

**Site Investigation
And Residential Development
Generic Quantitative Risk Assessment**



Report prepared at

Land adj. to 5 Muntham Drive
Barns Green
Horsham
RH13 0PT

On behalf of

Shanly Homes

Report reference

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Contents

1.0	PROJECT AND SITE INFORMATION	1
2.0	DESK STUDY REVIEW	4
3.0	PRELIMINARY RISK ASSESSMENT	10
4.0	SITE INVESTIGATION WORK	17
5.0	LABORATORY ANALYSIS	21
6.0	ENVIRONMENTAL INTERPRETATIVE GUIDANCE	23
7.0	ASSESSMENT OF GEOCHEMICAL SOIL RESULTS	25
8.0	HAZARDOUS GROUND GAS MONITORING	27
9.0	REVISED RISK ASSESSMENT	30
10.0	GEOTECHNICAL ASSESSMENT	34
11.0	CONCLUSIONS AND RECOMMENDATIONS	44
12.0	PROJECT INSTRUCTION AND LIMITATIONS	47
13.0	REFERENCES AND OTHER SOURCES OF INFORMATION	50

Figures

1	Site Location Plan
2	Existing Site Layout Plan
3	Site Photographs
4	Proposed Development Plan
5	Exploratory Hole Location Plan - Existing Layout
6	Exploratory Hole Location Plan - Proposed Development

Appendices

- | | |
|-----|--|
| I | Exploratory Hole Logs and Photographs |
| II | Field Monitoring Results |
| III | Soil Contamination Results and Assessment Criteria |
| IV | Soil Geotechnical Results |

1.0 PROJECT AND SITE INFORMATION

1.1 APPOINTMENT

Aviron Associates Limited (Aviron) was retained by Shanly Homes (the “Client”) to prepare a Site Investigation (SI) leading towards a tier 2 Generic Quantitative Risk Assessment (GQRA) of the following premises:

Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT (hereafter referred to as the “site”).

The site investigation follows on from Aviron’s Preliminary Risk Assessment completed in January 2025 (reference 25-129.01) which formed a tier 1 assessment by completing a desk-based study with site walkover to identify potential areas of contaminative concern associated with the proposed development of the site. The PRA formed a preliminary Conceptual Site Model (CSM) with recommendations for any further investigation or risk assessment.

The SI will investigate the pollutant linkages established within the PRA in order to produce suitable data for the preparation of a tier 2 GQRA to refine the CSM and as necessary provide recommendations for any further investigation or tier 3 Detailed Quantitative Risk Assessment (DQRA). Alternatively, it may be possible to make remediation recommendations immediately following the GQRA.

In addition, geotechnical issues shall be investigated to provide recommendations for new foundations, drainage and pavement design.

Aviron has relied upon information received from the Client and their agents as accurate, unless contradicted by written documentation or site observations.

1.2 THE SITE

Table 1.2 provides a summary of site details and surrounding area.

Table 1.2: Site Details	
Site Location	The site is located in Barns Green, off Muntham Drive, between Chapel Road and Smugglers Lane which form the northern, south-eastern and south-western boundaries respectively. The site is situated equidistant between Horsham and Billingshurst, which are located approximately 5.5 kilometres (km) to the north-east and 4.0km to the south-west respectively. Figure 1 is presented as the Site Location Plan.
National Grid Ref.	Centred at approximately 512530, 127130.
Current Land Use	The site currently comprises pasture with small, dilapidated stable buildings and animal pens located within the north-western corner. Discarded farming equipment and a horse box are located inside the site entrance and in the south-east of the site respectively. Figure 2 is presented as the Existing Site Layout Plan.

Table 1.2: Site Details

	Figure 3 is presented as the Site Photographs.
Surrounding Land Use	The site is surrounded by Muntham Drive to the north, Chapel Road to the south-east, Smugglers Lane (public bridleway) to the south-west and a footpath to the north-west. The site is almost entirely surrounded by agricultural land or pasture with residential premises of Muntham Drive to the east and Chapel Road to the south-east. A cricket pitch, clubhouse and a sports and social club are located to the north-east of the site off Muntham Drive.
Proposed Land Use	The proposed development comprises the construction of twenty-one new homes. The buildings include detached and semi-detached homes and apartments units, with private and communal gardens, parking, garaging locally, a new access road off Chapel Road and associated infrastructure. An attenuation pond is proposed in the south-east of the site. Figure 4 is presented as the Proposed Development Plan.

1.3 SITE WALKOVER SURVEY

A site walkover survey was undertaken on 22 January 2025 and included an inspection of the site and surrounding area, where safe and accessible. It is noted that the site remained unchanged between the walkover survey completed in January 2025 and the subsequent site investigation completed in June 2025. The purpose of the survey is to identify any potential on-site or nearby contaminative activities or potential sources of land contamination.

Additionally, as part of the survey any features which may affect site re-development in terms of physical site and ground conditions were noted.

Table 1.3 provides a description of site features observed during the walkover survey and also current Ordnance Survey maps made available at the time of report writing.

Table 1.3: Summary of Site Walkover Survey

Physical Site Characteristics	
Existing Structures	Small, dilapidated buildings (stables) of corrugated sheet metal construction in the north-western corner of the site. Various animal pens and discarded vegetable plots also at this location.
Basements	None observed.
Visual Topography and Site Surfacing	A topographical survey drawing by Midland Survey Limited (reference H 1055 – 1, dated May 2017) indicates that the site slopes gently downwards in a south-easterly direction from approximately 44.0 metres (m) above Ordnance Datum (AOD) in the north-west to 32.5m AOD in the south-east.

Table 1.3: Summary of Site Walkover Survey

Retaining Structures and Slopes	The site slopes gently downwards in a south-easterly direction.
Drainage Issues	Shallow drainage ditch observed along the western and south-western site boundary.
Surface Waters	Softened ground surface following prolonged rain.
Trees and Hedges	Numerous young, semi-mature and mature trees, shrubs and hedges line the site boundaries.
Made and Infilled Ground	No significant made ground or infilled ground is anticipated. Made ground may however be encountered locally as unmade surfacing at the site entrances and around the buildings and animal pens in the north-western corner of the site.
Contaminative Characteristics	
Above or Underground Storage Tanks (ASTs/USTs) and Drums	None observed.
Fuel Interceptors	None observed.
Waste Storage and Disposal	None observed.
Hazardous Material Storage and Use	None observed.
Asbestos Containing Materials (ACMs)	Possibility of ACMs as part of the existing or former building materials to the buildings in the north-western corner. An asbestos survey is recommended prior to the redevelopment works.
Boiler Houses	None observed.
Sub-stations	None observed.
Surface Staining	None observed.
Potentially Contaminative Activities	No significant evidence of potentially contaminative activities observed at the site.

1.3.1 Summary of Physical Site Characteristics

Consideration should be made towards the make-up and competency of the underlying strata and the influence of trees on the proposed development building.

1.3.2 Summary of Contaminative Site Characteristics

No potentially contaminative activities observed during the site walkover.

