottled orange brown slightly sandy CLAY. Sand is fine to medium [Head deposits]
		0.50	D					
		1.00	SPT	N=13 (1,1/2,3,4,4)				
		1.50	D					
					1.70			Grey and orange brown clayey fine to medium SAND [Sandgate Formation]
		2.00	SPT	N=14 (1,3/3,3,4,4)				
					2.10			Firm to stiff grey mottled orange brown sandy CLAY with bands of fine to medium clayey sand. Sand is fine to medium [Sandgate Formation].
		2.50	D					
		3.00	SPT	N=38 (2,6/10,10,10,8)				
		3.50	D					
		4.00	SPT	N=50 (10,11/50 for 260mm)	4.00			End of Borehole at 4.00m

1 2 3 4 5 6

Casing Details		
Diameter	Top (m bgl)	Base (m bgl)

Chiselling Details		
Top (m bgl)	Base (m bgl)	Duration (mins)

Legend

HVP = Hand Vane Peak (kPa)
PP = Pocket Penetrometer (kg cm2)
PID = Photoionisation detector (ppm)
D = Small Disturbed Sample (tub)
J = Organic Sample (amber glass jar)
V = Volatile Sample (amber glass vial)
B = Bulk Bag Sample
SPT(C) = Standard Penetration Test (cone)
SPT(S) = Standard Penetration Test (split spoon)
U = Undisturbed Sample

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Groundwater Details		
Depth Strike (m bgl)	Depth Rose (m bgl)	Time Elapsed (mins)

IDOM

Borehole Log

Borehole No. MWS107

Project Name: Grove House	Client: Gladman	Date: 21/01/2025
Location: Main Road, Sellindge, Kent	Contractor: 3D Drilling	Co-ords: E610064.24 N138163.24
Project No: 22653H	Weather:	Drilling Equipment:

Logged By	Checked By	Level	Hole Type	Scale	Page Number
Ben Alexander	CMM		WLS	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of brick and flint.
					0.30			
		0.40	ES					Soft to firm brown mottled orange brown slightly sandy CLAY. Sand is fine to medium [Head deposits]
		0.50	D					
		1.00	SPT	N=13 (2,2/3,4,3,3)				
					1.40			
		1.50	D					Stiff grey mottled orange brown slightly sandy CLAY with occasional clayey sand lenses. Sand is fine to medium [Sandgate Formation]
		2.00	SPT	N=17 (2,7/2,5,5,5)				
		2.50	D					
		3.00	SPT	N=25 (3,3/5,5,7,8)				
					4.00			End of Borehole at 4.00m

1 2 3 4 5 6

Casing Details		
Diameter	Top (m bgl)	Base (m bgl)

Chiselling Details		
Top (m bgl)	Base (m bgl)	Duration (mins)

Legend

HVP = Hand Vane Peak (kPa)
PP = Pocket Penetrometer (kg cm2)
PID = Photoionisation detector (ppm)
D = Small Disturbed Sample (tub)
J = Organic Sample (amber glass jar)
V = Volatile Sample (amber glass vial)
B = Bulk Bag Sample
SPT(C) = Standard Penetration Test (cone)
SPT(S) = Standard Penetration Test (split spoon)
U = Undisturbed Sample

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Groundwater Details		
Depth Strike (m bgl)	Depth Rose (m bgl)	Time Elapsed (mins)

IDOM

Borehole Log

Borehole No. MWS108

Project Name: Grove House	Client: Gladman	Date: 21/01/2025
Location: Main Road, Sellindge, Kent	Contractor: 3D Drilling	Co-ords: E610071.21 N138239.44
Project No: 22653H	Weather:	Drilling Equipment:

Logged By	Checked By	Level	Hole Type	Scale	Page Number
Ben Alexander	CMM		WLS	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES		0.20			[Topsoil] Soft brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub angular to sub rounded of flint.
		0.50	D					Soft brown mottled orange brown slightly sandy CLAY. Sand is fine to medium [Head deposits]
		1.00	SPT	N=8 (1,2/1,2,2,3)	1.00			Firm grey mottled orange brown slightly sandy CLAY. Sand is fine to medium [Sandgate Formation]
		1.50	D					
		2.00	SPT	N=12 (2,1/2,3,4,3)				
		2.50	D					
		3.00	SPT	N=30 (2,5/6,7,9,8)	3.00			End of Borehole at 3.00m

1 2 3 4 5 6

Casing Details		
Diameter	Top (m bgl)	Base (m bgl)

Chiselling Details		
Top (m bgl)	Base (m bgl)	Duration (mins)

Legend

HVP = Hand Vane Peak (kPa)
PP = Pocket Penetrometer (kg cm2)
PID = Photoionisation detector (ppm)
D = Small Disturbed Sample (tub)
J = Organic Sample (amber glass jar)
V = Volatile Sample (amber glass vial)
B = Bulk Bag Sample
SPT(C) = Standard Penetration Test (cone)
SPT(S) = Standard Penetration Test (split spoon)
U = Undisturbed Sample

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Groundwater Details		
Depth Strike (m bgl)	Depth Rose (m bgl)	Time Elapsed (mins)

APPENDIX 6

- Soil Chemistry
- Summary Spreadsheet
- Laboratory Analysis Certificates

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e: reception@i2analytical.com

Analytical Report Number : 25-003326

Project / Site name:	Grove	**Samples received on:**	23/01/2025
Your job number:	22653H	**Samples instructed on/ Analysis started on:**	27/01/2025
Your order number:	25-2-FDO-LABS	**Analysis completed by:**	03/02/2025
Report Issue Number:	1	**Report issued on:**	03/02/2025
Samples Analysed:	7 soil samples		

Signed:

Joanna Wawrzeczko
Senior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433730	433731	433732	433733	433734
Sample Reference				MWS101	MWS103	MWS104	MWS105	MWS106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10	0.10	0.60	0.10	0.10
Date Sampled				21/01/2025	21/01/2025	21/01/2025	21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	25	28	17	20	18
Total mass of sample received	kg	0.1	NONE	0.8	0.6	0.6	0.6	0.6
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU	SPU	SPU	SPU
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	5.9	6.6	9	5.9	6
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	22	18	6.8	21	24
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0112	0.0088	0.00342	0.0105	0.0121
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.2	8.8	3.42	10.5	12.1
Organic Matter (automated)	%	0.1	MCERTS	3.6	3.5	0.8	4.1	3.9
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.1	2.1	0.5	2.4	2.3
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.17	0.11	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.5	0.48	< 0.05	0.08	0.05
Pyrene	mg/kg	0.05	MCERTS	0.45	0.43	< 0.05	0.06	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.24	0.23	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.34	0.4	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.36	0.45	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.21	0.24	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.32	0.34	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.22	0.22	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.23	0.26	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.03	3.17	< 0.80	< 0.80	< 0.80

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433730	433731	433732	433733	433734
Sample Reference				MWS101	MWS103	MWS104	MWS105	MWS106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10	0.10	0.60	0.10	0.10
Date Sampled				21/01/2025	21/01/2025	21/01/2025	21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8	9.3	6.5	7.9	8.4
Barium (aqua regia extractable)	mg/kg	1	MCERTS	44	55	43	31	32
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	21	25	20	17	17
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	25	20	17	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	10	13	6.7	7.1	9
Lead (aqua regia extractable)	mg/kg	1	MCERTS	32	50	9.7	22	21
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	13	10	6.2	6.6
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	31	32	25	25	27
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	49	55	34	30	34
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH\_CU\_1D\_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC35 $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH Total >EC5 - EC40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433730	433731	433732	433733	433734
Sample Reference				MWS101	MWS103	MWS104	MWS105	MWS106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10	0.10	0.60	0.10	0.10
Date Sampled				21/01/2025	21/01/2025	21/01/2025	21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Pesticides (GC-MS)								
Alpha-BHC (Benzene Hexachloride)	µg/kg	10	NONE	-	-	-	< 10	-
Alachlor	µg/kg	10	NONE	-	-	-	< 10	-
Bifenthrin	µg/kg	10	NONE	-	-	-	< 10	-
Cyhalothrin (Lambda)	µg/kg	10	NONE	-	-	-	< 10	-
Gamma-BHC (Lindane, gamma HCH)	µg/kg	10	NONE	-	-	-	< 10	-
Omethoate	µg/kg	10	NONE	-	-	-	< 10	-
1,2,3-Trichlorobenzene	µg/kg	10	NONE	-	-	-	< 10	-
1,3,5-Trichlorobenzene	µg/kg	10	NONE	-	-	-	< 10	-
2,6-Dichlorobenzonitrile	µg/kg	10	NONE	-	-	-	< 10	-
Dimethylvinphos	µg/kg	10	NONE	-	-	-	< 10	-
Demeton-O	µg/kg	10	NONE	-	-	-	< 10	-
Demeton-S	µg/kg	10	NONE	-	-	-	< 10	-
Endrin Aldehyde	µg/kg	10	NONE	-	-	-	< 10	-
Endrin Ketone	µg/kg	10	NONE	-	-	-	< 10	-
Hexachlorobutadiene	µg/kg	10	NONE	-	-	-	< 10	-
Phosphamidon (Sum)	µg/kg	10	NONE	-	-	-	< 10	-
1,2,4,5-Tetrachlorobenzene	µg/kg	10	NONE	-	-	-	< 10	-
Cis-Permethrin	µg/kg	10	NONE	-	-	-	< 10	-
Endosulfan sulfate	µg/kg	10	NONE	-	-	-	< 10	-
Etrimfos	µg/kg	10	NONE	-	-	-	< 10	-
Fenvalerate (Sum)	µg/kg	10	NONE	-	-	-	< 10	-
Hexachlorobenzene	µg/kg	10	NONE	-	-	-	< 10	-
Mevinphos, E+Z	µg/kg	10	NONE	-	-	-	< 10	-
Pentachlorobenzene	µg/kg	10	NONE	-	-	-	< 10	-
Pirimiphos-ethyl	µg/kg	10	NONE	-	-	-	< 10	-
Propetamphos	µg/kg	10	NONE	-	-	-	< 10	-
Tecnazene	µg/kg	10	NONE	-	-	-	< 10	-
Triadimefon	µg/kg	10	NONE	-	-	-	< 10	-
Trans-Permethrin	µg/kg	10	NONE	-	-	-	< 10	-
Aldrin	µg/kg	10	NONE	-	-	-	< 10	-
Azinphos-methyl	µg/kg	10	NONE	-	-	-	< 10	-
Beta-BHC	µg/kg	10	NONE	-	-	-	< 10	-
Cis-Chlordane	µg/kg	10	NONE	-	-	-	< 10	-
Chlorfenvinphos	µg/kg	10	NONE	-	-	-	< 10	-
Chlorpyrifos	µg/kg	10	NONE	-	-	-	< 10	-
Chlorothalonil	µg/kg	10	NONE	-	-	-	< 10	-
Carbophenothion	µg/kg	10	NONE	-	-	-	< 10	-
Cyfluthrin (Sum)	µg/kg	10	NONE	-	-	-	< 10	-
Delta-BHC	µg/kg	10	NONE	-	-	-	< 10	-
Dieldrin	µg/kg	10	NONE	-	-	-	< 10	-
Deltamethrin	µg/kg	10	NONE	-	-	-	< 10	-
Heptachlor Exo-epoxide	µg/kg	10	NONE	-	-	-	< 10	-
Endrin	µg/kg	10	NONE	-	-	-	< 10	-
Endosulfan I (alpha isomer)	µg/kg	10	NONE	-	-	-	< 10	-
Endosulfan II (beta isomer)	µg/kg	10	NONE	-	-	-	< 10	-
Fenthion	µg/kg	10	NONE	-	-	-	< 10	-
Isodrin	µg/kg	10	NONE	-	-	-	< 10	-
Methacrifos	µg/kg	10	NONE	-	-	-	< 10	-
O,p'-DDD	µg/kg	10	NONE	-	-	-	< 10	-
O,p'-DDE	µg/kg	10	NONE	-	-	-	< 10	-

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433730	433731	433732	433733	433734
Sample Reference				MWS101	MWS103	MWS104	MWS105	MWS106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10	0.10	0.60	0.10	0.10
Date Sampled				21/01/2025	21/01/2025	21/01/2025	21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
O,p'-DDT	µg/kg	10	NONE	-	-	-	< 10	-
Parathion	µg/kg	10	NONE	-	-	-	< 10	-
Parathion-methyl	µg/kg	10	NONE	-	-	-	< 10	-
Pendimethalin	µg/kg	10	NONE	-	-	-	< 10	-
Phorate	µg/kg	10	NONE	-	-	-	< 10	-
Phosalone	µg/kg	10	NONE	-	-	-	< 10	-
P,p'-DDD	µg/kg	10	NONE	-	-	-	< 10	-
P,p'-DDE	µg/kg	10	NONE	-	-	-	< 10	-
P,p'-DDT	µg/kg	10	NONE	-	-	-	< 10	-
P,p'-Methoxychlor	µg/kg	10	NONE	-	-	-	< 10	-
Propyzamide	µg/kg	10	NONE	-	-	-	< 10	-
Triazophos	µg/kg	10	NONE	-	-	-	< 10	-
Trans-Chlordane	µg/kg	10	NONE	-	-	-	< 10	-
Cypermethrin (Sum)	µg/kg	10	NONE	-	-	-	< 10	-
Dichlorvos	µg/kg	10	NONE	-	-	-	< 10	-
Dimethoate	µg/kg	10	NONE	-	-	-	< 10	-
Diazinon	µg/kg	10	NONE	-	-	-	< 10	-
Ethion	µg/kg	10	NONE	-	-	-	< 10	-
Fenitrothion	µg/kg	10	NONE	-	-	-	< 10	-
Malathion	µg/kg	10	NONE	-	-	-	< 10	-
Pirimiphos-methyl	µg/kg	10	NONE	-	-	-	< 10	-
Trifluralin	µg/kg	10	NONE	-	-	-	< 10	-
Azinphos-ethyl	µg/kg	10	NONE	-	-	-	< 10	-

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433730	433731	433732	433733	433734
Sample Reference				MWS101	MWS103	MWS104	MWS105	MWS106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10	0.10	0.60	0.10	0.10
Date Sampled				21/01/2025	21/01/2025	21/01/2025	21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Pesticides (LC-MS)								
Carbofuran, 3-OH	µg/kg	10	NONE	-	< 10	-	-	-
Tebuthiuron	µg/kg	10	NONE	-	< 10	-	-	-
Thiadiazuron	µg/kg	10	NONE	-	< 10	-	-	-
Aldicarb Sulfone	µg/kg	10	NONE	-	< 10	-	-	-
Aldicarb Sulfoxide	µg/kg	10	NONE	-	< 10	-	-	-
Aldicarb	µg/kg	10	NONE	-	< 10	-	-	-
Carbofuran	µg/kg	10	NONE	-	< 10	-	-	-
Fluometuron	µg/kg	10	NONE	-	< 10	-	-	-
Methomyl	µg/kg	10	NONE	-	< 10	-	-	-
Oxamyl	µg/kg	10	NONE	-	< 10	-	-	-
Propoxur	µg/kg	10	NONE	-	< 10	-	-	-
Siduron	µg/kg	10	NONE	-	< 10	-	-	-
Terbutryn	µg/kg	10	NONE	-	< 10	-	-	-
Carbaryl	µg/kg	10	NONE	-	< 10	-	-	-
Diflubenzuron	µg/kg	10	NONE	-	< 10	-	-	-
Isoproturon	µg/kg	10	NONE	-	< 10	-	-	-
Prometryn	µg/kg	10	NONE	-	< 10	-	-	-
Propazine	µg/kg	10	NONE	-	< 10	-	-	-
Trietazine	µg/kg	10	NONE	-	< 10	-	-	-
Atrazine	µg/kg	10	NONE	-	< 10	-	-	-
Chlorotoluron	µg/kg	10	NONE	-	< 10	-	-	-
Cyanazine	µg/kg	10	NONE	-	< 10	-	-	-
Diuron	µg/kg	10	NONE	-	< 10	-	-	-
Linuron	µg/kg	10	NONE	-	< 10	-	-	-
Methiocarb	µg/kg	10	NONE	-	< 10	-	-	-
Simazine	µg/kg	10	NONE	-	< 10	-	-	-
Terbuthylazine	µg/kg	10	NONE	-	< 10	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433735	433736
Sample Reference				MWS107	MWS108
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.10	0.10
Date Sampled				21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	25
Total mass of sample received	kg	0.1	NONE	0.6	0.6
Asbestos					
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	SPU	-
General Inorganics					
pH (L099)	pH Units	N/A	MCERTS	5.6	6.3
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	17	29
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0084	0.0143
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	8.4	14.3
Organic Matter (automated)	%	0.1	MCERTS	4.7	4.4
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.7	2.6
Total Phenols					
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0
Speciated PAHs					
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.14	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.2	0.11
Pyrene	mg/kg	0.05	MCERTS	0.15	0.09
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.08	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.08	0.06
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.11	0.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.07	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.08	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.06	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.06	< 0.05
Total PAH					
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.04	< 0.80

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433735	433736
Sample Reference				MWS107	MWS108
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.10	0.10
Date Sampled				21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.2	8
Barium (aqua regia extractable)	mg/kg	1	MCERTS	30	49
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	19	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	8.2	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	34
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.5	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	26	31
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	35	52
Petroleum Hydrocarbons					
TPHCWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH\_CU\_1D\_AL}$	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC35 $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	< 10	< 10
TPH Total >EC5 - EC40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	< 10	< 10
VOCs					
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433735	433736
Sample Reference				MWS107	MWS108
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.10	0.10
Date Sampled				21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Pesticides (GC-MS)					
Alpha-BHC (Benzene Hexachloride)	µg/kg	10	NONE	-	< 10
Alachlor	µg/kg	10	NONE	-	< 10
Bifenthrin	µg/kg	10	NONE	-	< 10
Cyhalothrin (Lambda)	µg/kg	10	NONE	-	< 10
Gamma-BHC (Lindane, gamma HCH)	µg/kg	10	NONE	-	< 10
Omethoate	µg/kg	10	NONE	-	< 10
1,2,3-Trichlorobenzene	µg/kg	10	NONE	-	< 10
1,3,5-Trichlorobenzene	µg/kg	10	NONE	-	< 10
2,6-Dichlorobenzonitrile	µg/kg	10	NONE	-	< 10
Dimethylvinphos	µg/kg	10	NONE	-	< 10
Demeton-O	µg/kg	10	NONE	-	< 10
Demeton-S	µg/kg	10	NONE	-	< 10
Endrin Aldehyde	µg/kg	10	NONE	-	< 10
Endrin Ketone	µg/kg	10	NONE	-	< 10
Hexachlorobutadiene	µg/kg	10	NONE	-	< 10
Phosphamidon (Sum)	µg/kg	10	NONE	-	< 10
1,2,4,5-Tetrachlorobenzene	µg/kg	10	NONE	-	< 10
Cis-Permethrin	µg/kg	10	NONE	-	< 10
Endosulfan sulfate	µg/kg	10	NONE	-	< 10
Etrimfos	µg/kg	10	NONE	-	< 10
Fenvalerate (Sum)	µg/kg	10	NONE	-	< 10
Hexachlorobenzene	µg/kg	10	NONE	-	< 10
Mevinphos, E+Z	µg/kg	10	NONE	-	< 10
Pentachlorobenzene	µg/kg	10	NONE	-	< 10
Pirimiphos-ethyl	µg/kg	10	NONE	-	< 10
Propetamphos	µg/kg	10	NONE	-	< 10
Tecnazene	µg/kg	10	NONE	-	< 10
Triadimefon	µg/kg	10	NONE	-	< 10
Trans-Permethrin	µg/kg	10	NONE	-	< 10
Aldrin	µg/kg	10	NONE	-	< 10
Azinphos-methyl	µg/kg	10	NONE	-	< 10
Beta-BHC	µg/kg	10	NONE	-	< 10
Cis-Chlordane	µg/kg	10	NONE	-	< 10
Chlorfenvinphos	µg/kg	10	NONE	-	< 10
Chlorpyrifos	µg/kg	10	NONE	-	< 10
Chlorothalonil	µg/kg	10	NONE	-	< 10
Carbophenothion	µg/kg	10	NONE	-	< 10
Cyfluthrin (Sum)	µg/kg	10	NONE	-	< 10
Delta-BHC	µg/kg	10	NONE	-	< 10
Dieldrin	µg/kg	10	NONE	-	< 10
Deltamethrin	µg/kg	10	NONE	-	< 10
Heptachlor Exo-epoxide	µg/kg	10	NONE	-	< 10
Endrin	µg/kg	10	NONE	-	< 10
Endosulfan I (alpha isomer)	µg/kg	10	NONE	-	< 10
Endosulfan II (beta isomer)	µg/kg	10	NONE	-	< 10
Fenthion	µg/kg	10	NONE	-	< 10
Isodrin	µg/kg	10	NONE	-	< 10
Methacrifos	µg/kg	10	NONE	-	< 10
O,p'-DDD	µg/kg	10	NONE	-	< 10
O,p'-DDE	µg/kg	10	NONE	-	< 10