2.0 DESK STUDY REVIEW

Historical Ordnance Survey (OS) maps were obtained as part of an Envirocheck database search reported within our aforementioned PRA report. Database information within the PRA report also included reference to the hydrogeology, hydrology and ground gas hazards in the site area and this information is also summarised in the following sections.

2.1 HISTORICAL REVIEW

Historical Ordnance Survey (OS) maps were reviewed, and the historical development of the site and the surrounding land is summarised in the following table.

Table 2.1: History of the Site and Surrounding Land		
Date (scale)	Site History	Surrounding Land History
1877 (1:2,500) 1879 (1:10,560) 1897 (1:2,500) 1898 (1:10,560) 1911 (1:2,500) 1913 (1:10,560) 1947 (aerial photograph)	The site is shown to have comprised undeveloped agricultural land or pasture, set almost entirely within its current boundaries. The south-eastern section of the site is located within the grounds of the adjacent Bennetts.	The site is surrounded by Muntham Drive to the north, Chapel Lane to the south-east, Smugglers Lane to the south-west and a footpath to the north-west. The site boundaries are shown to be locally tree-lined with deciduous species. A railway line is marked 300m to the south-east of the site. Ponds noted in the area, the closest of which is marked 180m to the south-west of the site. Surface watercourses shown in the surrounding area, the closest of which is marked 150m to the south, flowing in an easterly direction and marked as Parson's Brook further downstream of the site. Numerous water wells shown in the wider site area.
1961 (1:10,560)	No notable changes identified at the site.	Residential development noted within Barns Green further to the south-east of the site.
1977 (1:2,500) 1982 (1:10,000) 1993 (1:2,500)	The site boundaries are shown to have been slightly redefined to include the existing site extents. The grounds of Bennetts are noted to have been separated from the site at this time.	Residential development noted immediately east of the site in Muntham Drive and to the south-east in Chapel Road, as well as further to the south. Recreation ground, hall and pavilion marked to the north-east of the site off Muntham Drive.
1999 (aerial photograph) 2000-2024 (1:10,000) incl.)	Cluster of buildings noted in the north-western corner of the site. Site boundaries are shown to have been almost entirely lined with trees and hedges.	No notable changes identified in the surrounding area.
2025 walkover and site investigation	The buildings in the north-western corner of the site (stables) are noted to have become dilapidated at this time.	Recreational ponds and lakes shown to have been created in the wider site area to the south and west.

Table 2.1: History of the Site and Surrounding Land

Date (scale)	Site History	Surrounding Land History
Note: All distances are approximate.		

2.1.1 Summary of Historical Landuses

The site has remained mostly undeveloped throughout the available mapping history, with the exception of the buildings located in the north-western corner of the site by 1999.

No significant industrial or commercial landuses shown in the surrounding area.

2.2 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

2.2.1 Anticipated Geology

Relevant geological information has been determined using the British Geological Survey (BGS) extract sheet 302 of Horsham, which have been summarised in table 2.1.1 below.

Table 2.2.1: Anticipated Geology

Stratum	Age	Possible Thickness (m)	Typical Description	Aquifer Status
Artificial/Made Ground None indicated on site	N/A	N/A	N/A	N/A
Superficial None indicated on site	N/A	N/A	N/A	N/A
Solid Weald Clay Formation	Hauterivian to Barremian	Up to 460m	Thinly bedded mudstones (shales) and mudstones with subordinate siltstones, sandstones, including calcareous sandstone, shelly limestones and clay ironstones	Unproductive strata

The BGS website indicates that there are no references to artificial ground, mass movement, linear features or faults recorded on site or within 500m of the site.

2.2.2 Ground Conditions – BGS Borehole and Trial Pit Records

The nearest BGS borehole log(s) for drilling or excavation works undertaken within circa 500m of the site, and a summary of the ground conditions encountered to approximate depths in metres (m) below ground level (bgl), are presented in table 2.2.2.

Table 2.2.2: Summary of Local BGS Borehole Logs			
Unit	Description	From (bgl)	To (bgl)
TQ12NW15 – SUMNERS POND CHAPEL ROAD BARNES GREEN HORSHAM – 410m south-west			
Topsoil	Topsoil	GL	0.5m
Solid	Clay + Stone	0.5m	4.5m
	Clay with hard bands of Mudstone	4.5m	35.0m
	Horsham Stone – very hard	35.0m	40.0m
	Stiff Clay	40.0m	44.0m
	Stiff Clay and stone throughout	44.0m	52.0m
	Clay	52.0m	54.0m
Groundwater	N/A – drilled with mud (Oct 2023)		
GL = Ground Level			

2.2.3 Hydrogeology

The hydrogeology of the site has been determined by the solid geology of the Weald Clay Formation, which is classified by the Environment Agency as unproductive strata. Unproductive strata comprise rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The combined classification groundwater vulnerability beneath the site is noted as ‘unproductive aquifer’.

Both the PRA report and the Environment Agency website (June 2025) indicate that the site is not located within an Environment Agency source protection zone (SPZ).

The Envirocheck report indicates that there are references to groundwater abstraction licences for premises within 1000m of the site, including public water supply.

2.2.4 Hydrology

The Ordnance Survey Water Network Lines indicates that the nearest inland river (and surface water feature) is located 144m to the south, within the Adur and Teville catchment. Parson's Brook is referenced at a location 290m to the north-east of the site.

The PRA report indicates that there are no references to surface water abstraction licences and no licences for public water supply for premises within 1000m of the site.

The Envirocheck database information within the PRA report indicates that there are five references to 'Discharge Consents' for premises within 250m of the site, the nearest being 148m to the south for 'discharge of other matter-surface water, into a freshwater stream/river.

The PRA report indicates that there is one record of a 'Pollution Incident to Controlled Waters' at a location 236m to the south, where 'oils – petrol' is noted to have entered the stream, however the incident is shown to have been 'minor'.

There are no 'Local Authority Pollution Prevention and Controls' for premises within 250m of the site.

The PRA report indicates that the site is not located within an area that is at risk of 'extreme flooding' or 'flooding' from rivers or sea without defences. The site is located in a Flood Zone I, where there is a low risk of flooding. The site is not located in an area that benefits from flood defences. The site is not located in a flood water storage area.

The Envirocheck report within the PRA indicates that discreet areas within the site are located in a 1 in 1000 year surface water flood extent.

2.3 LANDFILLS AND BIO-GROUND GAS

2.3.1 Landfills, Waste Management Facilities and Infilled Ground

The Envirocheck report indicates that there are no historical landfill sites, Local Authority recorded landfill sites, registered landfill sites, or waste facilities within 250m of the site.

There are also no references to potentially infilled land (non-water or water) within 250m of the site.

2.3.2 Preliminary Risk Assessment (PRA) – Bio-Ground Gas

Table 2.3.2 summarises the gas risk for the site, based on the above information gained through the desk-based research. In accordance with current guidance (CIRIA C665), the gas generation potential for each

source has been individually assessed, with references to potential gassing risk made according to the following definitions: Negligible, Very Low, Low, Moderate, High and Very High. The definitions are explained in Section 10.0 of the guidance.

The objective of this exercise is to determine if potentially unacceptable bio-ground gas risks exist, and whether further investigation and assessment is necessary.

Table 2.3.2: Preliminary Risk Assessment (PRA) – Bio-Ground Gas			
Potential Source	Risk	Risk Rating	Rationale
Made Ground (CO ₂ + CH ₄)	Human health Explosion	Very Low	The site has remained mostly undeveloped with the exception of the buildings and pens in the north-west, therefore significant Made Ground is not anticipated. Although Made Ground may be encountered locally at site entrance points and around the buildings and vegetable plots in the north-west of the site, significant organic biodegradable material is not expected.
Alluvial Strata (CO ₂ + CH ₄)	Human health Explosion	Negligible	No alluvial deposits noted within 250m of the site.
Landfills (CO ₂ + CH ₄)	Human health Explosion	Negligible	No landfill sites noted within 250m of the site.
Infilled Ground + Burial Sites (CO ₂ + CH ₄)	Human health Explosion	Negligible	No potentially infilled ground locally within 250m of the site.
Coal and Mining (CO ₂ + CH ₄)	Human health Explosion	Negligible	The risk in connection with 'non-coal mining area(s) of Great Britain' is noted to be 'highly unlikely'.
Soil Vapours	Human health Explosion	Very Low	No evidence of fuel storage.
COMBINED RISK RATING = VERY LOW			

A combined Very Low risk from ground gas ingress and explosion is considered and ground gas monitoring is not required. However, precautionary gas monitoring would be prudent as a matter of course during the current site investigation.

2.4 RADON GAS

Information from the Envirocheck report within the PRA (using data supplied by the BGS) indicates that 'The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level)' and that no radon protection measures are required.

Notwithstanding the above, a Radon report is recommended immediately prior to the re-development as radon guidance periodically changes and the above advice may be outdated by the time of any re-development.

The HSA website (ukradon.org) can be used to purchase radon reports, where an address-specific radon report may be obtained. It should however be noted that for redevelopment sites, a GeoReport provided by the British Geological Survey may be more appropriate.

3.0 PRELIMINARY RISK ASSESSMENT

3.1 METHODOLOGY

A tier 1 PRA and CSM have been prepared in accordance with the technical approach on Land Contamination Risk Management (LCRM), which replaced 'CLR11'. Possible hazards identified by a potential source of contamination and sensitive receptors have been assessed via a source-pathway-receptor (SPR) model in accordance with current UK protocols. A risk may only exist where a plausible SPR linkage is viable and where the quantity or concentration of a contaminant (source) is sufficient to cause harm. Under the statutory definition "Contamination" may only exist where contaminants pose a risk of harm to a receptor. Risk may be defined as a function of the likelihood and severity of any adverse effects resulting from a contamination event in accordance with CIRIA C552. A summary of how risk is derived, and the associated definition, is presented in tables 3.1.1 and 3.1.2.

Table 3.1.1: Risk Ratings Matrix				
	Consequence			
Probability	Severe	Medium	Mild	Minor
High Likelihood	Very high risk	High risk	Moderate Risk	Moderate/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 3.1.2: Risk Ratings Definition	
Risk Rationale	Definition
Very high risk	A high probability that severe harm could occur to determined receptor from identified contaminant - OR - evidence exists that severe harm to receptor is currently occurring. Urgent investigation and remediation should be considered. If demonstrated this risk is likely to result in substantial liability.
High risk	Harm is likely to occur to determined receptor from identified contaminant. Urgent investigation and short-term risk minimisation remediation followed by longer term fit for purpose remediation should be considered. If demonstrated this risk is likely to result in substantial liability.
Moderate Risk	It is possible that harm could occur to a determined receptor from identified contaminant. It is relatively unlikely that any harm would be severe or should harm occur it is likely to be relatively mild.
Moderate/low risk	It is possible that harm could occur to a determined receptor from identified contaminant. It is unlikely that any harm would be severe or should harm occur it is probable to be relatively mild.
Low risk	It is possible that harm could occur to a determined receptor from identified contaminant. It is unlikely that such harm, if indeed present, would at worst be mild.
Very low risk	There is a low possibility that harm could occur to a receptor. In such event the harm would not be severe.

3.2 POTENTIAL SOURCES OF CONTAMINATION

Based on the desk-study and walkover survey completed, table 3.2 presents a summary of the potential sources identified.

Table 3.2: Potential Sources			
Source	Key Contaminants of Concern	Description	Plausible?
1. Site-wide soil contamination	Metals, hydrocarbons (TPH/PAH), asbestos.	Limited risk of soil contamination within the site associated with existing buildings and use of the site and the possibility of the presence of Made Ground.	Yes
2. Local soil contamination	Metals, hydrocarbons (TPH/PAH), asbestos.	Limited risk of soil contamination from existing buildings in the north-west of the site and at site entrances.	Yes
3. Asbestos	Asbestos	Limited risk of Asbestos Containing Soils (ACS) and Asbestos Containing Materials (ACMs) from previous and existing buildings.	Yes
4. Groundwater	Groundwater is not anticipated at shallow depth beneath the site.	Site is underlain by unproductive strata and not located in an SPZ.	No
5. Ground gases/vapours	Hazardous bio-ground gas. Complete routine bio-ground gas monitoring.	No significant hazardous ground gas sources are anticipated on-site.	Yes

3.3 PATHWAYS

A pathway is one or more routes or means that a receptor can be exposed to, or affected by, a contaminant.

Table 3.3: Plausible Pathways
On-Site and Locally
Direct contact; to humans and infrastructure
Underlying geology/hydrogeology; <i>Weald Clay Formation comprising unproductive strata</i>
Inhalation and ingestion
Surface run-off/drainage

3.4 RECEPTORS

A receptor is either a living organism, a group of organisms, an ecological system, controlled waters or property that could be harmed or polluted by a contaminant. Table 3.4 examines the potential receptors.

Table 3.4: Potential Receptors			
Receptor	Description	Comments	Plausible
Construction workers	Groundworkers and general construction works	Construction works proposed within the site.	Yes
End users	Occupants of the proposed development	Landscaped areas proposed around the site.	Yes
Adjacent land users	Occupants of surrounding residencies	Adjacent residential dwellings which could be affected by run-off or migration.	Yes
Soft landscaping	Areas of new planting including lawns	Landscaped areas proposed around the site.	Yes
Water supply pipes	Plastic pipework for potable water supply to housing may be affected if laid in contaminated soils	New supply required for redevelopment.	Yes
Buildings & infrastructure	Buried concrete for new foundations may be in contact with aggressive ground (sulphur attack)	New building works proposed.	Yes
Groundwater	Controlled waters (aquifers) beneath the site	Site underlain by unproductive strata. No potable water supply within 1000m of the site. The site is not located in an SPZ.	No
Surface waters	Controlled water such as lakes, streams, rivers or coastal waters	Main river 144m south of the site.	Yes
Ecological receptors	Sensitive areas of ecological significance defined under Part 2A of EPA 1990	Ancient and Semi-Natural Woodland 13m to the west.	Yes

3.5 SUMMARY OF POLLUTANT LINKAGES FOR PROPOSED LAND USE - PRELIMINARY CSM

The preliminary CSM is based upon the proposed site end use and the information currently consulted relating to various risk sources and plausible pollutant linkages and is presented within table 3.5.