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433735	433736
Sample Reference				MWS107	MWS108
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.10	0.10
Date Sampled				21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
O,p'-DDT	µg/kg	10	NONE	-	< 10
Parathion	µg/kg	10	NONE	-	< 10
Parathion-methyl	µg/kg	10	NONE	-	< 10
Pendimethalin	µg/kg	10	NONE	-	< 10
Phorate	µg/kg	10	NONE	-	< 10
Phosalone	µg/kg	10	NONE	-	< 10
P,p'-DDD	µg/kg	10	NONE	-	< 10
P,p'-DDE	µg/kg	10	NONE	-	< 10
P,p'-DDT	µg/kg	10	NONE	-	< 10
P,p'-Methoxychlor	µg/kg	10	NONE	-	< 10
Propyzamide	µg/kg	10	NONE	-	< 10
Triazophos	µg/kg	10	NONE	-	< 10
Trans-Chlordane	µg/kg	10	NONE	-	< 10
Cypermethrin (Sum)	µg/kg	10	NONE	-	< 10
Dichlorvos	µg/kg	10	NONE	-	< 10
Dimethoate	µg/kg	10	NONE	-	< 10
Diazinon	µg/kg	10	NONE	-	< 10
Ethion	µg/kg	10	NONE	-	< 10
Fenitrothion	µg/kg	10	NONE	-	< 10
Malathion	µg/kg	10	NONE	-	< 10
Pirimiphos-methyl	µg/kg	10	NONE	-	< 10
Trifluralin	µg/kg	10	NONE	-	< 10
Azinphos-ethyl	µg/kg	10	NONE	-	< 10

Analytical Report Number: 25-003326
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433735	433736
Sample Reference				MWS107	MWS108
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.10	0.10
Date Sampled				21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Pesticides (LC-MS)					
Carbofuran, 3-OH	µg/kg	10	NONE	< 10	-
Tebuthiuron	µg/kg	10	NONE	< 10	-
Thiadiazuron	µg/kg	10	NONE	< 10	-
Aldicarb Sulfone	µg/kg	10	NONE	< 10	-
Aldicarb Sulfoxide	µg/kg	10	NONE	< 10	-
Aldicarb	µg/kg	10	NONE	< 10	-
Carbofuran	µg/kg	10	NONE	< 10	-
Fluometuron	µg/kg	10	NONE	< 10	-
Methomyl	µg/kg	10	NONE	< 10	-
Oxamyl	µg/kg	10	NONE	< 10	-
Propoxur	µg/kg	10	NONE	< 10	-
Siduron	µg/kg	10	NONE	< 10	-
Terbutryn	µg/kg	10	NONE	< 10	-
Carbaryl	µg/kg	10	NONE	< 10	-
Diflubenzuron	µg/kg	10	NONE	< 10	-
Isoproturon	µg/kg	10	NONE	< 10	-
Prometryn	µg/kg	10	NONE	< 10	-
Propazine	µg/kg	10	NONE	< 10	-
Trietazine	µg/kg	10	NONE	< 10	-
Atrazine	µg/kg	10	NONE	< 10	-
Chlorotoluron	µg/kg	10	NONE	< 10	-
Cyanazine	µg/kg	10	NONE	< 10	-
Diuron	µg/kg	10	NONE	< 10	-
Linuron	µg/kg	10	NONE	< 10	-
Methiocarb	µg/kg	10	NONE	< 10	-
Simazine	µg/kg	10	NONE	< 10	-
Terbuthylazine	µg/kg	10	NONE	< 10	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-003326
Project / Site name: Grove

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
433730	MWS101	None Supplied	0.1	Brown loam and clay with gravel and vegetation
433731	MWS103	None Supplied	0.1	Brown loam and clay with gravel and vegetation
433732	MWS104	None Supplied	0.6	Brown loam and clay with gravel and vegetation
433733	MWS105	None Supplied	0.1	Brown loam and clay with gravel and vegetation
433734	MWS106	None Supplied	0.1	Brown loam and clay with gravel and vegetation
433735	MWS107	None Supplied	0.1	Brown loam and clay with gravel and vegetation
433736	MWS108	None Supplied	0.1	Brown loam and clay with gravel and vegetation

Analytical Report Number : 25-003326
Project / Site name: Grove

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Pesticides by GC-MS/MS	Detemination of Pesticides in soil by GC MS/MS	In-house method	L055B	W	NONE
Pesticides by LC-MS	Detemination of Pesticides in soil by LC-MS	In-house method	L056B	W	NONE
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS

Analytical Report Number : 25-003326
Project / Site name: Grove

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Analytical Report Number : 25-003327

Project / Site name:	Grove	**Samples received on:**	23/01/2025
Your job number:	22653H	**Samples instructed on/ Analysis started on:**	27/01/2025
Your order number:	25-2-FDO-LABS	**Analysis completed by:**	03/02/2025
Report Issue Number:	1	**Report issued on:**	03/02/2025
Samples Analysed:	10:1 WAC sample		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-003327
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433737
Sample Reference				MSW106
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.40
Date Sampled				21/01/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	18
Total mass of sample received	kg	0.1	NONE	0.8

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	6.1
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8
Loss on Ignition @ 450°C	%	0.2	MCERTS	3
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	-4.5

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85

Petroleum Hydrocarbons

Mineral Oil (EC10 - EC40) EH_CU_1D_AL	mg/kg	10	NONE	< 10

VOCs

Benzene	µg/kg	5	MCERTS	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

Total BTEX	µg/kg	10	MCERTS	< 10

Analytical Report Number: 25-003327
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				433737
Sample Reference				MSW106
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.40
Date Sampled				21/01/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
PCBs by GC-MS				
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	< 0.007

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Waste Acceptance Criteria Analytical Results

Report No:	**25-003327**						
					Client: MEREBROOK		
Location	**Grove**						
Lab Reference (Sample Number)	433737				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	21/01/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	MSW106						
Depth (m)	0.40						
Solid Waste Analysis							
TOC (%)**	0.8				3%	5%	6%
Loss on Ignition (%) **	3.0				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	6.1				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	-4.5				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00355			0.0355	0.5	2	25
Barium *	0.00436			0.0436	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0020			0.020	0.5	10	70
Copper *	0.0046			0.046	2	50	100
Mercury *	0.000815			0.00815	0.01	0.2	2
Molybdenum *	< 0.000400			< 0.00400	0.5	10	30
Nickel *	0.0017			0.017	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0028			0.028	4	50	200
Chloride *	2.8			28	800	15000	25000
Fluoride*	0.18			1.8	10	150	500
Sulphate *	4.1			41	1000	20000	50000
TDS*	13			130	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	18.9			189	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.8						
Dry Matter (%)	82						
Moisture (%)	18						

Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3. This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.
Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.
Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number : 25-003327
Project / Site name: Grove

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
433737	MSW106	None Supplied	0.4	Brown clay and loam with gravel and vegetation

Analytical Report Number : 25-003327
Project / Site name: Grove

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025

Analytical Report Number : 25-003327
Project / Site name: Grove

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

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

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

choose screening level from dropdown -> | Residential with homegrown produce

Site Name: Grove House
Project Number: 22653H

Sample Location	MWS101	MWS103	MWS104	MWS105	MWS106	MWS107	MWS108					
Depth	0.10	0.10	0.60	0.10	0.10	0.10	0.10					
Determinand								Number of Tests	Maximum (mg.kg^{-1})	Mean (mg.kg^{-1})	Screening Level (mg.kg^{-1})	No. > SL
Arsenic	8	9.3	6.5	7.9	8.4	8.2	8	7	9.3	8.043	37	0
Barium	44	55	43	31	32	30	49	7	55	40.571	1300	0
Cadmium	0.2	0.2	0.2	0.2	0.2	0.2	0.2	7	0.2	0.200	11	0
Hexavalent Chromium	1.8	1.8	1.8	1.8	1.8	1.8	1.8	7	1.8	1.800	6	0
Chromium III	21	25	20	17	17	19	23	7	25	20.286	910	0
Chromium (total)	22	25	20	17	19	19	24	7	25	20.857	-	-
Copper	10	13	6.7	7.1	9	8.2	11	7	13	9.286	2400	0
Lead	32	50	9.7	22	21	24	34	7	50	27.529	200	0
Mercury	0.3	0.3	0.3	0.3	0.3	0.3	0.3	7	0.3	0.300	40	0
Nickel	11	13	10	6.2	6.6	6.5	11	7	13	9.186	130	0
Selenium	1	1	1	1	1	1	1	7	1	1.000	250	0
Vanadium	31	32	25	25	27	26	31	7	32	28.143	410	0
Zinc	49	55	34	30	34	35	52	7	55	41.286	3700	0
pH	5.9	6.6	9	5.9	6	5.6	6.3	7	9	6.471	9	0
Water Soluble SO4 (BRE SD 2:1 Leach Equivalent) g.l^{-1}	0.0112	0.0088	0.00342	0.0105	0.0121	0.0084	0.0143	7	0.0143	0.010	-	-
% Organic matter	3.6	3.5	0.8	4.1	3.9	4.7	4.4	7	4.7	3.571	-	-
% TOC	2.1	2.1	0.5	2.4	2.3	2.7	2.6	7	2.7	2.100	-	-
Aliphatic C5-C6	0.01	0.01	0.01	0.01	0.01	0.01	0.01	7	0.01	0.010	78	0
Aliphatic C6-C8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	7	0.01	0.010	230	0
Aliphatic C8-C10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	7	0.01	0.010	65	0
Aliphatic C10-C12	1	1	1	1	1	1	1	7	1	1.000	330	0
Aliphatic C12-C16	2	2	2	2	2	2	2	7	2	2.000	2400	0
Aliphatic C16-C21	8	8	8	8	8	8	8	7	8	8.000	92000	0
Aliphatic C21-C35	8	8	8	8	8	8	8	7	8	8.000	92000	0
Aliphatic C35-C40	10	10	10	10	10	10	10	7	10	10.000	-	-
Aliphatic C5-C35	10	10	10	10	10	10	10	7	10	10.000	-	-
Aromatic C5-C7	0.01	0.01	0.01	0.01	0.01	0.01	0.01	7	0.01	0.010	140	0
Aromatic C7-C8	0.01	0.01	0.01	0.01	0.01	0.01	0.01	7	0.01	0.010	290	0
Aromatic C8-C10	0.02	0.02	0.02	0.02	0.02	0.02	0.02	7	0.02	0.020	83	0
Aromatic C10-C12	1	1	1	1	1	1	1	7	1	1.000	180	0
Aromatic C12-C16	2	2	2	2	2	2	2	7	2	2.000	330	0
Aromatic C16-C21	10	10	10	10	10	10	10	7	10	10.000	540	0
Aromatic C21-C35	10	10	10	10	10	10	10	7	10	10.000	1500	0
Aromatic C35-C40	10	10	10	10	10	10	10	7	10	10.000	-	-
Aromatic C5-C35	10	10	10	10	10	10	10	7	10	10.000	-	-
TPH Total C5 - C40	10	10	10	10	10	10	10	7	10	10.000	-	-
Benzene	5	5	5	5	5	5	5	-	-	-	-	-
Toluene	5	5	5	5	5	5	5	-	-	-	-	-
Ethylbenzene	5	5	5	5	5	5	5	-	-	-	-	-
p & m-xylene	8	8	8	8	8	8	8	-	-	-	-	-
o-xylene	5	5	5	5	5	5	5	-	-	-	-	-
MTBE	5	5	5	5	5	5	5	-	-	-	-	-
Benzene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	7	0.005	0.005	0.17	0
Toluene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	7	0.005	0.005	290	0
Ethylbenzene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	7	0.005	0.005	110	0
total xylene	0.013	0.013	0.013	0.013	0.013	0.013	0.013	7	0.013	0.013	130	0
MTBE	0.005	0.005	0.005	0.005	0.005	0.005	0.005	7	0.005	0.005	-	-
Naphthalene	0.05	0.05	0.05	0.05	0.05	0.05	0.05	7	0.05	0.050	5.6	0
Acenaphthylene	0.05	0.05	0.05	0.05	0.05	0.05	0.05	7	0.05	0.050	420	0
Acenaphthene	0.05	0.05	0.05	0.05	0.05	0.05	0.05	7	0.05	0.050	510	0
Fluorene	0.05	0.05	0.05	0.05	0.05	0.05	0.05	7	0.05	0.050	400	0
Phenanthrene	0.17	0.11	0.05	0.05	0.05	0.14	0.05	7	0.17	0.089	220	0
Anthracene	0.05	0.05	0.05	0.05	0.05	0.05	0.05	7	0.05	0.050	5400	0
Fluoranthene	0.5	0.48	0.05	0.08	0.05	0.2	0.11	7	0.5	0.210	560	0
Pyrene	0.45	0.43	0.05	0.05	0.05	0.15	0.09	7	0.45	0.181	1200	0
Benzo(a)anthracene	0.24	0.23	0.05	0.05	0.05	0.08	0.05	7	0.24	0.107	11	0
Chrysene	0.34	0.4	0.05	0.05	0.05	0.08	0.06	7	0.4	0.147	22	0
Benzo(b)fluoranthene	0.36	0.45	0.05	0.05	0.05	0.11	0.1	7	0.45	0.167	3.3	0
Benzo(k)fluoranthene	0.21	0.24	0.05	0.05	0.05	0.07	0.05	7	0.24	0.103	93	0
Benzo(a)pyrene	0.32	0.34	0.05	0.05	0.05	0.08	0.05	7	0.34	0.134	2.7	0
Indeno(1,2,3-c,d)pyrene	0.22	0.22	0.05	0.05	0.05	0.06	0.05	7	0.22	0.100	36	0
Dibenzo(a,h)anthracene	0.05	0.05	0.05	0.05	0.05	0.05	0.05	7	0.05	0.050	0.28	0
Benzo(g,h,i)perylene	0.23	0.26	0.05	0.05	0.05	0.06	0.05	7	0.26	0.107	340	0
Total PAH - USEPA 16	3.03	3.17	0.8	0.8	0.8	1.04	0.8	7	3.17	1.491	-	-
Phenol - Monohydric	1	1	1	1	1	1	1	7	1	1.000	200	0

APPENDIX 7 ▪ Geotechnical Laboratory Certificates

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

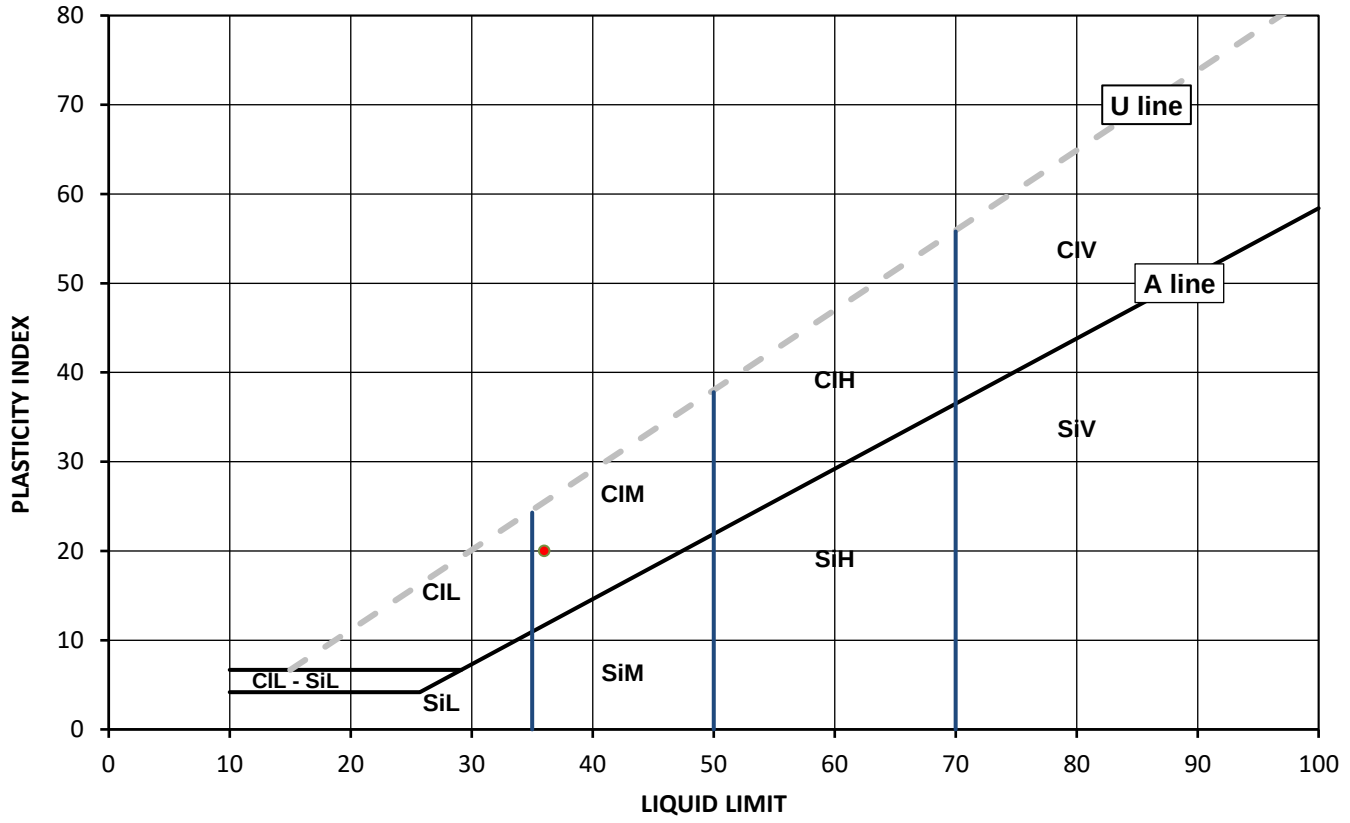
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465867	Depth Top [m]:	1.50
Hole No.:	MWS101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
22.1	36	1.020	16	20	0.30	0.70	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