Table 3.5: Preliminary Conceptual Site Model (for plausible pollutant linkage pathways)

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
Source 1 Site-wide soil contamination	Construction workers	Direct contact	Unlikely	Mild	Very Low <i>Note 1.</i> Site occupied with existing buildings locally, and in use as agricultural land or pasture. Potential for made ground and contaminants associated with the buildings locally. Potential asbestos arising from building materials.	1
	End users	Direct contact	Low Likelihood	Mild	Low <i>See Note 1.</i>	2
	Adjacent land users	Direct contact via run-off	Unlikely	Mild	Very Low <i>Note 2.</i> Site is underlain by unproductive strata. Site occupied with existing buildings locally, and in use as agricultural land or pasture. Site predominantly soft surfaced.	3
	Soft landscaping	Root uptake	Low Likelihood	Mild	Low <i>Note 3.</i> Potential for made ground has been identified locally which may impact soft landscaping and root development. However, no evidence of existing vegetation die-back.	4
	Water supply pipes	Direct contact	Low Likelihood	Mild	Low <i>Note 1.</i>	5
	Buildings & infrastructure	Direct contact	Low Likelihood	Mild	Low <i>Note 1.</i>	6
	Groundwater	Vertical migration through hydrogeology	Unlikely	Mild	Very Low <i>Note 4.</i> Site is underlain by unproductive strata. The site is not located in an SPZ. Site predominantly soft surfaced, but pathway restricted by geology to controlled water receptors.	7

Table 3.5: Preliminary Conceptual Site Model (for plausible pollutant linkage pathways)

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
	Surface water	Run-off	Unlikely	Mild	Very Low <i>Note 5.</i> No inland rivers within the immediate vicinity and pathway restricted by geology to controlled water receptors.	8
	Ecology	Direct contact via run-off	Unlikely	Mild	Low <i>See Note 2.</i>	9
Source 2 Local soil contamination	Construction workers	Direct contact	Unlikely	Mild	Very Low <i>Note 6.</i> On site contaminative features of interest including existing buildings and the possibility of made ground locally in the north-west and at site entrances.	10
	End users	Direct contact	Low likelihood	Mild	Low <i>See Note 6.</i>	11
	Adjacent land users	Direct contact via run-off	Unlikely	Mild	Low <i>See Note 6.</i>	12
	Soft landscaping	Root uptake	Low likelihood	Mild	Low <i>See Note 6.</i>	13
	Water supply pipes	Direct contact	Low likelihood	Mild	Low <i>See Note 6.</i>	14
	Buildings & infrastructure	Direct contact	Low likelihood	Mild	Low <i>See Note 6.</i>	15
	Groundwater	Vertical migration through hydrogeology	Unlikely	Mild	Very Low <i>See Note 4.</i>	16
	Surface water	Run-off	Unlikely	Mild	Very Low <i>See Note 5.</i> No inland rivers within the immediate vicinity and pathway restricted by geology to controlled water receptors.	17

Table 3.5: Preliminary Conceptual Site Model (for plausible pollutant linkage pathways)

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
	Ecology	Direct contact via run-off	Unlikely	Mild	Very Low <i>See Note 2.</i>	18
Source 3 Asbestos	Construction workers	Inhalation	Low likelihood	Minor	Very Low <i>Note 7. Potential for ACMs from existing buildings locally.</i>	19
	End users	Inhalation	Low likelihood	Minor	Low <i>See Note 7.</i>	20
	Adjacent land users	Inhalation	Unlikely	Mild	Very Low <i>Note 8. Potential for ACMs from buildings locally.</i> Distance and dispersion in outdoor air limits risk.	21
Source 4 Groundwater	Construction workers End users Adjacent land users Water supply pipes	Direct contact	Unlikely	Mild	Very Low <i>Note 9. Unproductive strata beneath the site.</i> Groundwater contamination from site unlikely as risk of soil contamination is low.	22
	Soft landscaping	Root uptake	Unlikely	Mild	Very Low <i>See Note 9.</i>	23
	Groundwater Surface water Ecology	Lateral migration through hydrogeology	Unlikely	Mild	Very Low <i>See Note 9.</i>	24
Source 5 Ground gases and Soil vapours (on/off site source)	Construction workers	Inhalation of vapours/gas	Low likelihood	Minor	Very Low <i>Note 10. No significant notable sources of ground gas identified within the site or within the vicinity of the site, however, possible risks locally in the north-west from made ground and soil vapours and at site entrance points.</i>	25
	End users	Inhalation of vapours/gas	Low likelihood	Mild	Low <i>See Note 10.</i>	26

Table 3.5: Preliminary Conceptual Site Model (for plausible pollutant linkage pathways)						
Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
					<i>Perceived risk increased due to long-term occupancy.</i>	

The overall environmental risk classification for the site is considered to be generally **LOW**.

4.5 CONSIDERATIONS FOR SITE INVESTIGATION

Due to the sensitivity of the proposed land use a site investigation and suitable risk assessment should be completed, to include:

1. **Investigation of soil contamination.** This should be completed on both a spatial and targeted basis. Spatial coverage should be achieved in order to target areas of the site where potential sources of contamination may exist and ideally where these sources overlay a pathway for risk to exist (i.e. within proposed landscaped areas). Additionally, pH, sulphate and sulphur testing should be completed to enable design of buried concrete.
2. **Local sources of contamination.** Such as the existing buildings in the north-western corner of the site should also be targeted.
3. **Precautionary investigation of hazardous bio-ground gases and soil vapours.** Monitoring wells should be installed enabling precautionary bio-ground gas and vapour monitoring.

The listed suite of analysis is considered suitable and will provide a screening for the majority of commonly found soil contaminants, which shall be followed through into the site investigation.

 Aviron's "ES-1" of laboratory analysis shall be applied to future site investigations which includes; arsenic, barium, cadmium, total chromium, copper, nickel, zinc, lead, mercury, selenium, water soluble boron, total cyanide, total sulphate, water soluble sulphide, speciated Polycyclic Aromatic Hydrocarbons (PAH), speciated Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) and Methyl Tert-Butyl Ether (MTBE), organic matter, total phenols, pH and asbestos. **Provides broad analysis of common soil contaminants.**

 Waste Acceptance Criteria (WAC) testing to determine waste soil classification.

The listed suite of analysis is considered suitable and will provide a screening for the majority of commonly found soil contaminants, which shall be followed through into the site investigation (section 4.0).

4.0 SITE INVESTIGATION WORK

4.1 METHOD STATEMENT AND SITE INVESTIGATION APPROACH

A method statement detailing how the site investigation was to be conducted was produced in accordance with current statutory guidance, best practices and the Client's instructions.

A health and safety plan was completed before site work commenced. Site investigation staff were briefed on the potential contaminants likely to be encountered, and the appropriate personal protective equipment (PPE) to be adopted for this type of investigation.

The site investigation was conducted in accordance with British Standards; BS5930:2015+A1 'Code of Practice for Ground Investigation', BS1377-1:2016 'Methods of test for soils for Civil Engineering Purposes' and/or BS EN ISO 17892 Parts 1-12, 'Geotechnical investigation and testing. Laboratory testing of soil', and BS10175:2011+A2:2017 'Investigation of Potentially Contaminated sites'.

4.2 SITE INVESTIGATION METHODS

Section 3.5 prepared an initial CSM where pollutant linkages with a greater risk than low would require suitable investigation. Table 4.2 presents what it considered to be a suitable method and rationale of investigation which was completed between 3 and 4 June 2025.

Exploratory Hole Location Plans are enclosed as **Figures 5 and 6**.

Exploratory holes were positioned where agreement was made between the Client and on-site representatives.

Table 4.2: Rationale of the Site Investigation Positions		
Locations	Rationale	Monitoring Wells
Window Sample (WS) Boreholes		
WS1 to WS11 were spatially positioned around the site to target the proposed development buildings and garden areas, for shallow soil sampling and laboratory testing. WS4 were completed in the area of the buildings in the north-west of the site.		Monitoring wells were installed into WS1, WS2 and WS5

All intrusive locations were pre-cleared prior to the ground investigation works using a Cable Avoidance Tool (CAT) and tracing of manhole covers, which was completed to endeavour service avoidance during this exercise.

4.2.1 Window Sample Drilling

Window sample boreholes WS1 to WS11 were drilled to depths of up to 4.7m bgl using an Archway Dart drilling rig.

The purpose of the window sampling was to evaluate ground conditions at shallow depths, collect soil samples for geochemical and geotechnical laboratory analysis and to determine soil strength by means of SPTs.

The action of window sampling also enables the installation of monitoring wells to determine standing groundwater levels and ground gas testing.

Standard Penetration Tests were undertaken at 1m intervals to depths of up to 4.7m bgl within the boreholes in accordance with BS EN SO 22476-3 "Standard Penetration Test 2005". Drilling refusal (SPT N > 50) occurred routinely in the boreholes at depths of between 2.7m and 4.7m bgl, where the boreholes were terminated to prevent damage to the drilling equipment and tooling, and to avoid jamming.

Disturbed soil samples were also collected from bored arisings for geochemical and geotechnical laboratory tests which are further discussed within section 6.0.

Hand penetrometer tests were completed at 0.25m depth intervals in the fine soils encountered or where appropriate to determine the shear strength profile across the site.

4.2.2 Dynamic Cone Penetrometer (DCP/TRL)

Seven Dynamic Cone Penetrometer (DCP) tests (DCP1-DCP7) were undertaken to determine design parameters (California Bearing Ratio, or CBR) for road pavement construction in accordance with the Transport Research Laboratory (TRL), commencing at ground level, to a depth of 0.9 m bgl.

The tests were undertaken at the locations included in **Figures 5 and 6**.

4.3 GROUND CONDITIONS

The exploratory hole logs and photographs are presented within **Appendix I**.

Table 4.3: Summary of Ground Conditions

Unit	Description	From (m bgl)	To (m bgl)
Topsoil	Comprising slightly clayey sandy gravelly SILT. Reworked Topsoil locally in WS2 to 0.4m bgl.	GL	0.3 – 0.6
Weald Clay Formation	Soft, soft to firm and firm, becoming stiff and very stiff silty sandy gravelly CLAY. Local horizons of firm SILT in WS1 (2.2-2.5m), WS2 (1.2-1.6m), WS9 (2.4-2.6m) and WS11 (1.6-1.8m).	0.3 – 0.6	2.7 – 4.7+
	Very weak, poorly laminated MUDSTONE, with local partings of shell fragments.	2.5 – 4.2	3.0 – 4.5+

4.3.1 Field Observations

The following visual and olfactory observations were made:

-  Soft low strength soils noted locally to depths of between approximately 1.5m and 2.3m bgl in the SPTs.
-  Roots and rootlets were recorded locally during the site investigation works to depths of between 1.1m and 1.3m bgl.
-  No discernible stains, or visual and olfactory evidence of contamination noted during the site investigation works.

4.4 GROUNDWATER LEVELS

4.4.1 Groundwater Levels: During Site Investigation Works

Groundwater was encountered during the site investigation works completed on 4 and 5 June 2025 at the depths detailed in table 4.4.1.

Table 4.4.1: Groundwater During Investigation

Location	Depth – bgl (during GI)	Comments
WS1, WS3-WS8, WS10-WS11	Dry to depths of up to 4.7m	The water encountered is expected to represent perched water within the Weald Clay Formation, possibly as fissure flow.
WS2	2.5m, rising to 2.4m	
WS9	3.9m, rising to 3.85m	

4.4.2 Groundwater and Gas Monitoring Wells

Selected boreholes were converted to monitoring wells to enable standing groundwater level monitoring and ground gas monitoring. Wells were installed into 101mm diameter window sample boreholes using 63mm external diameter and 50mm internal diameter HDPE standpipe. Table 4.4.2 describes the construction of the wells.

Table 4.4.2: Monitoring Well Construction			
Location	Depth of plain pipe and bentonite seal (m)	Response zone; depth of slotted pipe with gravel screen (m)	Depth of install (m)
WS1	Ground level (GL)-1.0	1.0-4.4	4.4
WS2	GL-1.0	1.0-2.7	2.7
WS5	GL-1.0	1.0-4.5	4.5

4.4.3 Groundwater and Gas Post-Investigation Monitoring

In all instances and prior to completing groundwater monitoring and field measurements bulk ground gases and soil vapours were monitored using a GFM 435 Gas Analyser and miniRAE Photon-Ionisation Detector (PID) on the dates shown in table 4.4.3, which provides standing level groundwater 'dips' during post-investigation monitoring.

Table 4.4.3: Groundwater Monitoring Depths			
Location / Date	Depth – bgl WS1	Depth – bgl WS2	Depth – bgl WS5
26 June 2025	1.36m	1.98m	1.55m

Further to comments made regarding the groundwater within table 5.4.1, the groundwater encountered is expected to be perched water within the Weald Clay Formation.

Ground gas monitoring is discussed in section 8.0 of this report.

Field monitoring sheets are enclosed in **Appendix II**.

5.0 LABORATORY ANALYSIS

5.1 SOIL GEOCHEMICAL TESTING

Table 5.1 details the soil samples which were collected and submitted for geochemical analysis.

Table 5.1: Soil Geochemical Testing			
Location	Strata Sampled	Objective	Analysis
WS2 (0.3m)	Reworked Topsoil	Material at shallow depths is the greatest risk to human health via the dermal contact, ingestion and inhalation pathways and thus is the most intensely assessed stratum.	ES-1
WS3 (0.1m)	Topsoil		ES-1
WS4 (0.1m)	Topsoil		ES-1
WS11 (0.2m)	Topsoil		ES-1
WS1 (0.7m)	Natural Clay	To provide baseline concentrations of natural soils (<1m deep) where root growth will occur.	ES-1
WS4 (0.6m)	Natural Clay		ES-1
COMP1 (0.1-0.3m)	Topsoil	Completed to enable waste classification of the overlying Made Ground for off-site disposal purposes	WAC

Chemical sampling and testing targeted the overlying units of Made Ground and natural strata whereby virtue of surface deposition historical contaminants are most likely to be recorded. The purpose of sampling slightly deeper natural strata is to generate a baseline understanding of natural soil chemistry, particularly about the water-table/smear zone.