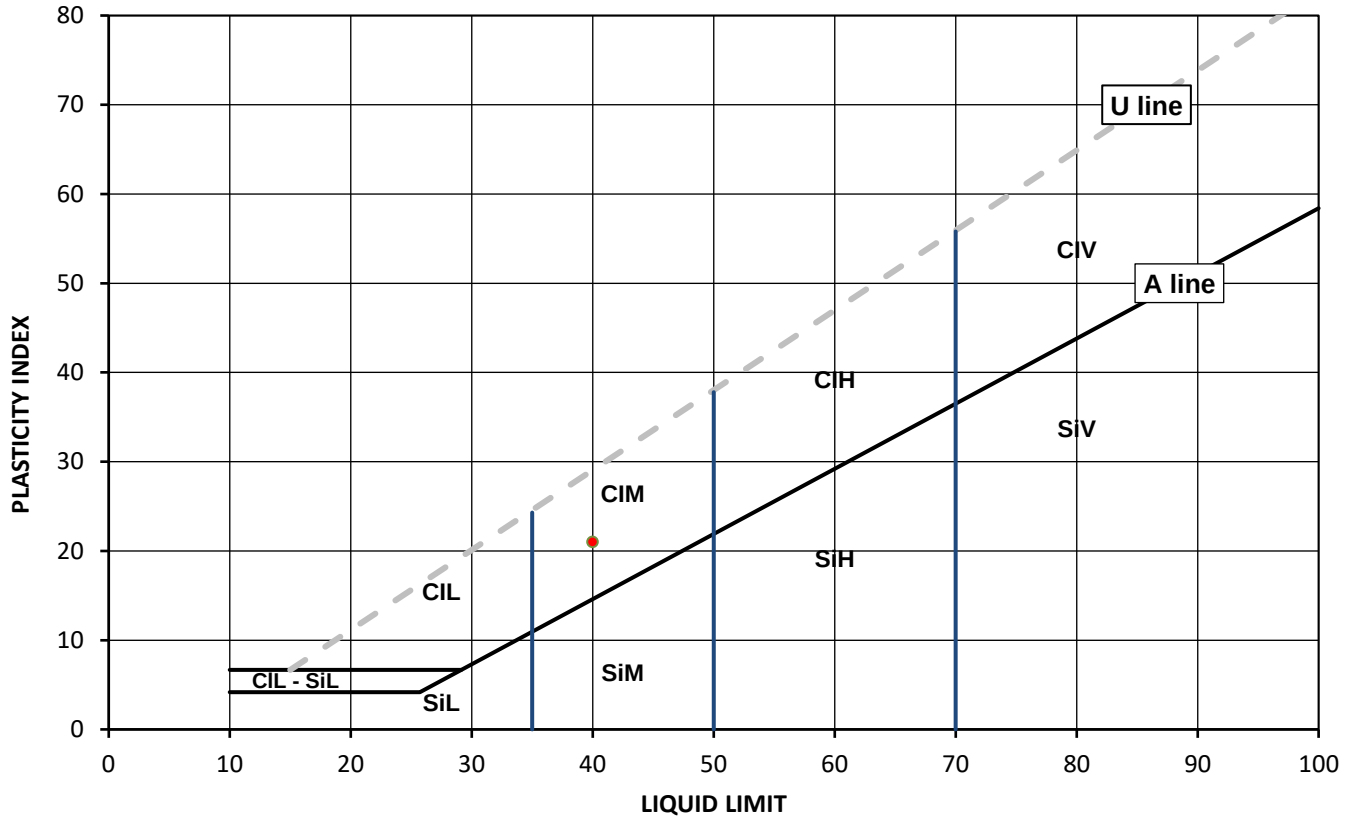
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465868	Depth Top [m]:	2.50
Hole No.:	MWS102	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >0.425 mm removed by hand;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
21.7	40	1.039	19	21	0.14	0.86	97



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
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Date Reported: 06/03/2025

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Brackmills Industrial Estate
Northampton NN4 7EB

4041

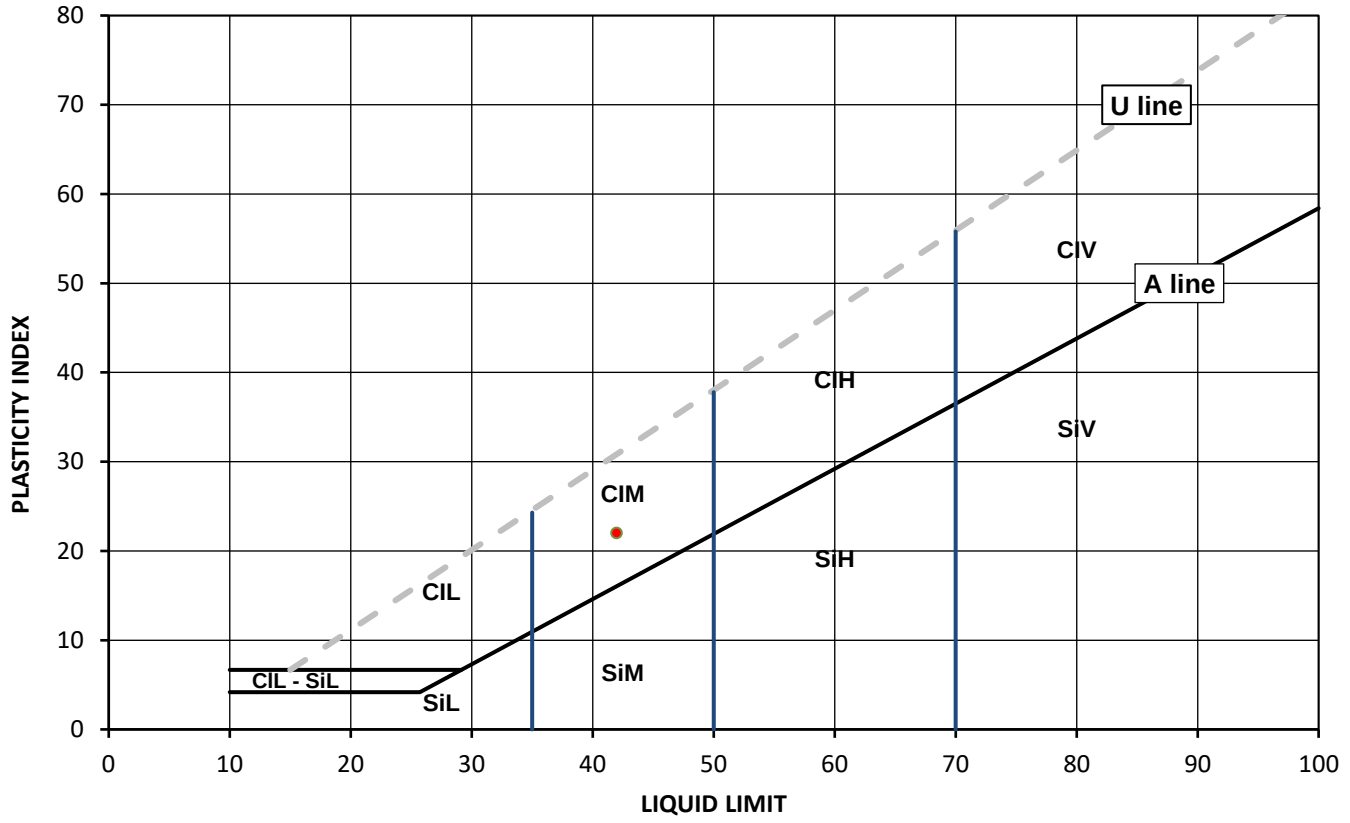
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465869	Depth Top [m]:	2.50
Hole No.:	MWS103	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
24.6	42	1.000	20	22	0.23	0.77	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

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Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
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Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

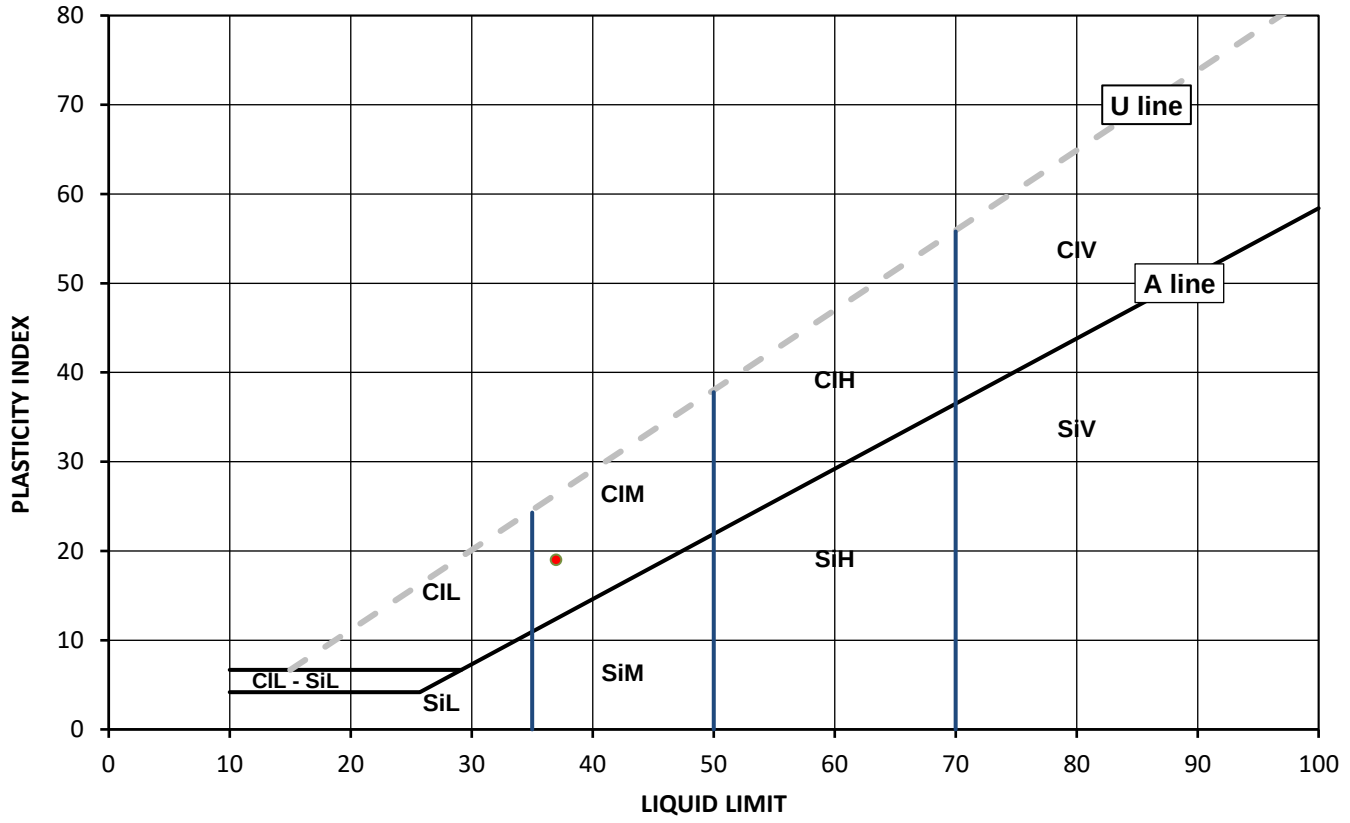
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465870	Depth Top [m]:	2.00
Hole No.:	MWS104	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
22.5	37	1.000	18	19	0.26	0.74	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
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Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

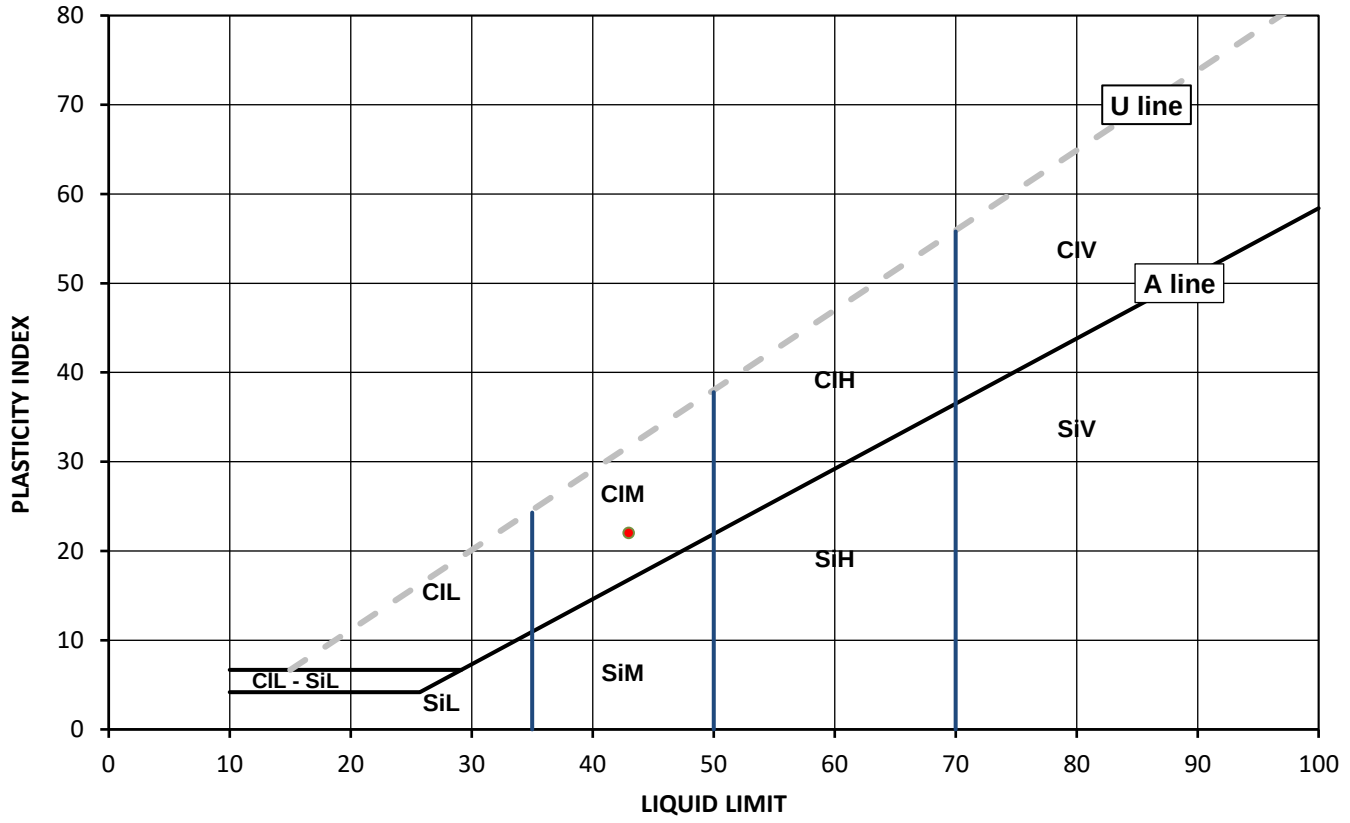
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465871	Depth Top [m]:	1.50
Hole No.:	MWS105	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >0.425 mm removed by hand;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
28.2	43	1.000	21	22	0.32	0.68	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

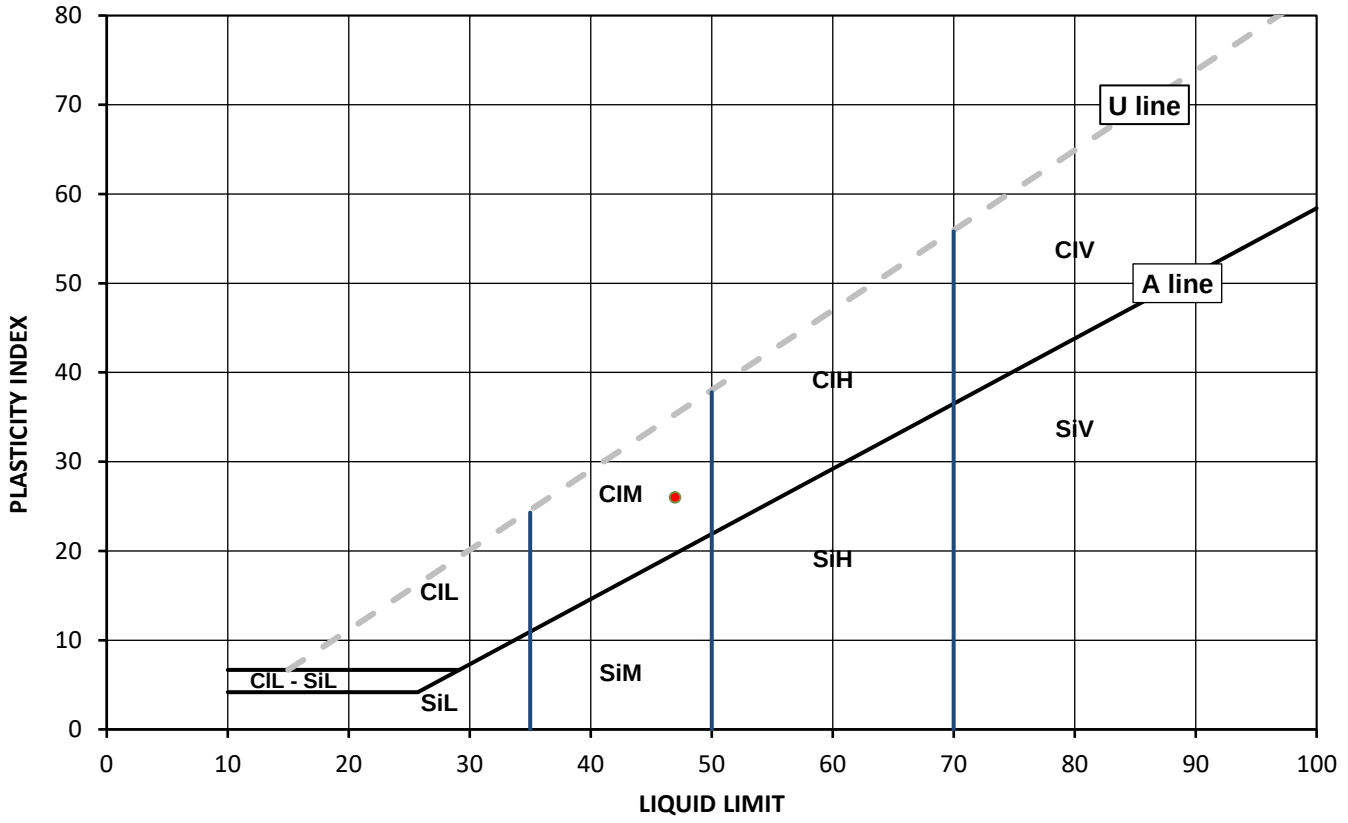
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465872	Depth Top [m]:	3.50
Hole No.:	MWS105	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Greenish brown slightly sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
20.0	47	1.058	21	26	-0.04	1.04	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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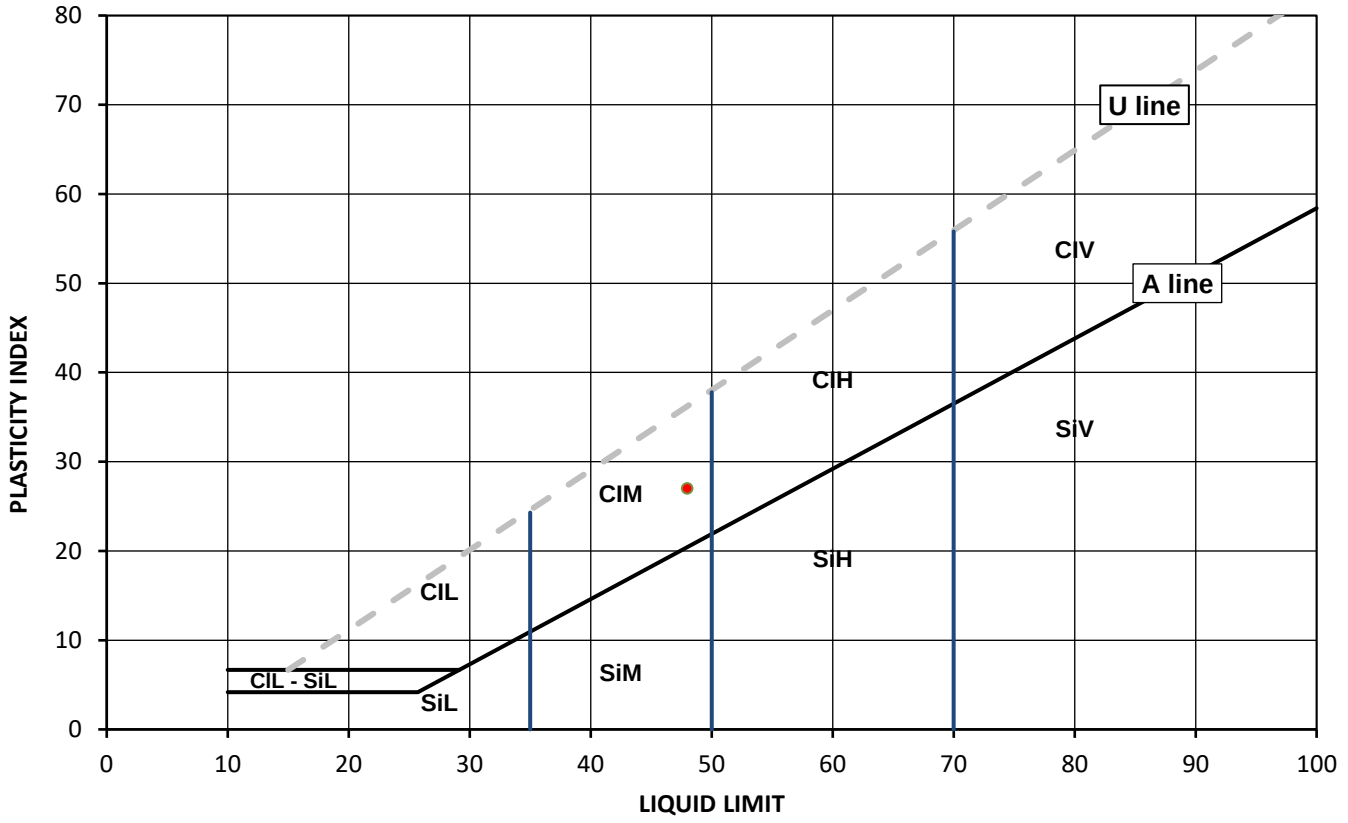
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465873	Depth Top [m]:	2.50
Hole No.:	MWS106	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
22.2	48	1.021	21	27	0.04	0.96	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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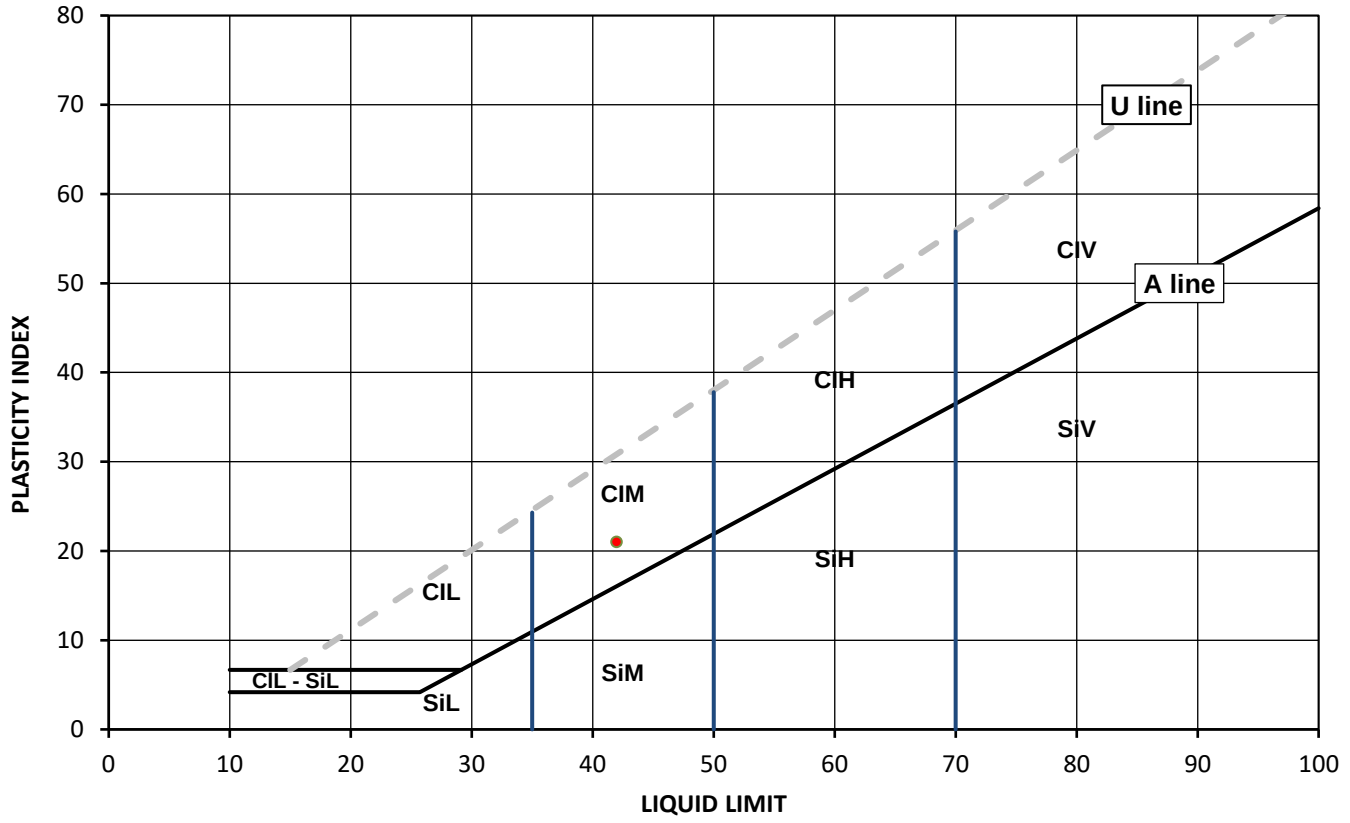
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465874	Depth Top [m]:	0.50
Hole No.:	MWS107	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >0.425 mm removed by hand;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
24.9	42	1.020	21	21	0.19	0.81	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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i2 Analytical Ltd
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Northampton NN4 7EB

Environmental Science

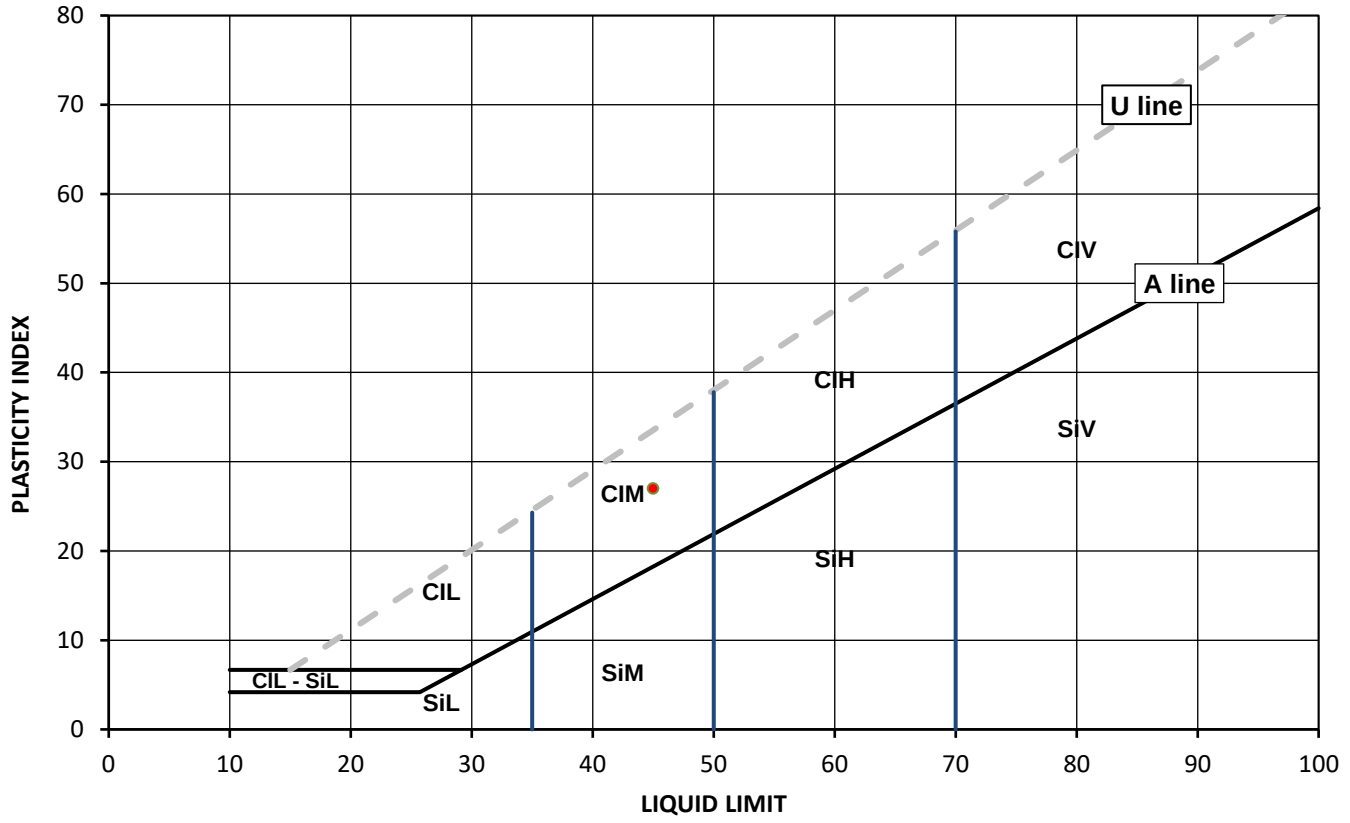
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	21/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465875	Depth Top [m]:	1.50
Hole No.:	MWS108	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey slightly sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
21.9	45	0.984	18	27	0.15	0.85	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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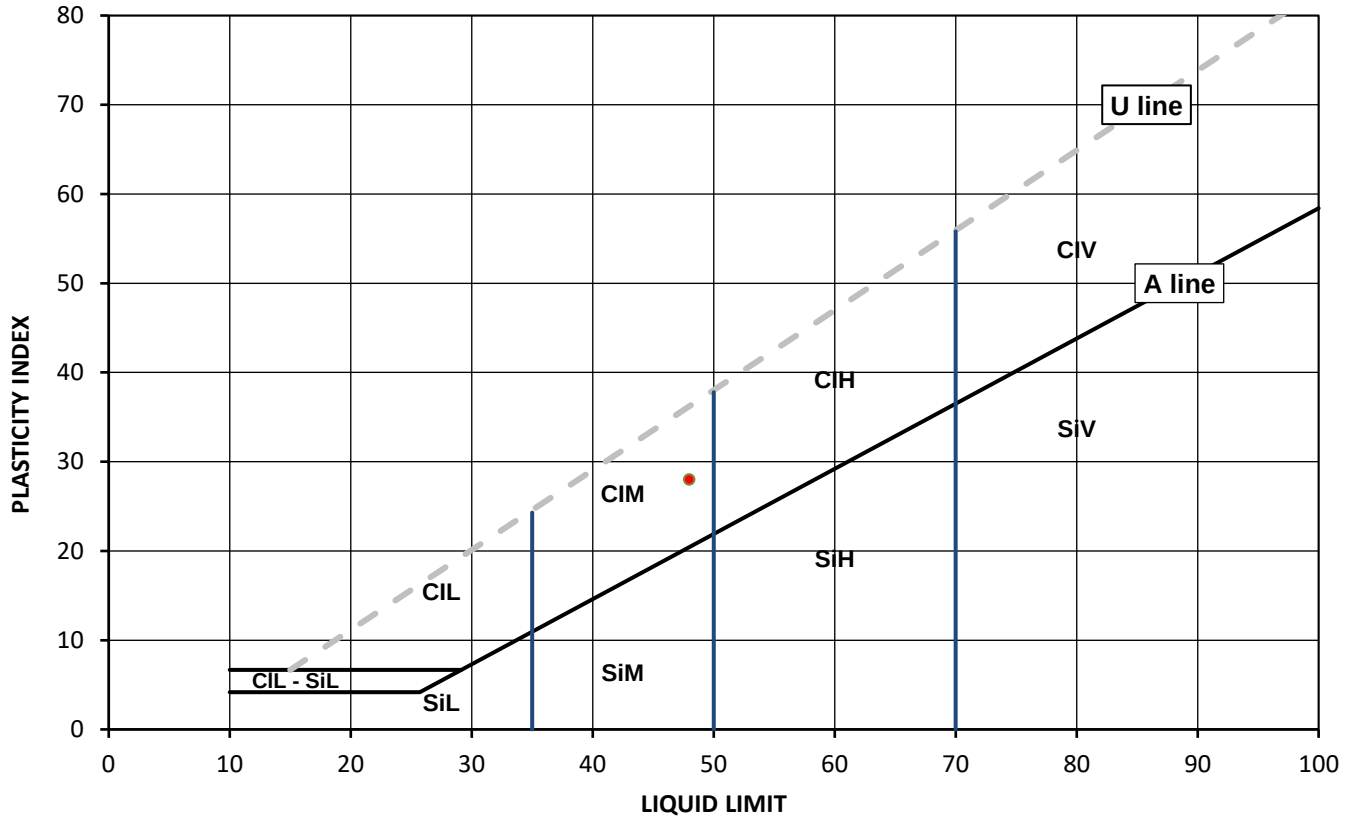
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	24/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465876	Depth Top [m]:	0.50
Hole No.:	MBH101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey slightly sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
29.5	48	1.058	20	28	0.36	0.64	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Brackmills Industrial Estate
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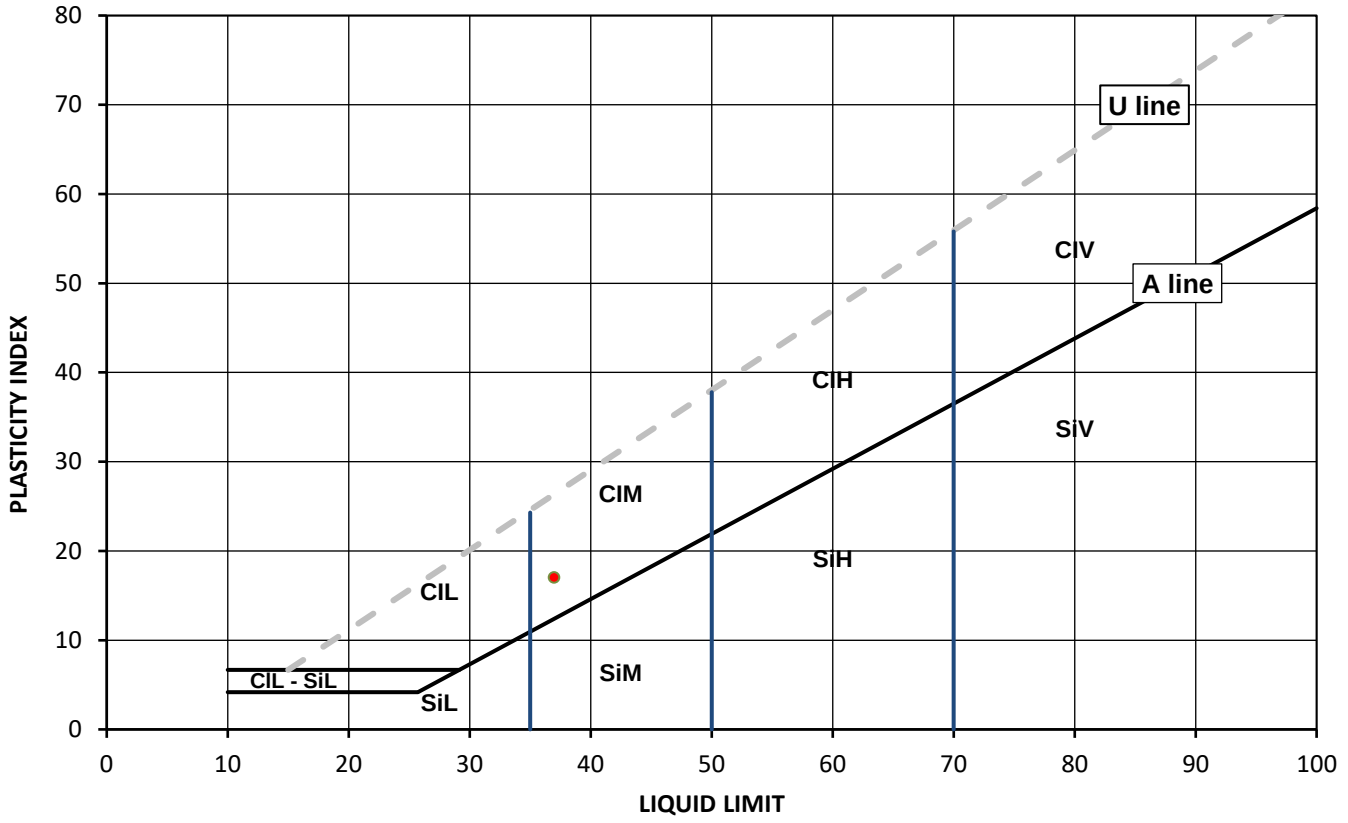
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	24/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465877	Depth Top [m]:	1.50
Hole No.:	MBH101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
24.2	37	1.020	20	17	0.24	0.76	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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		Date Sampled:	24/01/2025
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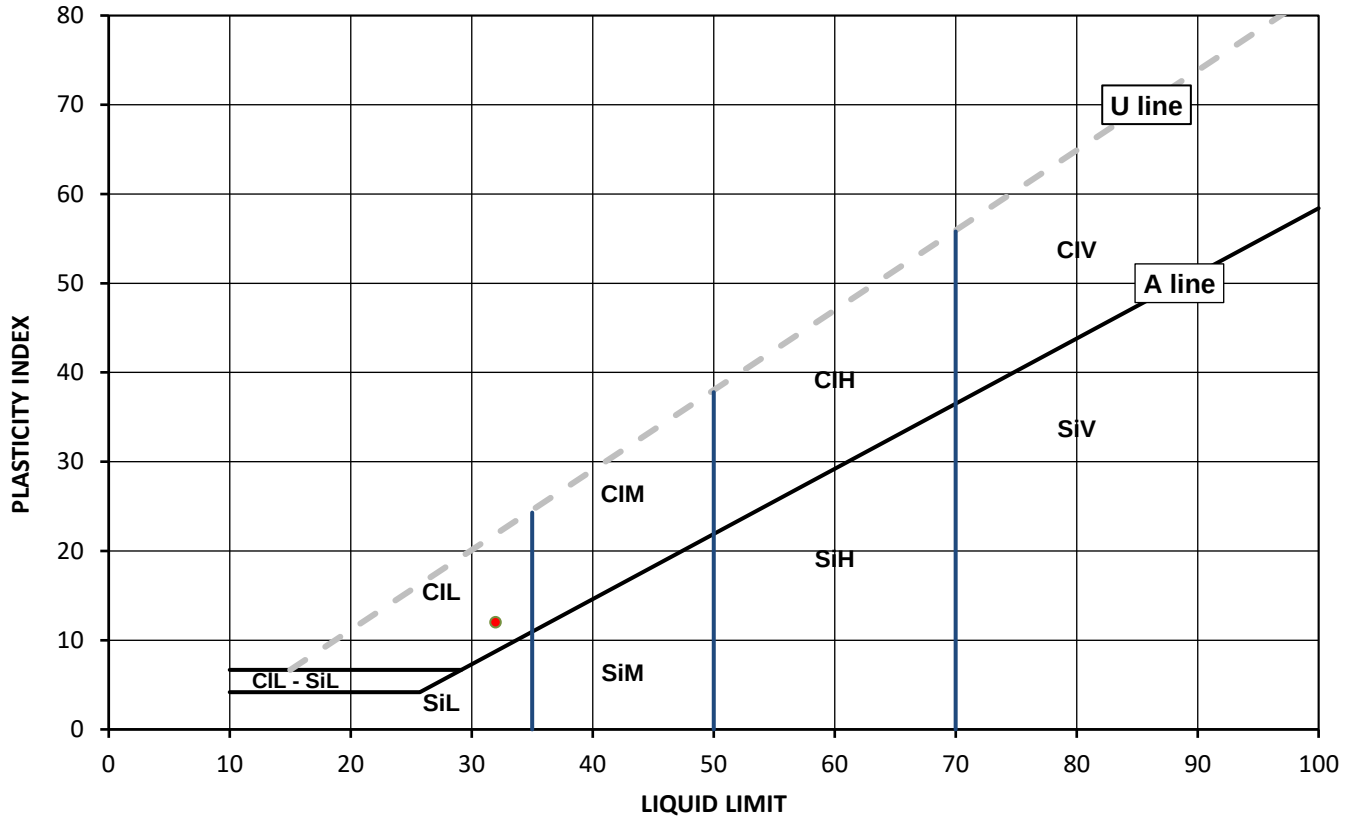
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465878	Depth Top [m]:	2.50
Hole No.:	MBH101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey slightly gravelly very sandy CLAY		
Sample Preparation:	Tested after >0.425 mm removed by hand;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
21.6	32	1.030	20	12	0.17	0.83	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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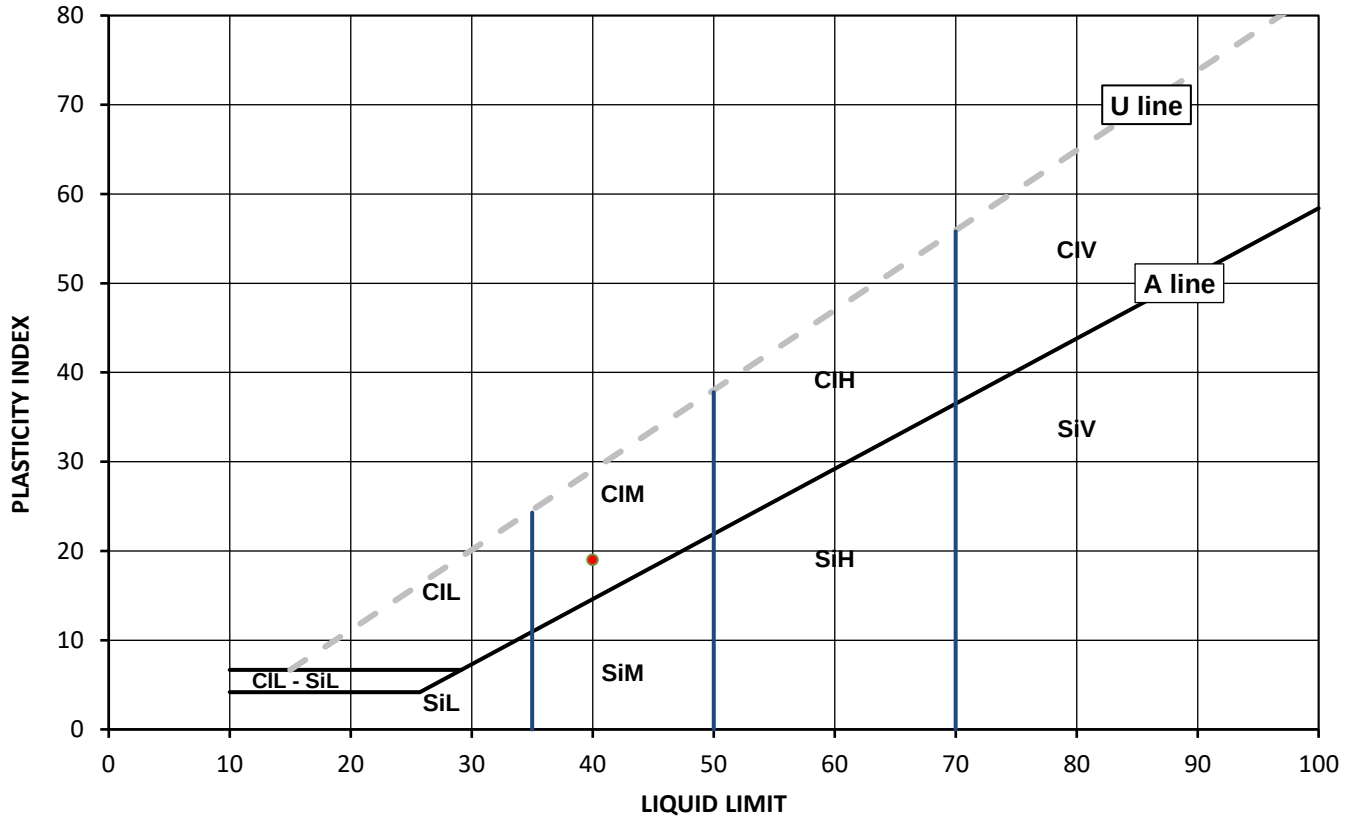
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465879	Depth Top [m]:	1.00
Hole No.:	MTP101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
26.9	40	1.020	21	19	0.32	0.68	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Environmental Science