The analytical suites were chosen to provide a suitable screening in accordance with the potential contaminants identified within the site conceptualisation presented within section 3.5.

Soil samples for environmental quality analysis were sent to i2 Analytical Limited.

5.2 SOIL GEOTECHNICAL TESTING

A programme of geotechnical laboratory testing was undertaken at GEO Site and Testing Services Limited and i2 Analytical Limited. Testing was completed on the fine and coarse soils encountered beneath the site. The test procedures used were generally in accordance with the methods described in BS1377-1:2016 and/or BS EN ISO 17892. Details of testing used are provided in table 5.3.

Table 5.2: Soil Geotechnical Testing

Test	Standard	Number of Samples
Atterberg Limits (and Moisture Content) <i>The objective of Atterberg limits and moisture content testing is to determine plasticity and volume change potential of fine (clay and silt) soils and the potential for desiccation to have occurred</i>	BS1377: 1990: Part 2: Clause 3.2, 4.5, 5.0	15 (18)
Aviron LC Suite - pH, water soluble sulphate, total sulphate & total sulphur <i>To enable concrete classification to be specified</i>	UKAS accredited	10 (including 6 within the ES-1 analysis)

5.3 SOIL SAMPLING PROTOCOL

All soil samples were collected from bored or excavated arisings using a trowel and following Aviron's standard protocols for soil sampling. To avoid cross contamination, the sampling equipment was cleaned using de-ionised water after each sample was retrieved. Clean latex gloves were used each time a soil sample was collected, and all samples were placed into clean sterilised jars for submission to the UKAS/MCERTS accredited laboratory.

All sample containers were labelled on-site immediately prior to filling. These samples were identified by a label placed on the body of each container and the following information was recorded; site name, date collected, unique sample number, soil sample depth.

Samples for geochemical analysis were then placed into a cool box containing ice packs to maintain refrigerated conditions following collection and transport to the laboratory.

6.0 ENVIRONMENTAL INTERPRETATIVE GUIDANCE

6.1 GENERIC QUANTITATIVE RISK ASSESSMENT

The purpose of a tier 2 GQRA is to determine the suitability of the site for proposed development and end use.

The site investigation shall collect soil samples whereby determinant chemistry measured in the soil through laboratory analysis have been compared with guidance values which are appropriate to the receptor under consideration. The guidance values or screening criteria applied shall be industry adopted generic values which following a screening of the laboratory analysis shall determine whether or not a site is contaminated, as defined under Part IIA of the EPA 1990 and specification in regard of the proposed development and identified receptors.

Where exceedances of guidance values or recorded a GQRA can be used to appraise risk and make recommendations in regard of further investigation, remediation and/or tier 3 Detailed Quantitative Risk Assessment (DQRA).

6.2 GUIDANCE USED FOR ASSESSING SOIL CONTAMINATION

Aviron has followed the technical approach on Land Contamination Risk Management (LCRM), accessed on gov.uk website and other available guidance to assess contaminant concentrations.

Details of the methodology and Aviron's position on the adoption of guidance values is outlined below.

The available chemical data, from soil samples tested, is sorted into appropriate datasets depending on sampling regime and ground conditions. An initial GQRA is completed using the relevant and industry available screening criteria and where appropriate, statistical modelling. Risks to human health shall be initially assessed by comparing soil chemical data against various published screening criteria. These have been sourced from the following and in order of preference:

-  Category 4 Screening Levels (C4SLs) prepared by the Department of Environmental Food and Rural Affairs (DEFRA) and published March 2014.
-  Phase 2 C4SLs prepared by CL:AIRE and published May 2021.
-  Suitable 4 Use Levels (S4ULs) prepared by Land Quality Management/Chartered Institute of Environmental Health (LQM/CEIH) and published December 2014. LQM acknowledgement for use of S4ULs. *"Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3275. All rights reserved".*

-  Soil Guidance Values (SGVs) prepared by the Environment Agency (EA)/DEFRA and published 2009.
-  Soil Generic Assessment Criteria (GAC) prepared by Environment Industries Commission (EIC)/Association of Geotechnical and Geoenvironmental Specialists (AGS)/Contaminated Land: Application In Real Environments (CL:AIRE) and published 2010.

Aviron have adopted the above hierarchy in response to LCRM recommendations.

6.3 GUIDANCE USED FOR THE ASSESSMENT OF HAZARDOUS GROUND GAS

The principle influence for causing the migration of landgas in the ground is changes to barometric pressure. The most onerous landgas emission conditions on a site are usually observed following days of low or rapidly falling barometric pressure below 1000 millibars (mb).

Monitoring is usually performed over a period of several weeks or months in order to increase the chances of visiting the site on days when the conditions for monitoring worst-case results are correct. Gas monitoring results collected solely during high pressure conditions (>1000mb) may not provide a true value for worst case emission rates from the site.

Methane is produced by a number of processes, which can be biological or chemical in nature. The principal process is from the biogenic decay of organic material and is commonly found associated with landfill and organic marsh deposits or river silts. Methane can also be found associated with coal workings. It is explosive at concentrations of between 5 and 15%, with 5% being termed the lower explosive limit (LEL).

In assessing the risks from hazardous ground gas, reference has been made to the guidance from BS 8485:2015 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' and CIRIA Report C665 'Assessing risks posed by hazardous ground gases to buildings' 2007 which adopts a risk characterisation strategy based on the maximum flow (L/hour) and maximum steady stated concentration (% v/v) of methane and carbon dioxide from a site to derive gas screening values (GSV) in litres/hour which are comparable with the Modified Wilson and Card classification (shown in Table 8.5 of C665) for any site which isn't intended to be developed as low-rise housing with vented underfloor void.

It is noted bio-ground gas monitoring is precautionary.

7.0 ASSESSMENT OF GEOCHEMICAL SOIL RESULTS

The development proposed shall comprise new homes with private gardens and therefore the homegrown produce with plant uptake end use values from the guidance listed in section 6.2 shall be selected.

In order to select the appropriate Soil Organic Matter (SOM) value for appraisal of PAH and TPH the mean average SOM value was determined from the laboratory dataset and accordingly the 2.5% SOM value was selected.

Laboratory certificates of chemical analysis are presented in **Appendix III** along with the chemical assessment criteria.

7.1 ASSESSMENT OF SOIL GEOCHEMICAL RESULTS

Table 7.1 provides a summary of the results for each determinand analysed when compared to the relevant assessment criteria.

Table 7.1: Summary of Geochemical Results				
Location	Strata	Determinant	Measured Conc. (mg/kg)	Guidance Conc. (mg/kg)
WS2 (0.3m)	Reworked Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
WS3 (0.1m)	Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
WS4 (0.1m)	Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
WS11 (0.2m)	Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
WS1 (0.7m)	Natural Clay	All determinants recorded at acceptable concentrations	n/a	n/a
WS4 (0.6m)	Natural Clay	All determinants recorded at acceptable concentrations	n/a	n/a
COMP1 (0.1-0.3m)	Topsoil	All determinants recorded at acceptable concentrations and suggested of inert waste.	n/a	n/a
Notes: Barium EIC Generic Acceptance Criteria (EIC GAC) is 1300mg /kg (Residential) Chromium is assumed to be chromium III (not chromium IV).				