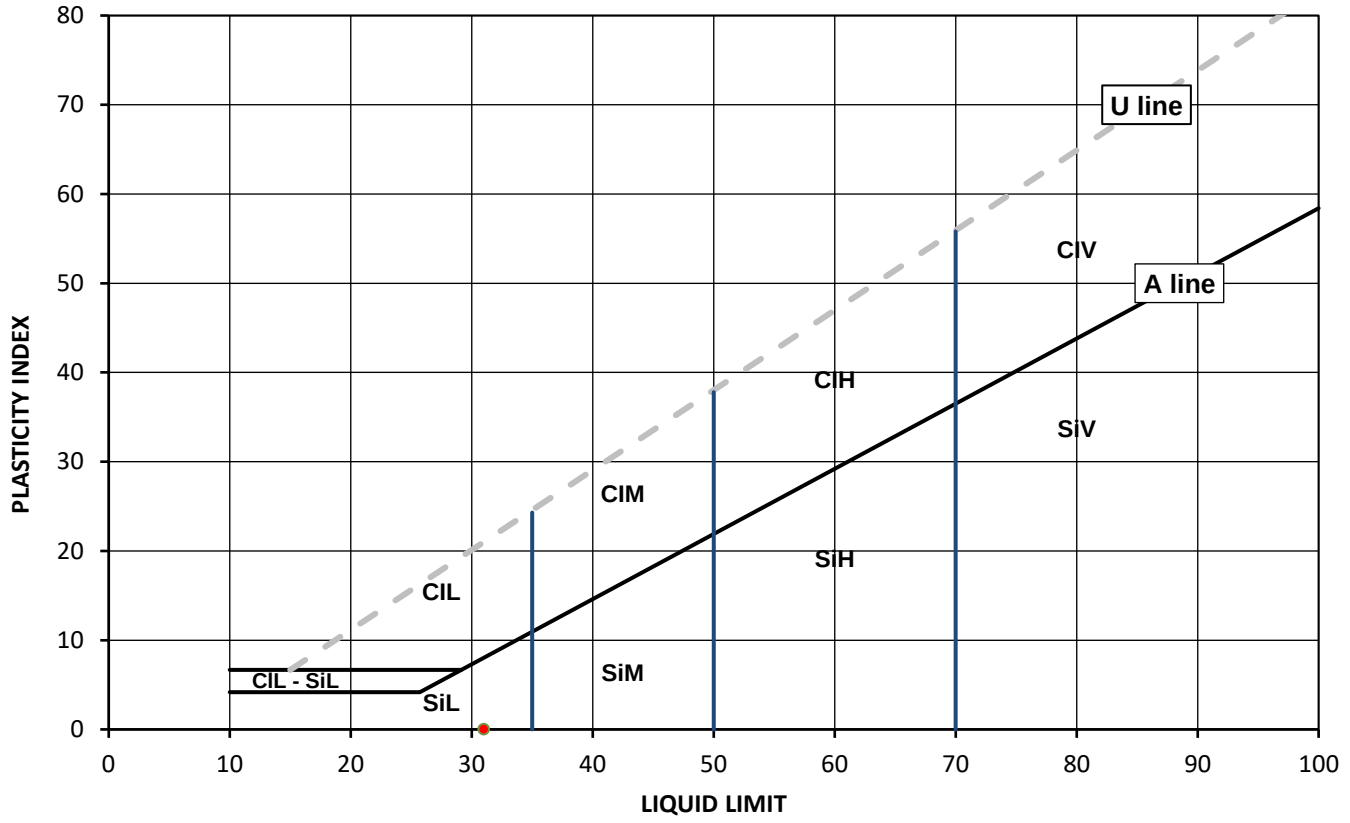
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465881	Depth Top [m]:	2.90
Hole No.:	MTP101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brownish grey silty SAND		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
26.4	31	1.030	NP	NP	N/A	N/A	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks: NP - non plastic.

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

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Client:	Merebrook	Client Reference:	22653H
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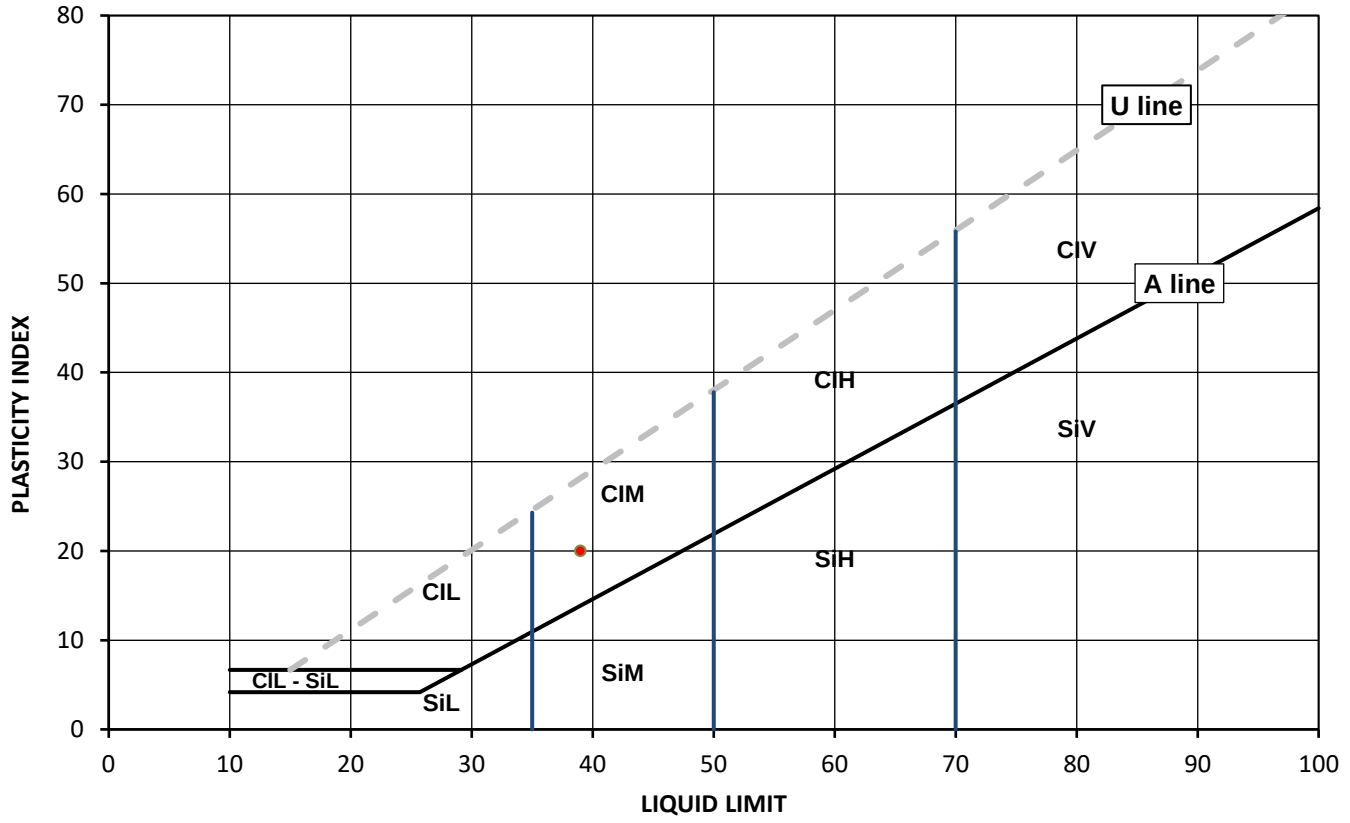
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465883	Depth Top [m]:	1.00
Hole No.:	MTP103	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >0.425 mm;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
25.3	39	1.039	19	20	0.30	0.70	97



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

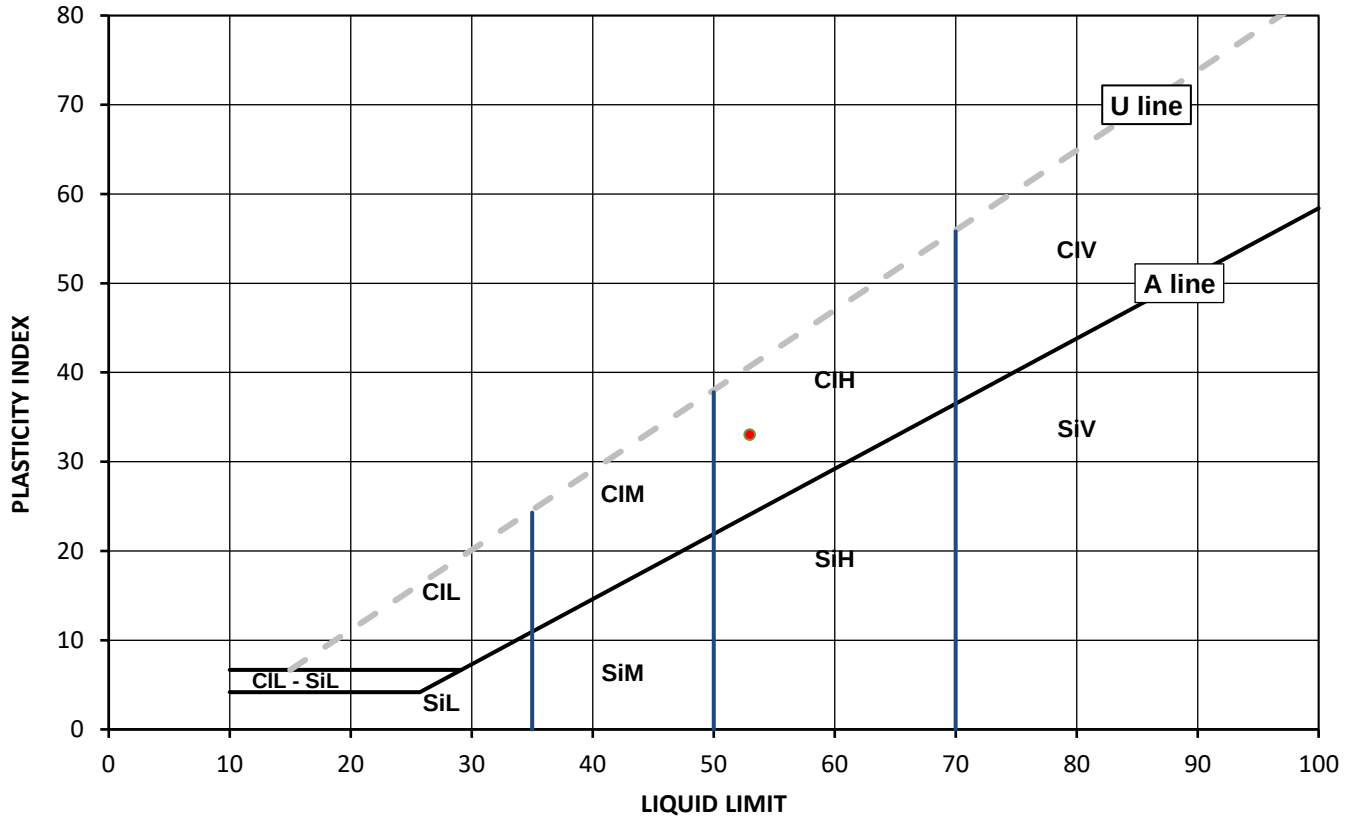
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465884	Depth Top [m]:	1.20
Hole No.:	MTP104	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Greyish brown slightly sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
24.3	53	1.020	20	33	0.12	0.88	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

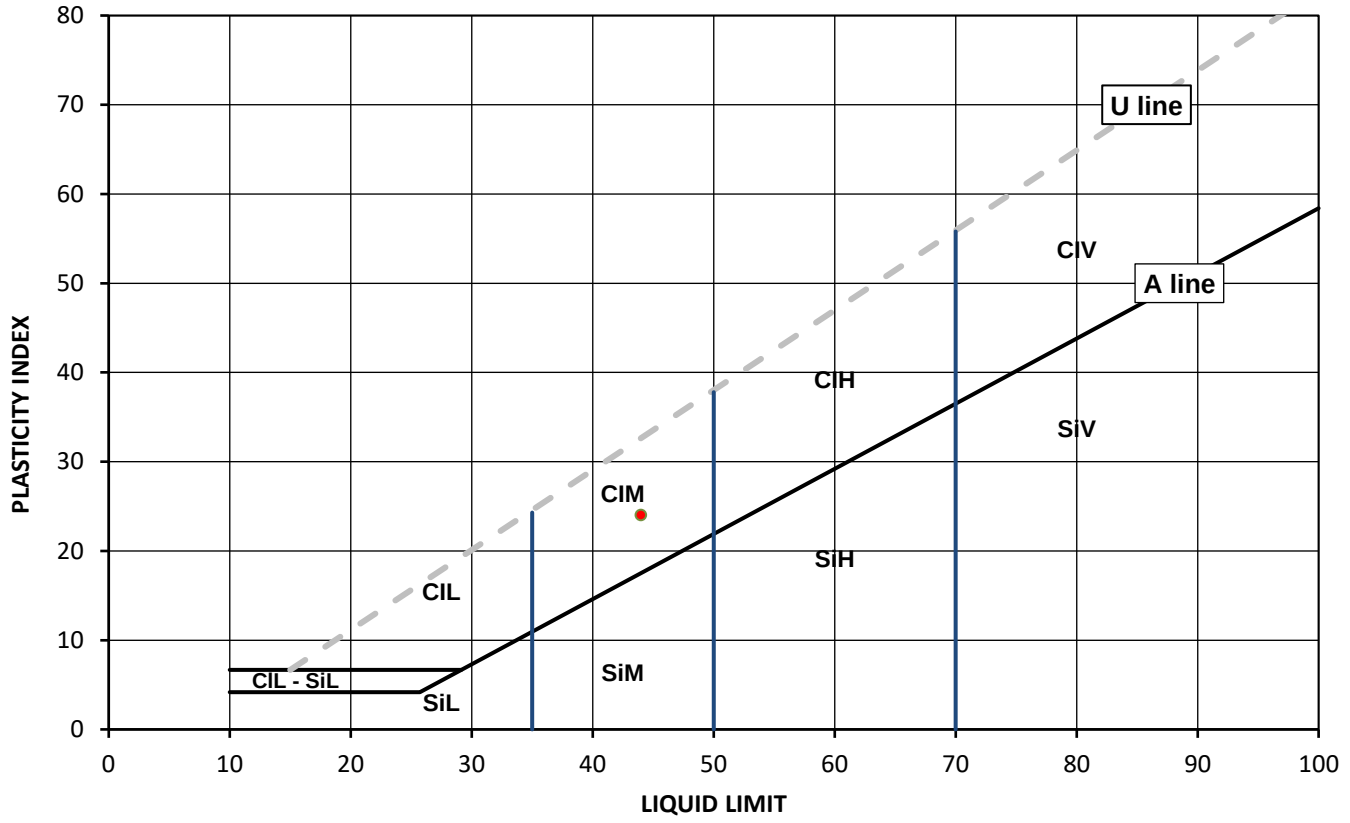
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465885	Depth Top [m]:	1.30
Hole No.:	MTP105	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Greyish brown sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
22.5	44	1.058	20	24	0.13	0.88	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

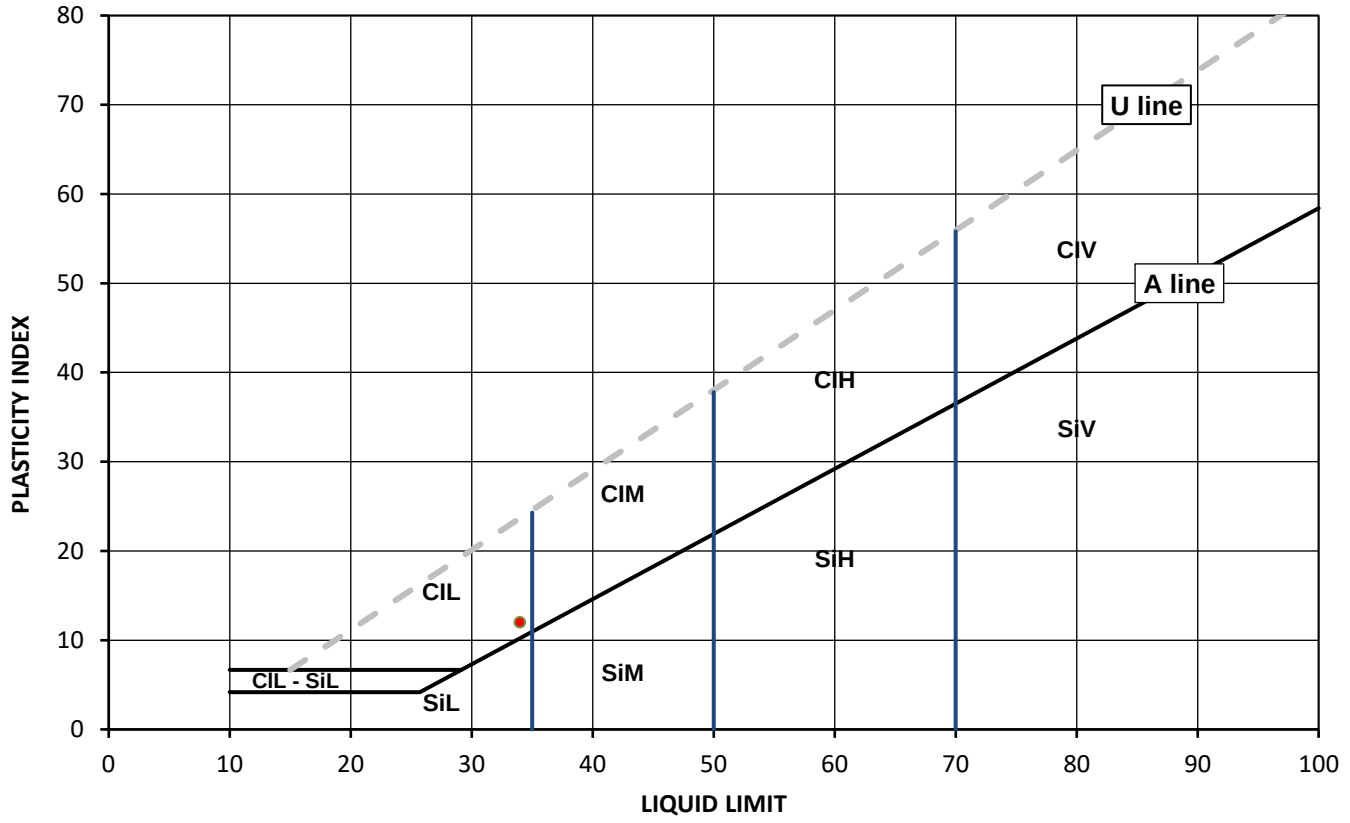
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465886	Depth Top [m]:	3.00
Hole No.:	MTP105	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Dark brown slightly gravelly very sandy silty CLAY		
Sample Preparation:	Tested after washing to remove >0.425 mm;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
17.4	34	0.984	22	12	-0.42	1.42	93



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

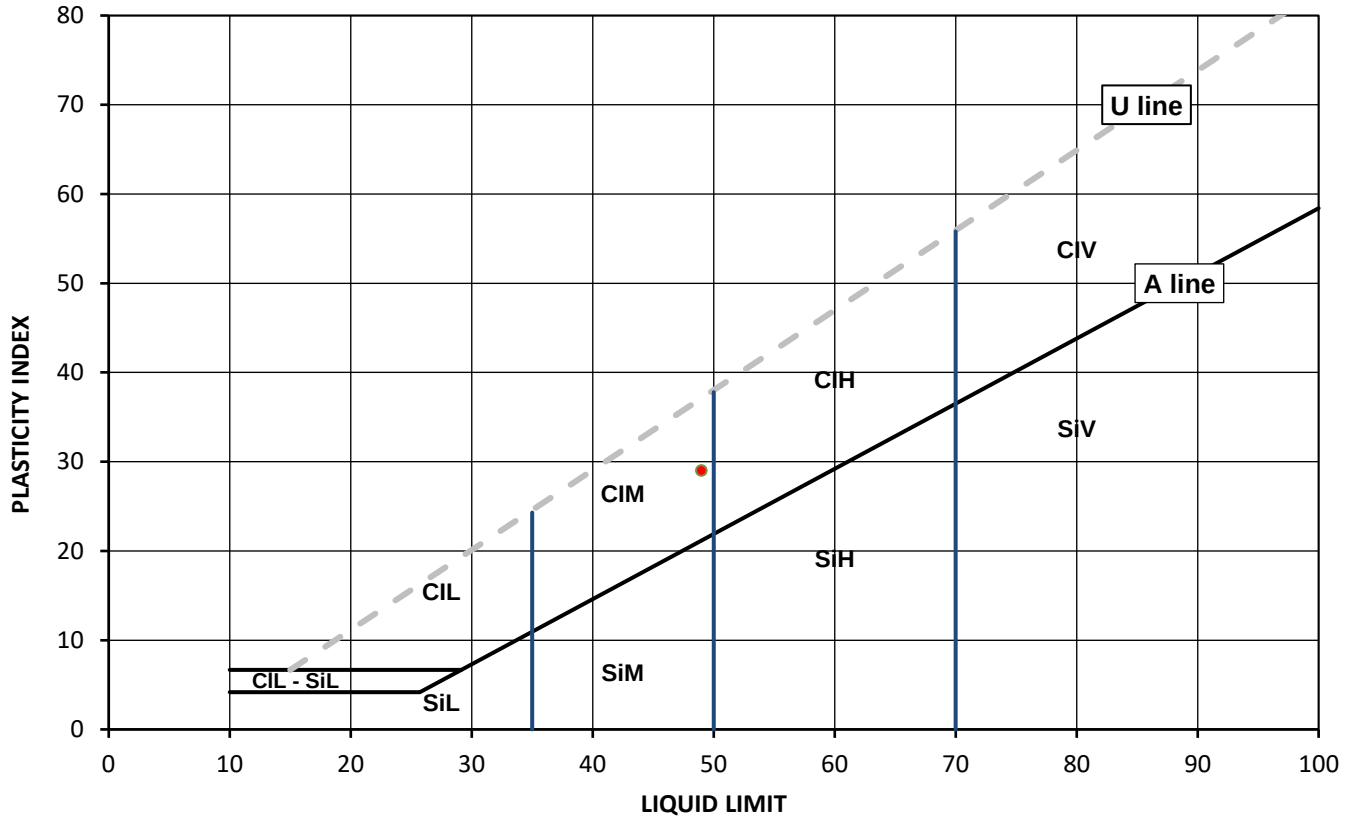
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465887	Depth Top [m]:	2.40
Hole No.:	MTP106	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish grey slightly sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
28.1	49	1.039	20	29	0.28	0.72	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

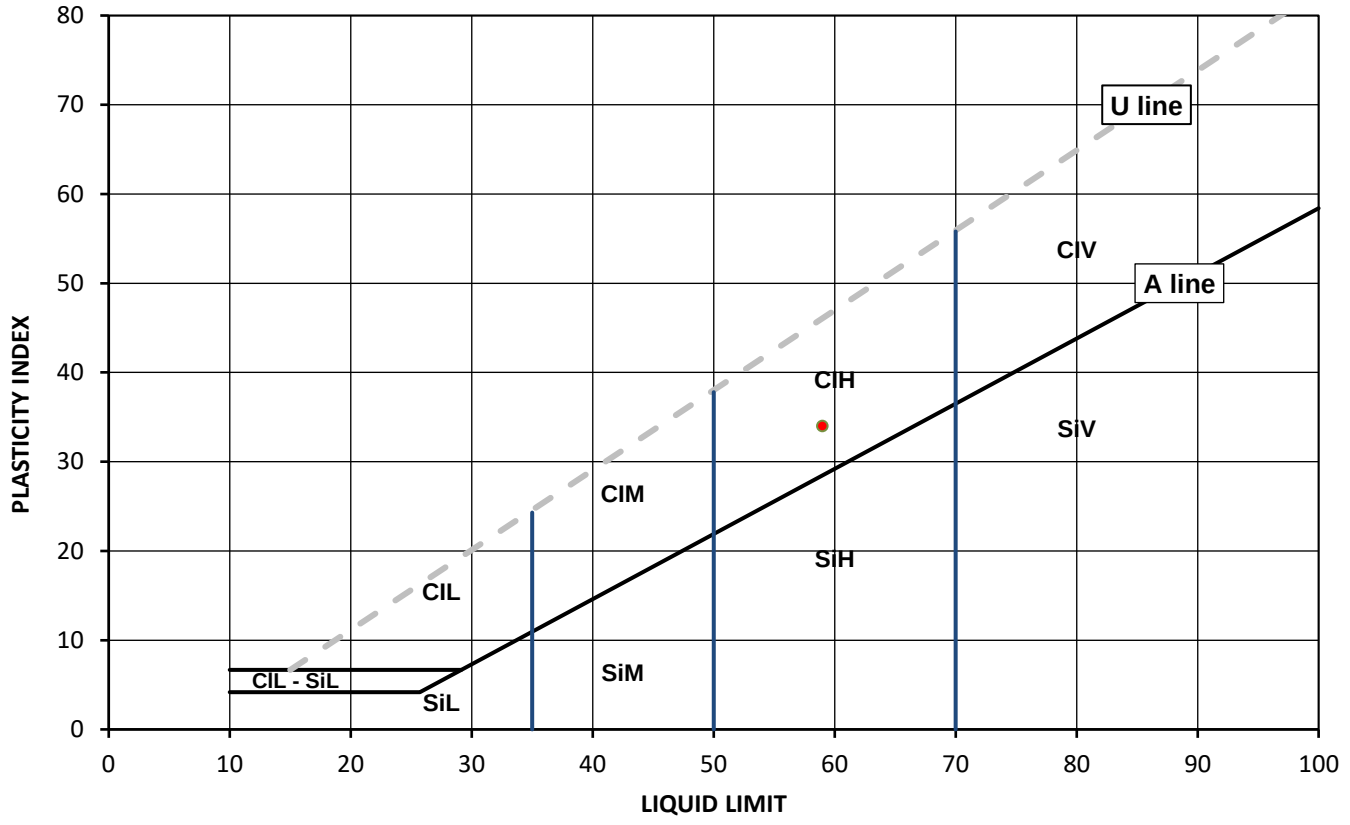
Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	24/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465889	Depth Top [m]:	9.00
Hole No.:	MBH101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Greyish brown slightly sandy CLAY		
Sample Preparation:	Tested in natural condition;		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
25.5	59	1.036	25	34	0.03	0.97	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 360.13

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Tested in Accordance with:

BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6. Correlation Factor by Clayton C.R.I and Jukes A.W (1978). W by BS EN ISO 17892-1:2014+A1:2022.

4041

Client: Merebrook

Client Address: First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ

Contact: Tim Stempt

Site Address: Grove

Client Reference: 22653H
Job Number: 25-009629-1
Date Sampled: 21/01 - 24/01/2025
Date Received: 04/02/2025
Date Tested: 04/03/2025
Sampled By: Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit						Density		
		Reference	Depth Top m	Depth Base m	Type			%	% Passing 425um %	WL* %	Correlation Factor	Wp %	Ip %	Cone type	Sample Preparation	bulk Mg/m3	dry Mg/m3	PD Mg/m3
465867	MWS101	Not Given	1.50	Not Given	D	Brown sandy CLAY	Atterberg 1 Point	22.1	100	36	1.020	16	20	80g/30 deg	N			
465868	MWS102	Not Given	2.50	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	21.7	97	40	1.039	19	21	80g/30 deg	R			
465869	MWS103	Not Given	2.50	Not Given	D	Brown sandy CLAY	Atterberg 1 Point	24.6	100	42	1.000	20	22	80g/30 deg	N			
465870	MWS104	Not Given	2.00	Not Given	D	Brown sandy CLAY	Atterberg 1 Point	22.5	100	37	1.000	18	19	80g/30 deg	N			
465871	MWS105	Not Given	1.50	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	28.2	98	43	1.000	21	22	80g/30 deg	R			
465872	MWS105	Not Given	3.50	Not Given	D	Greenish brown slightly sandy CLAY	Atterberg 1 Point	20.0	100	47	1.058	21	26	80g/30 deg	N			
465873	MWS106	Not Given	2.50	Not Given	D	Brown slightly sandy CLAY	Atterberg 1 Point	22.2	100	48	1.021	21	27	80g/30 deg	N			
465874	MWS107	Not Given	0.50	Not Given	D	Yellowish brown slightly gravelly sandy CLAY	Atterberg 1 Point	24.9	95	42	1.020	21	21	80g/30 deg	R			
465875	MWS108	Not Given	1.50	Not Given	D	Brownish grey slightly sandy CLAY	Atterberg 1 Point	21.9	100	45	0.984	18	27	80g/30 deg	N			
465876	MBH101	Not Given	0.50	Not Given	D	Brownish grey slightly sandy CLAY	Atterberg 1 Point	29.5	100	48	1.058	20	28	80g/30 deg	N			

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0.425mm removed by hand, WR - Tested after washing to remove >425mm; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025 **GF 361.15**

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Tested in Accordance with:

BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6. Correlation Factor by Clayton C.R.I and Jukes A.W (1978). W by BS EN ISO 17892-1:2014+A1:2022.

4041

Client: Merebrook

Client Address: First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ

Contact: Tim Stempt

Site Address: Grove

Client Reference: 22653H
Job Number: 25-009629-1
Date Sampled: 23/01 - 24/01/2025
Date Received: 04/02/2025
Date Tested: 04/03/2025
Sampled By: Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit						Density		
		Reference	Depth Top m	Depth Base m	Type			%	% Passing 425um %	WL* %	Correlation Factor	Wp %	Ip %	Cone type	Sample Preparation	bulk Mg/m3	dry Mg/m3	PD Mg/m3
465877	MBH101	Not Given	1.50	Not Given	D	Brown sandy CLAY	Atterberg 1 Point	24.2	100	37	1.020	20	17	80g/30 deg	N			
465878	MBH101	Not Given	2.50	Not Given	D	Brownish grey slightly gravelly very sandy CLAY	Atterberg 1 Point	21.6	99	32	1.030	20	12	80g/30 deg	R			
465879	MTP101	Not Given	1.00	Not Given	B	Yellowish brown sandy CLAY	Atterberg 1 Point	26.9	100	40	1.020	21	19	80g/30 deg	N			
465881	MTP101	Not Given	2.90	Not Given	B	Brownish grey silty SAND	Atterberg 1 Point	26.4	100	31	1.030	NP	NP	80g/30 deg	N			
465883	MTP103	Not Given	1.00	Not Given	B	Yellowish brown slightly gravelly sandy CLAY	Atterberg 1 Point	25.3	97	39	1.039	19	20	80g/30 deg	WR			
465884	MTP104	Not Given	1.20	Not Given	B	Greyish brown slightly sandy CLAY	Atterberg 1 Point	24.3	100	53	1.020	20	33	80g/30 deg	N			
465885	MTP105	Not Given	1.30	Not Given	B	Greyish brown sandy CLAY	Atterberg 1 Point	22.5	100	44	1.058	20	24	80g/30 deg	N			
465886	MTP105	Not Given	3.00	Not Given	B	Dark brown slightly gravelly very sandy silty CLAY	Atterberg 1 Point	17.4	93	34	0.984	22	12	80g/30 deg	WR			
465887	MTP106	Not Given	2.40	Not Given	B	Yellowish grey slightly sandy CLAY	Atterberg 1 Point	28.1	100	49	1.039	20	29	80g/30 deg	N			
465889	MBH101	Not Given	9.00	Not Given	D	Greyish brown slightly sandy CLAY	Atterberg 1 Point	25.5	100	59	1.036	25	34	80g/30 deg	N			

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0.425mm removed by hand, WR - Tested after washing to remove >425mm; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025 **GF 361.15**

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022, clause 4.1

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Merebrook

Client Address: First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ

Contact: Tim Stempt

Site Address: Grove

Client Reference: 22653H
Job Number: 25-009629-1
Date Sampled: 21/01 - 24/01/2025
Date Received: 04/02/2025
Date Tested: 04/03/2025
Sampled By: Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC											
		Reference	Depth Top m	Depth Base m	Type			%											
465867	MWS101	Not Given	1.50	Not Given	D	Brown sandy CLAY		22.1											
465868	MWS102	Not Given	2.50	Not Given	D	Brown slightly gravelly sandy CLAY		21.7											
465869	MWS103	Not Given	2.50	Not Given	D	Brown sandy CLAY		24.6											
465870	MWS104	Not Given	2.00	Not Given	D	Brown sandy CLAY		22.5											
465871	MWS105	Not Given	1.50	Not Given	D	Brown slightly gravelly sandy CLAY		28.2											
465872	MWS105	Not Given	3.50	Not Given	D	Greenish brown slightly sandy CLAY		20.0											
465873	MWS106	Not Given	2.50	Not Given	D	Brown slightly sandy CLAY		22.2											
465874	MWS107	Not Given	0.50	Not Given	D	Yellowish brown slightly gravelly sandy CLAY		24.9											
465875	MWS108	Not Given	1.50	Not Given	D	Brownish grey slightly sandy CLAY		21.9											
465876	MBH101	Not Given	0.50	Not Given	D	Brownish grey slightly sandy CLAY		29.5											