7.2 DISCUSSION OF SOIL GEOCHEMICAL RESULTS

All analytical determinands have been recorded at acceptable concentrations and are considered to be found in 'low' (based on professional judgement) concentrations.

No abnormal conditions were identified within the samples submitted for testing from across the site.

It is considered currently and historical land uses, of a light agricultural nature, have not chemically impacted the site.

7.2.1 Waste Management and Disposal

The results of the WAC test and chemical testing suggest soils would be on an inert waste criteria, which should be confirmed by the waste management contractor, who upon presentation of the laboratory results shall be able to classify waste soil.

8.0 HAZARDOUS GROUND GAS MONITORING

8.1 STRATEGY

As previously presented within table 4.4.2 monitoring well installations were constructed in order to enable precautionary ground gas monitoring following the outcome of the preliminary ground gas assessment, which determined a very low risk. Monitoring was completed in order to quantify the qualitative assessment.

The installation of the monitoring wells have suitable response zones to enable the capture of ground gases which may possibly migrate through granular and fractured units beneath proposed homes. Each monitoring well was completed with a 1m thick bentonite seal from ground level to prevent atmospheric influence.

8.2 MONITORING

The presence of soil vapours was determined prior to bulk ground gas monitoring using a MiniRAE Photon Ionisation Detector (PID) from RAEs Systems. The presence of hazardous bio-gases including methane (CH₄), carbon dioxide (CO₂) and oxygen (O₂) was determined using a GFM Infra-Red Gas Analyser from Ribble Enviro Limited. The flow rate and atmospheric pressure, in millibars (mb), was also measured during the monitoring process. Depth to groundwater was measured using an electronic dip meter.

Monitoring work was completed on the dates specified within table 8.2 which also summarises weather conditions and atmosphere pressure. To determine rising or falling pressures local 'online' weather trends from the Met Office and/or the monitoring apparatus were consulted.

Table 8.2: Background Gas Monitoring Data				
Date	Atmospheric Pressure	Rising/Falling Pressure?	Worst Case Conditions?	Groundwater above response zone?
26 June 2025	1010-1011mB	Steady	No	No

Note 2 of C665 indicates 'worst case' conditions occur during falling and sub-1000mB atmospheric pressures. Section 5.5.1 of C665 indicates 'worst case' conditions are likely to occur during weather conditions such as rainfall, frost or dry weather.

8.3 MONITORING

Table 8.3 summaries the results obtained which are enclosed in **Appendix II**.

Table 8.3: Summary of Monitoring Results			
Gas	Measured Conc. Range (% v/v)		Comments
	Low	High	
CH ₄	0.0 (<0.1)	0.0 (<0.1)	Methane was not detected (<0.1%) and thus is below the guidance value of 1% at which point the characteristic situation is advised to increase to CS2.
CO ₂	0.2	0.5	Carbon dioxide has been detected at concentrations below the guidance value of 5% at which point the characteristic situation is advised to increase to CS2.
O ₂	19.9	20.1	Oxygen has been recorded at ambient concentrations, above 16%, being the point where it is considered there is potential for asphyxiation.
Vapour*	0.1	0.3	Very low (PID) concentrations have been recorded. This concurs with the ground conditions and geochemical laboratory results suggesting the absence of soil vapour risk to new units.

*vapour concentration in parts per million (ppm)

Monitoring positions remained constant and intact. No replacement monitoring positions were installed during the period of this project. No damage was observed to the monitoring wells during works.

It is considered the integrity of the monitoring wells has not been compromised as there is no evidence of surface damage which may affect the underlying installations. There is a bentonite seal within the bored annulus preventing escape of ground gases and entry of atmospheric gases. The gas valve remained closed prior to all monitoring occasions so passive venting of ground gas is unlikely to have occurred as site visits were unannounced.

8.4 INTERPRETATION OF DATA

Under normal use of the site (i.e. above ground), the risk presented by methane and carbon dioxide is dependent on both the concentrations and the rate of flow. In accordance with Wilson and Card methodology specified in the CIRIA C655 document, Gas Screening Values (GSV) were determined using the formula below.

GSV =	(Maximum steady concentration / 100) x Flow rate
GSV measured in litres per hour (l/hr)	Maximum steady concentration measured in percent (%) Flow rate measured in l/hr.

Based on the maximum concentrations and flows recorded, the **GSV** for **methane** was **0.0 L/hr** and the **GSV** for **carbon dioxide** was **0.0l/hr**.

Based on the outcome of the PRA, the results of the precautionary monitoring and GSV for carbon dioxide which is between below 0.07l/h the site is considered to conform the Characteristic Situation 1 (CS1).

Bio-ground gas protection is not considered necessary.

9.0 REVISED RISK ASSESSMENT

9.1 REVISED SOURCES OF CONTAMINATION

Table 9.1 summarises the sources of contamination are considered to exist, following completion of the site investigation and interpretation of test results.

Table 9.1: Revised Sources		
Source	Description	Key Contaminants of Concern/Comments
Revised Potential Sources		
1r. Undiscovered contamination	Potential for undiscovered soil contamination during groundwater excavations.	Buried waste/asbestos from agriculture. Ensure a watching brief during excavations.
No Longer Considered to be Potential Sources		
Site-wide soil contamination	Based on the site history, the ground conditions beneath the site and the laboratory results it is not considered site-wide (or local) soil contamination exists at the site.	n/a
Groundwater	Groundwater contamination is not considered to exist beneath the site	n/a
Bio-ground gases/vapours	Ground gas concentrations are considered to represent CS1 and gas protection is not considered necessary.	n/a

9.2 REVISED CONCEPTUAL SITE MODEL

Following interpretation of the laboratory results, site dynamics and the revision of potential soil contaminants within table 9.1 a revised conceptual model has been prepared and is presented in table 9.2.

Table 10.2: Refined Conceptual Site Model (for plausible pollutant linkage pathways)						
Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
Source 1r Undiscovered contamination	Construction workers	Direct contact	Unlikely	Mild	Very Low <i>Note 11.</i> No evidence of soil contamination following investigation. However, there is a small possibility of undiscovered contamination. Action. Enact a Watching Brief during groundworks.	27
	End users	Direct	Unlikely	Mild	Very Low	28

Table 10.2: Refined Conceptual Site Model (for plausible pollutant linkage pathways)

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
		contact			<i>See Note 12.</i>	
	Adjacent land users	Direct contact via run-off	Unlikely	Mild	Very Low <i>See Note 12.</i>	29
	Soft landscaping	Root uptake	Unlikely	Mild	Very Low <i>See Note 12.</i>	30
	Water supply pipes	Direct contact	Unlikely	Mild	Very Low <i>See Note 12.</i>	31
	Buildings & infrastructure	Direct contact	Unlikely	Mild	Low <i>Note 13. Non-aggressive ground conditions encountered. See section 10.7.</i>	32
	Groundwater	Vertical migration through hydrogeology	Unlikely	Mild	Very Low <i>See Note 12.</i>	33
	Surface waters	Vertical and lateral migration through hydrogeology	Unlikely	Mild	Very Low <i>See Note 12.</i>	34
	Ecology	Direct contact via run-off	Unlikely	Mild	Very Low <i>See Note 12.</i>	35

9.3 RISK COMMENTARY

9.3.1 Contamination Risk from Soil to Human Health – Construction Workers

Concentrations of soil determinands are unlikely to present a short-term exposure risk to adult construction workers, specifically from the dermal contact, ingestion and inhalation pathways. Nonetheless construction workers should ensure suitable PPE is worn which would include:

 Gloves to prevent dermal contact with contaminated soils. It is advised that disposable latex gloves are worn beneath the outer 'work' gloves. This shall prevent skin contact with any contaminated soils which may come into contact with the outer 'work' gloves.