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 126.18

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022, clause 4.1

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Merebrook

Client Address: First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ

Contact: Tim Stempt

Site Address: Grove

Client Reference: 22653H
Job Number: 25-009629-1
Date Sampled: 23/01 - 24/01/2025
Date Received: 04/02/2025
Date Tested: 04/03/2025
Sampled By: Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC											
		Reference	Depth Top m	Depth Base m	Type			%											
465877	MBH101	Not Given	1.50	Not Given	D	Brown sandy CLAY		24.2											
465878	MBH101	Not Given	2.50	Not Given	D	Brownish grey slightly gravelly very sandy CLAY		21.6											
465879	MTP101	Not Given	1.00	Not Given	B	Yellowish brown sandy CLAY		26.9											
465881	MTP101	Not Given	2.90	Not Given	B	Brownish grey silty SAND		26.4											
465883	MTP103	Not Given	1.00	Not Given	B	Yellowish brown slightly gravelly sandy CLAY		25.3											
465884	MTP104	Not Given	1.20	Not Given	B	Greyish brown slightly sandy CLAY		24.3											
465885	MTP105	Not Given	1.30	Not Given	B	Greyish brown sandy CLAY		22.5											
465886	MTP105	Not Given	3.00	Not Given	B	Dark brown slightly gravelly very sandy silty CLAY		17.4											
465887	MTP106	Not Given	2.40	Not Given	B	Yellowish grey slightly sandy CLAY		28.1											
465889	MBH101	Not Given	9.00	Not Given	D	Greyish brown slightly sandy CLAY		25.5											

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 126.18

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS EN ISO 17892-4:2016, BS 1377-2:2022 cl. 10

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

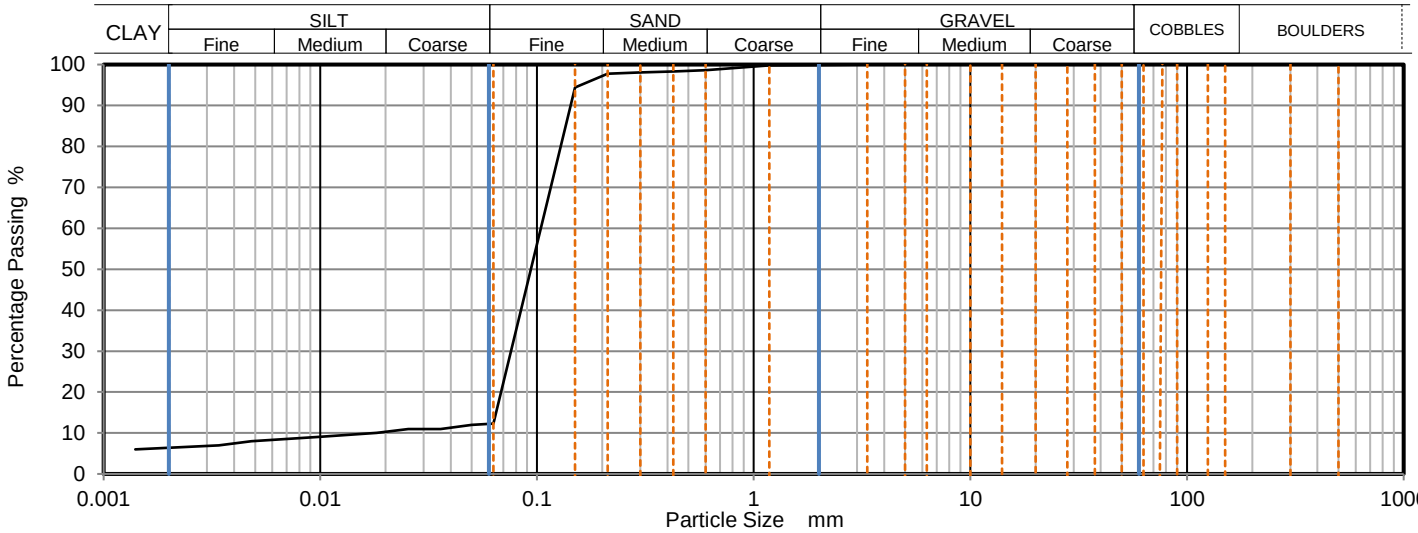
4041

Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465880	Depth Top [m]:	2.00
Hole No.:	MTP101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 107.7 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0500	12
300	100	0.0359	11
150	100	0.0255	11
125	100	0.0182	10
90	100	0.0096	9
75	100	0.0048	8
63	100	0.0034	7
50	100	0.0014	6
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density	(assumed)
0.425	98	2.65	Mg/m3
0.3	98		
0.212	98		
0.15	94		
0.063	12		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	88
Silt	6
Clay	6

Grading Analysis		
D100	mm	3.35
D60	mm	0.104
D30	mm	0.076
D10	mm	0.0158
Uniformity Coefficient		6.6
Curvature Coefficient		3.5

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving and hydrometer sedimentation

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 366.12

4041

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS EN ISO 17892-4:2016, BS 1377-2:2022 cl. 10

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

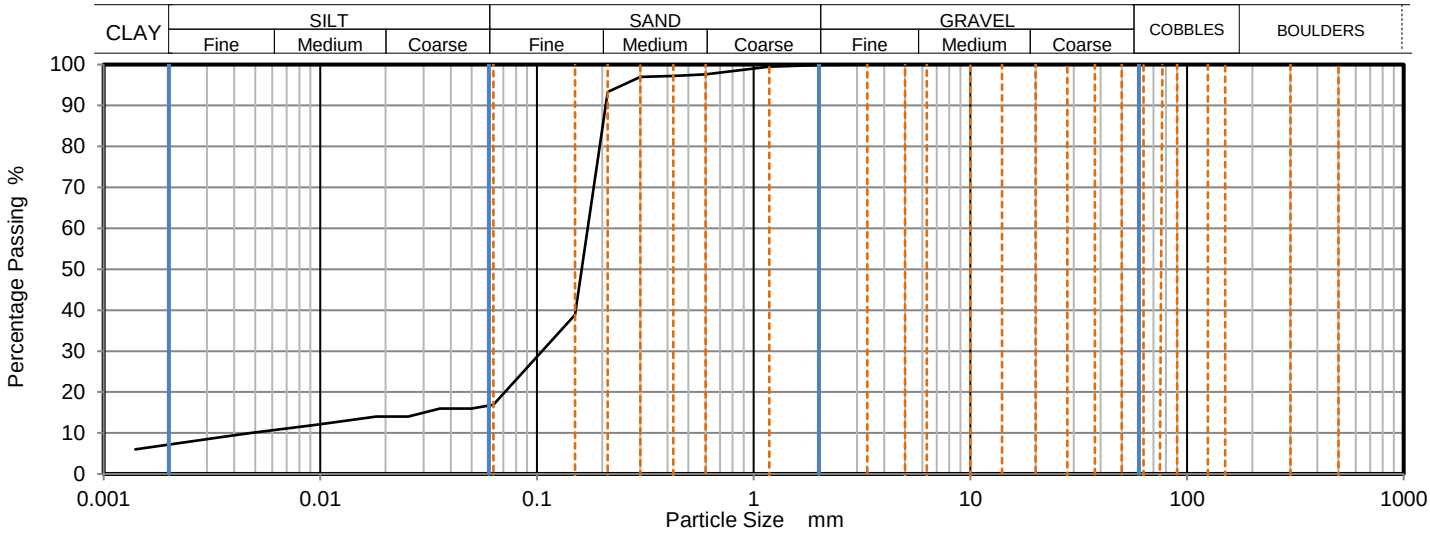
Environmental Science

Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465882	Depth Top [m]:	2.80
Hole No.:	MTP102	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 107.7 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0500	16
300	100	0.0356	16
150	100	0.0255	14
125	100	0.0181	14
90	100	0.0095	12
75	100	0.0048	10
63	100	0.0035	9
50	100	0.0014	6
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density	(assumed)
0.425	97	2.65	Mg/m3
0.3	97		
0.212	93		
0.15	39		
0.063	17		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	83
Silt	9
Clay	8

Grading Analysis		
D100	mm	3.35
D60	mm	0.172
D30	mm	0.106
D10	mm	0.00435
Uniformity Coefficient		39
Curvature Coefficient		15

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving and hydrometer sedimentation

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 366.12

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS EN ISO 17892-4:2016, BS 1377-2:2022 cl. 10

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

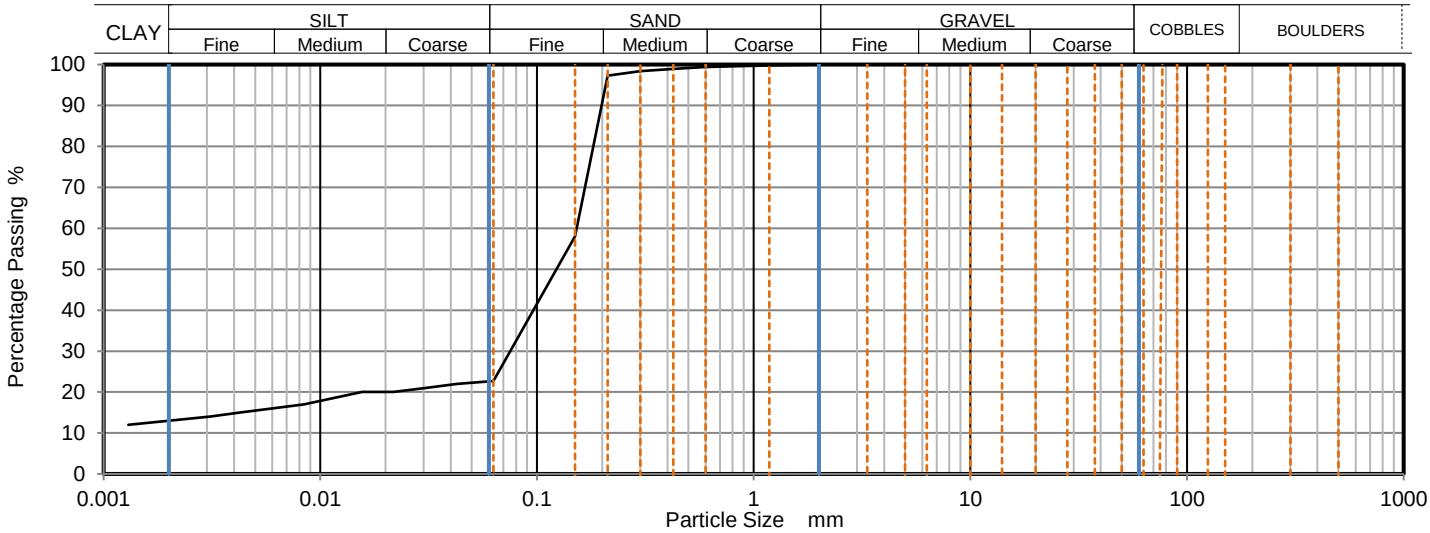
4041

Client:	Merebrook	Client Reference:	22653H
Client Address:	First Floor, 1 Leonard Place, Westerham Road, Keston, BR2 6HQ	Job Number:	25-009629-1
		Date Sampled:	23/01/2025
		Date Received:	04/02/2025
Contact:	Tim Stempt	Date Tested:	04/03/2025
Site Address:	Grove	Sampled By:	Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	465888	Depth Top [m]:	3.40
Hole No.:	MTP106	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown very clayey SAND		
Sample Preparation:	Sample was quartered, oven dried at 107.7 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0427	22
300	100	0.0304	21
150	100	0.0218	20
125	100	0.0156	20
90	100	0.0084	17
75	100	0.0043	15
63	100	0.0031	14
50	100	0.0013	12
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density	(assumed)
0.425	99	2.65	Mg/m3
0.3	98		
0.212	97		
0.15	58		
0.063	23		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	77
Silt	10
Clay	13

Grading Analysis		
D100	mm	3.35
D60	mm	0.153
D30	mm	0.0755
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving and hydrometer sedimentation

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 366.12

SUMMARY REPORT

DETERMINATION OF POINT LOAD STRENGTH

Tested in Accordance with: ISRM: 2007, pages 125-132

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Merebrook

Client Address: First Floor, 1 Leonard Place,
Westerham Road, Keston,
BR2 6HQ

Contact: Tim Stempt

Site Address: Grove

Client Reference: 22653H
Job Number: 25-009629-1
Date Sampled: 24/01/2025
Date Received: 04/02/2025
Date Tested: 04/03/2025
Sampled By: Client - Tim Stempt

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm	kN	mm	Is MPa	Is(50) MPa
465890	MBH101	Not Given	14.00	14.40	C	Grey LIMESTONE	WC = 1.4%	1	D	U	YES	217.1	88.9	89.0	84.0	16.7	86.4	2.24	2.86
465891	MBH101	Not Given	15.20	15.50	C	Grey LIMESTONE	WC = 3.4%	1	D	U	YES	141.1	88.4	88.0	85.0	17.3	86.7	2.30	2.94
465892	MBH101	Not Given	17.80	18.20	U	Grey LIMESTONE	WC = 1.8%	1	D	U	YES	186.2	88.9	89.0	67.0	29.7	77.2	4.98	6.06

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
Dimensions: Dps - Distance between platens (platen separation), Dps' - at failure (see ISRM note 6), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Equipment No.: i2 4341 Calibration Date: 15/03/2024 - 15/03/2025

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 06/03/2025

GF 134.16

Merebrook
First Floor
1 Leonard Place
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f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-009630

Project / Site name:	Grove	**Samples received on:**	04/02/2025
Your job number:	22653H	**Samples instructed on/ Analysis started on:**	27/02/2025
Your order number:	25-2-FDO-LABS	**Analysis completed by:**	05/03/2025
Report Issue Number:	1	**Report issued on:**	05/03/2025
Samples Analysed:	10 soil samples		

Signed:

Rachel Chappell
Key Account Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-009630
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				465893	465894	465895	465896	465897
Sample Reference				MWS101	MWS102	MWS103	MWS103	MWS106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				2.50	0.50	1.50	3.50	0.50
Date Sampled				21/01/2025	21/01/2025	21/01/2025	21/01/2025	21/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	19	20	21	19
Total mass of sample received	kg	0.1	NONE	0.5	0.6	0.7	0.8	0.7
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.9	8.2	8.5	6.1	6.3
Total Sulphate as SO_4	%	0.005	MCERTS	0.011	0.027	0.011	0.094	0.011
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	8.3	13	13	33	31
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	4.17	6.52	6.64	16.6	15.3
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	4.2	5.3	3.9	1.4	1.5
Total Sulphur	mg/kg	50	MCERTS	< 50	77	< 50	310	55
Total Sulphur	%	0.005	MCERTS	< 0.005	0.008	< 0.005	0.031	0.005
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Heavy Metals / Metalloids								
Magnesium (leachate equivalent)	mg/l	2.5	NONE	3	8.1	11	4.7	4.3

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-009630
Project / Site name: Grove
Your Order No: 25-2-FDO-LABS

Lab Sample Number				465898	465899	465900	465901	465902
Sample Reference				MBH101	MTP103	MTP106	MBH101	MBH101
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				4.00	2.00	1.20	10.00	17.50-18.50
Date Sampled				24/01/2025	23/01/2025	23/01/2025	24/01/2025	24/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	88.4
Moisture Content	%	0.01	NONE	22	16	18	14	5.8
Total mass of sample received	kg	0.1	NONE	0.6	0.8	0.6	0.7	0.8
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	5.4	6.6	7.6	7.6	8.3
Total Sulphate as SO_4	%	0.005	MCERTS	0.052	0.07	0.008	0.022	0.091
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	450	61	28	200	320
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	227	30.4	14.2	102	160
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	4.1	3	0.8	3.9	4
Total Sulphur	mg/kg	50	MCERTS	290	1600	78	3700	3000
Total Sulphur	%	0.005	MCERTS	0.029	0.16	0.008	0.373	0.297
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Heavy Metals / Metalloids								
Magnesium (leachate equivalent)	mg/l	2.5	NONE	17	5.8	5.7	11	8

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-009630
Project / Site name: Grove

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
465893	MWS101	None Supplied	2.5	Brown clay
465894	MWS102	None Supplied	0.5	Brown clay
465895	MWS103	None Supplied	1.5	Brown clay
465896	MWS103	None Supplied	3.5	Brown clay and sand
465897	MWS106	None Supplied	0.5	Brown clay
465898	MBH101	None Supplied	4	Brown sand with gravel
465899	MTP103	None Supplied	2	Brown clay with vegetation
465900	MTP106	None Supplied	1.2	Brown clay
465901	MBH101	None Supplied	10	Brown clay and sand
465902	MBH101	None Supplied	17.50-18.50	Non Soil. [*9]

Analytical Report Number : 25-009630
Project / Site name: Grove

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

*g - Unaccredited sample matrix.

Analytical Report Number : 25-009630
Project / Site name: Grove

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
MBH101	N/A	S	465898	c	Chloride, water soluble, in soil	L082B	c
MBH101	N/A	S	465898	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MBH101	N/A	S	465898	c	Total Sulphur in soil	L038B	c
MBH101	N/A	S	465898	c	Total sulphate (as SO4 in soil)	L038B	c
MBH101	N/A	S	465898	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MBH101	N/A	S	465898	c	pH in soil (automated)	L099-PL	c
MBH101	N/A	S	465901	c	Chloride, water soluble, in soil	L082B	c
MBH101	N/A	S	465901	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MBH101	N/A	S	465901	c	Total Sulphur in soil	L038B	c
MBH101	N/A	S	465901	c	Total sulphate (as SO4 in soil)	L038B	c
MBH101	N/A	S	465901	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MBH101	N/A	S	465901	c	pH in soil (automated)	L099-PL	c
MBH101	N/A	S	465902	c	Chloride, water soluble, in soil	L082B	c
MBH101	N/A	S	465902	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MBH101	N/A	S	465902	c	Total Sulphur in soil	L038B	c
MBH101	N/A	S	465902	c	Total sulphate (as SO4 in soil)	L038B	c
MBH101	N/A	S	465902	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MBH101	N/A	S	465902	c	pH in soil (automated)	L099-PL	c
MTP103	N/A	S	465899	c	Chloride, water soluble, in soil	L082B	c
MTP103	N/A	S	465899	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MTP103	N/A	S	465899	c	Total Sulphur in soil	L038B	c
MTP103	N/A	S	465899	c	Total sulphate (as SO4 in soil)	L038B	c
MTP103	N/A	S	465899	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MTP103	N/A	S	465899	c	pH in soil (automated)	L099-PL	c
MTP106	N/A	S	465900	c	Chloride, water soluble, in soil	L082B	c
MTP106	N/A	S	465900	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MTP106	N/A	S	465900	c	Total Sulphur in soil	L038B	c
MTP106	N/A	S	465900	c	Total sulphate (as SO4 in soil)	L038B	c
MTP106	N/A	S	465900	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MTP106	N/A	S	465900	c	pH in soil (automated)	L099-PL	c
MWS101	N/A	S	465893	c	Chloride, water soluble, in soil	L082B	c
MWS101	N/A	S	465893	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MWS101	N/A	S	465893	c	Total Sulphur in soil	L038B	c
MWS101	N/A	S	465893	c	Total sulphate (as SO4 in soil)	L038B	c
MWS101	N/A	S	465893	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MWS101	N/A	S	465893	c	pH in soil (automated)	L099-PL	c
MWS102	N/A	S	465894	c	Chloride, water soluble, in soil	L082B	c
MWS102	N/A	S	465894	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MWS102	N/A	S	465894	c	Total Sulphur in soil	L038B	c
MWS102	N/A	S	465894	c	Total sulphate (as SO4 in soil)	L038B	c
MWS102	N/A	S	465894	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MWS102	N/A	S	465894	c	pH in soil (automated)	L099-PL	c
MWS103	N/A	S	465895	c	Chloride, water soluble, in soil	L082B	c
MWS103	N/A	S	465895	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MWS103	N/A	S	465895	c	Total Sulphur in soil	L038B	c
MWS103	N/A	S	465895	c	Total sulphate (as SO4 in soil)	L038B	c
MWS103	N/A	S	465895	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MWS103	N/A	S	465895	c	pH in soil (automated)	L099-PL	c
MWS103	N/A	S	465896	c	Chloride, water soluble, in soil	L082B	c
MWS103	N/A	S	465896	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MWS103	N/A	S	465896	c	Total Sulphur in soil	L038B	c
MWS103	N/A	S	465896	c	Total sulphate (as SO4 in soil)	L038B	c
MWS103	N/A	S	465896	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MWS103	N/A	S	465896	c	pH in soil (automated)	L099-PL	c
MWS106	N/A	S	465897	c	Chloride, water soluble, in soil	L082B	c
MWS106	N/A	S	465897	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
MWS106	N/A	S	465897	c	Total Sulphur in soil	L038B	c
MWS106	N/A	S	465897	c	Total sulphate (as SO4 in soil)	L038B	c

Sample Deviation Report

Analytical Report Number : 25-009630
Project / Site name: Grove

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
MWS106	N/A	S	465897	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
MWS106	N/A	S	465897	c	pH in soil (automated)	L099-PL	c

APPENDIX 8

- Groundwater Chemistry
- Laboratory Analysis Certificates

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Analytical Report Number : 25-007184

Project / Site name:	Grove House, Sellindge	**Samples received on:**	14/02/2025
Your job number:	22653H	**Samples instructed on/ Analysis started on:**	14/02/2025
Your order number:	25-2-FDO-LABS	**Analysis completed by:**	20/02/2025
Report Issue Number:	1	**Report issued on:**	20/02/2025
Samples Analysed:	3 water samples		

Signed: Eric

Eric Bomfim Crociquia
Customer Service Administrator
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-007184
Project / Site name: Grove House, Sellindge

Your Order No: 25-2-FDO-LABS

Lab Sample Number				453856	453857	453858
Sample Reference				MWS101	MWS104	MWS106
Sample Number				None Supplied	None Supplied	None Supplied
Water Matrix				Other water	Other water	Other water
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				13/02/2025	13/02/2025	13/02/2025
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**			
General Inorganics						
pH (L099)	pH Units	N/A	NONE	7	7.2	7.1
Total Cyanide	µg/l	10	NONE	< 10	< 10	< 10
Sulphate as SO_4	µg/l	45	NONE	6050	5970	47500
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	2.41	2.04	3.3
Total Phenols						
Total Phenols (monohydric)	µg/l	10	NONE	< 10	< 10	< 10
Speciated PAHs						
Naphthalene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01
Total PAH						
Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids						
Arsenic (dissolved)	µg/l	0.15	NONE	0.38	0.48	0.34
Cadmium (dissolved)	µg/l	0.02	NONE	< 0.02	0.02	0.02
Chromium (dissolved)	µg/l	0.2	NONE	0.4	1.6	0.3
Copper (dissolved)	µg/l	0.5	NONE	1.9	1.4	2.6
Lead (dissolved)	µg/l	0.2	NONE	< 0.2	0.7	< 0.2
Mercury (dissolved)	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	NONE	2.6	1.6	9
Selenium (dissolved)	µg/l	0.6	NONE	0.7	1.3	2.3
Zinc (dissolved)	µg/l	0.5	NONE	14	2.3	4.3
Calcium (dissolved)	mg/l	0.012	NONE	51	48	76
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0

Analytical Report Number: 25-007184
Project / Site name: Grove House, Sellindge

Your Order No: 25-2-FDO-LABS

Lab Sample Number				453856	453857	453858
Sample Reference				MWS101	MWS104	MWS106
Sample Number				None Supplied	None Supplied	None Supplied
Water Matrix				Other water	Other water	Other water
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				13/02/2025	13/02/2025	13/02/2025
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**			
Petroleum Hydrocarbons						
TPH - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
TPH - Aliphatic >EC10 - EC12 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aliphatic >EC12 - EC16 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aliphatic >EC16 - EC21 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aliphatic >EC21 - EC35 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aliphatic >EC5 - EC35 $_{HS+EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
TPH - Aromatic >EC10 - EC12 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aromatic >EC12 - EC16 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aromatic >EC16 - EC21 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aromatic >EC21 - EC35 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
TPH - Aromatic >EC5 - EC35 $_{HS+EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10	< 10
VOCs						
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	NONE	< 3.0	< 3.0	< 3.0
Benzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-007184
Project / Site name: Grove House, Sellindge

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited matrices: SW, PW, GW, except B - SW,GW, Hg - SW,PW, Al - SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	NONE
Sulphide in water	Determination of sulphide in water by ion selective electrode	In-house method	L029-PL	W	NONE
Dissolved Organic Carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR Analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, PrW, DI PrW, FSE, LL	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	NONE
Total Petroleum Hydrocarbons with carbon banding in water by GC-MS	Determination of total petroleum hydrocarbons in water by GC-MS with carbon banding aliphatic and aromatic	In-house method	L070B	W	NONE
BTEX and/or Volatile Organic Compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW, PW, GW	In-house method based on USEPA 8260	L073B	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5-diphenylcarbazide, followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method by continuous flow analyser	L080-PL	W	NONE
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	NONE
Total cyanide in water	Determination of total cyanide in water by distillation followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	NONE
Total Petroleum Hydrocarbons in water by HS-GC-MS	Determination of total petroleum hydrocarbons in water by headspace GC-MS. Accredited matrices: SW, PW, GW	In-house method	L088-PL	W	NONE
pH of water at 20°C (automated)	Determination of pH of water by electrochemical measurement. Accredited matrices: SW, PW, GW, FSE, LL	In-house method	L099-PL	W	NONE
Speciated PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAHs) in water by extraction in dichloromethane followed by GC-MS. Accredited matrices (PAHs): SW, PW, GW	In-house method based on USEPA 8270	L102B	W	NONE
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, FSE, LL; PrW, DI PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Analytical Report Number : 25-007184
Project / Site name: Grove House, Sellindge

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

APPENDIX 9

- Field Monitoring Records
- Groundwater Level Data
- Hazardous Soil Gas Data

GAS MONITORING RECORD ROUND 1

Location Reference	Time	Flow and Pressure Measurements				Gas Measurements									VOC Measurements		Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane Max	Methane Steady	Methane LEL	Carbon Dioxide Max	Carbon Dioxide Steady	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Time Taken to Reach Steady State	Hexane	PID	Depth to Water	Depth to Base	
		max	steady																
		l hr^{-1}		mb	Pa	%	%	%	%	%	%	ppm	ppm	s	%	ppm	m bgl	m bgl	
MWS101	14:28	0	0	1018	0	0	0	0	0.9	0.9	19.6	0	0	20.000	0.000	0	0.84	2.66	-
MWS104	14:47	0	0	1018	0	0	0	0	0.5	0	20.7	0	60	60.000	0.000	0	1.42	3.08	-
MWS106	10:59	0	0	1017	0	0	0	0	0.8	0.8	19	0	0	30.000	0.000	0	1.30	3.10	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Weather:	Overcast and dry. Atmospheric pressure remains steady for the past 12 hours.	nr = not recorded		**Gas Analyser**	**PID**	**Site:**	Grove House, Sellindge
		Model:		-	-	**Project Number:**	22653H
		Serial Number:		-	-	**Monitored By:**	Ben Alexander
		Date of Last Calibration:		-	-	**Date:**	03/02/2025

GAS MONITORING RECORD ROUND 2

Location Reference	Time	Flow and Pressure Measurements				Gas Measurements									VOC Measurements		Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane Max	Methane Steady	Methane LEL	Carbon Dioxide Max	Carbon Dioxide Steady	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Time Taken to Reach Steady State	Hexane	PID	Depth to Water	Depth to Base	
		max	steady																
		$l\ hr^{-1}$		mb	Pa	%	%	%	%	%	%	ppm	ppm	s	%	ppm	m	m	
MWS101	14:30	0	0	1016	0	0	0	0	1.9	1.9	17.9	0	0		0.000	1	0.85	2.60	Groundwater sample taken
MWS104	14:40	0	0	1015	0	0	0	0	0.9	0.9	19.9	0	0		0.000	0	0.92	3.00	Groundwater sample taken
MWS106	14:50	0	0	1014	0	0	0	0	1.6	1.6	17.5	0	0		0.000	0	1.20	2.95	Groundwater sample taken
-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
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Weather:	Overcast and dry. Atmospheric pressure rising for the past 12 hours.	nr = not recorded		**Gas Analyser**	**PID**	**Site:**	Grove House, Sellindge
		Model:		-	-	**Project Number:**	22653H
		Serial Number:		-	-	**Monitored By:**	Matt Baylis
		Date of Last Calibration:		-	-	**Date:**	13/02/2025

GAS MONITORING RECORD ROUND 3

Location Reference	Time	Flow and Pressure Measurements				Gas Measurements									VOC Measurements		Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane Max	Methane Steady	Methane LEL	Carbon Dioxide Max	Carbon Dioxide Steady	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Time Taken to Reach Steady State	Hexane	PID	Depth to Water	Depth to Base	
		max	steady																
		l hr^{-1}		mb	Pa	%	%	%	%	%	%	ppm	ppm	s	%	ppm	m	m	
MWS101	15:05	0	0	1006	0	0	0	0	1.3	1.3	18.1	0	0		0.009	0	1.68	2.38	Hole fitted with piezometer - unable to measure base depth
MWS104	15:25	0	0	1005	0	0	0	0	0.7	0.7	19.6	0	0		0.002	0	1.77	3.08	Hole fitted with piezometer - unable to measure base depth
MWS106	15:40	0	0	1004	0	0	0	0	1.1	1.1	17.9	1	0		0.002	0	2.17	2.60	Hole fitted with piezometer - unable to measure base depth
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Weather:	Overcast and dry, pressure steady for last 6 hours	nr = not recorded		**Gas Analyser**	**PID**	**Site:**	Grove House, Sellindge
		Model:		GFM 436	MiniRae Lite	**Project Number:**	22653H
		Serial Number:		13702	590-904749	**Monitored By:**	Thea James
		Date of Last Calibration:		26/07/2024	27/11/2024	**Date:**	25/02/2025

GAS MONITORING RECORD ROUND 4

Location Reference	Time	Flow and Pressure Measurements				Gas Measurements									VOC Measurements		Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane Max	Methane Steady	Methane LEL	Carbon Dioxide Max	Carbon Dioxide Steady	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Time Taken to Reach Steady State	Hexane	PID	Depth to Water	Depth to Base	
		max	steady																
		l hr^{-1}		mb	Pa	%	%	%	%	%	%	ppm	ppm	s	%	ppm	m	m	
MWS101	-	-	-	-	-	-	-	-	-	-	-	-	nr		-	nr	-	-	-
MWS104	-	-	-	-	-	-	-	-	-	-	-	-	nr		-	nr	-	-	-
MWS106	-	-	-	-	-	-	-	-	-	-	-	-	nr		-	nr	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
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Weather:	0.0	nr = not recorded		**Gas Analyser**	**PID**	**Site:**	Grove House, Sellindge
		Model:		-	-	**Project Number:**	22653H
		Serial Number:		-	-	**Monitored By:**	0
		Date of Last Calibration:		-	-	**Date:**	00/01/1900

GAS MONITORING RECORD ROUND 5

Location Reference	Time	Flow and Pressure Measurements				Gas Measurements									VOC Measurements		Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane Max	Methane Steady	Methane LEL	Carbon Dioxide Max	Carbon Dioxide Steady	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Time Taken to Reach Steady State	Hexane	PID	Depth to Water	Depth to Base	
		max	steady																
		$l\ hr^{-1}$		mb	Pa	%	%	%	%	%	%	ppm	ppm	s	%	ppm	m	m	
MWS101	-	-	-	-	-	-		-	-		-	-	nr		-	nr	-	-	-
MWS104	-	-	-	-	-	-		-	-		-	-	nr		-	nr	-	-	-
MWS106	-	-	-	-	-	-		-	-		-	-	nr		-	nr	-	-	-
-	-	-	-	-	-	-		-	-		-	-	-		-	-	-	-	-
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Weather:	0.0	nr = not recorded	**Gas Analyser**	**PID**	**Site:**	Grove House, Sellindge
		Model:	-	-	**Project Number:**	22653H
		Serial Number:	-	-	**Monitored By:**	0
		Date of Last Calibration:	-	-	**Date:**	00/01/1900

GAS MONITORING RECORD ROUND 6

Location Reference	Time	Flow and Pressure Measurements				Gas Measurements									VOC Measurements		Dip Measurements		Comments
		Flow		Atmospheric Pressure	Differential Pressure	Methane Max	Methane Steady	Methane LEL	Carbon Dioxide Max	Carbon Dioxide Steady	Oxygen	Carbon Monoxide	Hydrogen Sulphide	Time Taken to Reach Steady State	Hexane	PID	Depth to Water	Depth to Base	
		max	steady																
		l hr^{-1}		mb	Pa	%	%	%	%	%	%	ppm	ppm	s	%	ppm	m	m	
MWS101	-	-	-	-	-	-	-	-	-	-	-	-	nr		-	nr	-	-	-
MWS104	-	-	-	-	-	-	-	-	-	-	-	-	nr		-	nr	-	-	-
MWS106	-	-	-	-	-	-	-	-	-	-	-	-	nr		-	nr	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
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Weather:	0.0	nr = not recorded		**Gas Analyser**	**PID**	**Site:**	Grove House, Sellindge
		Model:		-	-	**Project Number:**	22653H
		Serial Number:		-	-	**Monitored By:**	0
		Date of Last Calibration:		-	-	**Date:**	00/01/1900

APPENDIX 10 ▪ Gas Risk Assessment

MODIFIED WILSON AND CARD GAS CHARACTERISTIC SITUATION

SITE: Grove House, Sellindge JOB NUMBER: 22653H 07/03/2025

Modified Wilson and Card Classification

					BS 8485:2015+A1:2019 Gas Protection Scores - refer to standard for full guidance			
					Minimum Gas Protection Score Required			
Characteristic Situation	Risk Classification	Gas Screening Value Threshold (L hr^{-1})	Additional Factors	Typical Source of Generation	Type A Building	Type B Building	Type C Building	Type D Building
1	very low risk	<0.07	typically methane not to exceed 1% and/or carbon dioxide 5% otherwise consider increase to situation 2	natural soils with low organic content; 'typical' made ground	0	0	0	0
2	low risk	0.07 to <0.7	borehole air flow rate not to exceed 70 L hr^{-1} otherwise consider increase to situation 3	natural soils with high peat/organic content; 'typical' made ground	3.5	3.5	2.5	1.5
3	moderate risk	0.7 to <3.5		old landfill, inert waste, mineworking flooded	4.5	4	3	2.5
4	moderate to high risk	3.5 to <15	quantitative risk assessment required to evaluate scope of protective measures	mineworking susceptible to flooding, completed landfill	6.5 A)	5.5 A)	4.5	3.5
5	high risk	15 to <70		mineworking unflooded inactive with shallow workings near surface	hazard too high for this method to define protection measures	6 A)	5.5	4.5
6	very high risk	>70		recent landfill site	hazard too high for this method to define protection measures	hazard too high for this method to define protection measures	hazard too high for this method to define protection measures	6

BS 8485:2015+A1:2019 Gas Protection Measures - refer to standard for full guidance

Select two or more elements from the following three types of protection to achieve score (only one element per type permitted)

Structural Barrier	Score A)	Ventilation Measures		Score	Gas Resistant Membrane	Score
Precast suspended segmental subfloor (i.e. beam and block)	0	Pressure relief pathway (usually formed of low fines gravel or with a thin geocomposite blanket or strips terminating in a gravel trench external to the building)		0.5	Gas resistant membrane meeting all of the following criteria: 1. sufficiently impervious, both in the sheet material and in the sealing of sheets and sealing around sheet penetrations, to prevent any significant passage of methane and/or carbon dioxide through the membrane. *A membrane with a methane gas transmission rate <40.0 ml/day/m2/atm (average) for sheets and joints (tested in accordance with BS ISO 15105-1:2007 manometric method) is regarded as sufficiently impervious.* 2. sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions 3. sufficiently strong* to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc) and to withstand in-service stresses (e.g. settlement if placed below a floor slab) 5. capable, after installation, of providing a complete barrier to the entry of the relevant gas 6. verified in accordance with CIRIA C735 * For example, reinforced LDPE (virgin polymer) membranes having a minimum mass per unit area of 370 g/m2 and not significantly less than 0.4 mm thickness between the reinforcement scrim (tested in accordance with Procedure D (2 mm diameter tip) of BS EN ISO 9863-1:2016) installed above floor slabs are considered sufficiently strong to meet the performance criteria (see also C.3). Thicker and more robust membranes or an additional membrane protection layer should be installed directly beneath cast-in-situ floor slabs	2
Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement)	0.5	Passive sub floor dispersal layer	Very good performance E)	2.5		
			Good performance E)	1.5		
Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations	1 or 1.5 B)	Active dispersal layer, usually comprising fans with active abstraction (suction) from a subfloor dilution layer, with roof level vents. The dilution layer may comprise a clear void or be formed of geocomposite or polystyrene void formers E)		1.5 to 2.5		
Basement floor and walls conforming to BS 8102:2009, Grade 2 waterproofing C) D)	2	Active positive pressurization by the creation of a blanket of external fresh air beneath the building floor slab by pumps supplying air to points across the central footprint of the building into a permeable layer, usually formed of a thin geocomposite blanket E)		1.5 to 2.5		
Basement floor and walls conforming to BS 8102:2009, Grade 3 waterproofing C) D)	2.5	Ventilated car park (floor slab of occupied part of the building under consideration is underlain by a basement or undercroft car park) F)		4		

Notes

A) The scores are conditional on breaches of floor slabs, etc., being effectively sealed

B) To achieve a score of 1.5 the raft or suspended slab should be well reinforced to control cracking and have minimal penetrations cast in

C) The score is conditional on the waterproofing being provided by a suitable structural barrier with the design and detailing of the walls and floor meeting the requirements for Type B protection. The score cannot be assigned for Type A (waterproof membrane) or Type C (drained cavity wall).

D) If a membrane is installed beneath and around the basement to provide Type A waterproofing (BS 8102:2009), it can be assigned a gas protection score in accordance with Table 7, if it meets all the criteria for a gas resistant membrane in that table

E) Refer to BS 8485:2015 Annex B to determine performance and assign score

F) Assumes that the car park is vented to deal with car exhaust fumes, designed to Buildings Regulations 2000, Approved Document F

Building Types

Type A

Private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building. Some small rooms present. Probably conventional building construction (rather than civil engineering). Examples include private housing and some retail premises.

FOR TYPE A BUILDINGS ACTIVE VENTILATION MEASURES ARE INAPPROPRIATE

Type B

Private or commercial property with central building management control of any alterations to the building or its uses but limited or no central building management control of the maintenance of the building, including the gas protection measures. Multiple occupancy. Small to medium size rooms with passive ventilation of rooms and other internal spaces throughout ground floor and basement areas. May be conventional building or civil engineering construction. Examples include managed apartments, multiple occupancy offices, some retail premises and parts of some public buildings (such as schools, hospitals, leisure centres) and parts of hotels.

Type C

Commercial building with central building management control of any alterations to the building or its uses and central building management control of the maintenance of the building, including the gas protection measures. Single occupancy of ground floor and basement areas. Small to large size rooms with active ventilation or good passive ventilation of all rooms and other internal spaces throughout ground floor and basement areas. Probably civil engineering construction. Examples include offices, some retail premises, and parts of some public buildings (such as schools, hospitals, leisure centres and parts of hotels).

Type D

Industrial style building having large volume internal space(s) that are well ventilated. Corporate ownership with building management controls on alterations to the ground floor and basement areas of the building and on maintenance of ground gas protective measures. Probably civil engineering construction. Examples are retail park sales buildings, factory shop floor areas, warehouses. (Small rooms within these style buildings should be separately categorized as Type B or Type C).

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