 To prevent ingestion of contaminated soils construction workers should avoid putting hands or objects

in their mouth whilst on-site.

-  To prevent ingestion of contaminated soils prior to eating or drinking construction workers should ensure their hands are properly washed, rinsed and dried. The use of latex gloves shall restrict any contamination from soils from coming into contact with the skin.
-  To prevent inhalation of contamination soils construction workers should wear dust masks on dry and windy days. On damp or wet still days the risk of dust inhalation is low.

Notwithstanding there always remains risk for undiscovered contamination and thus a Discovery Strategy should be enacted. Enclosed as **Appendix IV** is the Discovery Strategy which should be affixed to the site office notice board and the content of which should form the formal site induction for each operative.

9.3.2 Contamination Risk from Soil to Human Health – End Users

No visual or olfactory evidence of soil contamination was observed during the ground investigation. A soil sampling and geochemical testing scheme of the in-situ Topsoil and natural strata was completed as part of this assessment which recorded concentrations of a wide variety of analytical determinands to below the relevant end use criteria. It is considered that neither current nor previous site uses have impacted the site and remedial work is not considered necessary.

9.3.3 Contamination Risk from Soil to Human Health – Domestic Water Supply

Special design for domestic water supply is unlikely. However, to be certain, it is advised that the report should be provided to the local water authority to ensure the correct materials are chosen for water supply pipes. Following the formal withdrawal of WRAS Guidance Note No. 9-04-03 (October 2002), it is recommended that the following reference should be consulted:

Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21 by the UK Water Industry Research Ltd (UKWIR); ISBN: 1 84057 5697

Generally, all services should be placed within dedicated runs, and then backfilled with clean imported material.

9.3.4 Contamination Risk from Soils to Controlled Waters

It is not considered that soils present a risk to groundwater/controlled waters given the absence of contaminative site history, no evidence of abnormal ground conditions and also the absence of soil contamination.

9.3.5 Contamination Risk from Groundwater

It is not considered contaminated groundwater exists beneath the site.

9.3.6 Risk from Ground Gas

Following completion of the PRA a Very Low combined risk from ground gas ingress and explosion is considered. No significant risk sources such as made ground, landfills or soils contained abundant organic matter. Identified.

To further evaluate ground gas risk one round of precautionary monitoring has been completed in accordance with our instruction which recorded acceptable GSV and maximum concentrations within in site. The concentrations recorded suggest Characteristic Situation 1 (CS1).

Bio-ground gas protection is not considered necessary.

10.0 GEOTECHNICAL ASSESSMENT

This section provides a geotechnical assessment in connection with the proposed development as described above and considers the GEO Limit State: failure or excessive deformation of the ground, in accordance with EN 1997 Eurocode 7: Geotechnical Design (and the UK National Annex to Eurocode 7) where applicable.

It is assumed for the purposes of this assessment that the finished ground floor level of the proposed development building is the same as the ground level at each of the exploratory hole locations.

The assessment of the stability of any slopes or retaining structures across or adjacent the site, the requirement for additional retaining structures and the requirements for cut and fill that may be required to facilitate construction is outside the scope of this report.

Where applicable the following assessment includes bearing resistance assuming conventional construction only and no allowances have been made for interaction between existing adjacent foundations and proposed foundations or loads.

Eurocode 7 Section 2.1 Basis for Geotechnical Design indicates that for each geotechnical design situation it shall be verified that no limit state is exceeded. Geotechnical design requirements have been established by three Geotechnical Categories, 1, 2 and 3. For the purpose of this assessment the development is Geotechnical Category 2: which include conventional types of structure and foundation with no exceptional risk or difficult or loading conditions.

Designs for structures in Geotechnical Category 2 should normally include quantitative geotechnical data and analysis to ensure that the fundamental requirements are satisfied. Routine procedures for field and laboratory testing and for design and execution may be used for Geotechnical Category 2 designs.

10.1 GROUND MODEL

Table 10.1 overleaf, provides the ground model for the site as determined from ground conditions encountered during the site investigation works.

Table 10.1: Ground Model				
Stratum	Description	Top of Stratum (m bgl)	Bottom of Stratum (m bgl)	Average Thickness (m)
Topsoil	Slightly clayey sandy gravelly SILT.	GL	0.3 – 0.6	0.43
Weald Clay Formation	Soft, soft to firm and firm, becoming stiff and very stiff silty sandy gravelly CLAY.	0.3 – 0.6	2.7 – 4.7+	-
	Very weak, poorly laminated MUDSTONE, with local partings of shell fragments.	2.5 – 4.2	3.0 – 4.5+	-
Notes				
Soft low strength soils noted locally to depths of between approximately 1.5m and 2.3m bgl in the SPTs. Roots and rootlets were recorded locally during the site investigation works to depths of between 1.1m and 1.3m bgl.				
Groundwater				
Groundwater at depths of between 1.36m, 1.98m and 1.53m bgl in WS1, WS2 and WS5 during the ground investigation works (June 2025).				

10.2 FOUNDATION DESIGN CONCEPT

The ground model and the following considerations will need to be taken in account in determining the foundation solution for the proposed development buildings:

-  Soft low strength soils noted locally to depths of between 1.5m and 2.3m bgl.
-  Desiccation noted locally to 1.5m bgl around the periphery of the site within the proximity of trees.
-  High volume change potential CLAY soils and the influence of trees.
-  Requirements of temporary works in potentially spalling soils and possible seasonally elevated perched water.

The clay soils present at shallow depth beneath the site are of predominantly high plasticity and medium and high volume change potential.

Assumed maximum 'characteristic action' (or line load) of 85kN/m run to 140kN/m run on conventional shallow foundations 1.0m wide on firm and firm to stiff CLAY, at the anticipated foundation formation level of between 1.0m and 2.5m bgl may be acceptable for the proposed buildings subject to the above considerations. It is assumed that the 'characteristic actions' comprises a vertical permanent action.

Further information regarding the permanent actions and variable actions (making up the 'characteristic actions') applied to the foundations may be required along with confirmation of the foundation type and foundation dimensions.

10.2 EXCAVATION CONDITIONS

Excavation of the materials encountered during the ground investigation should be achieved using conventional hydraulic excavation techniques.

10.2.1 Temporary Works

From the ground investigation undertaken, excavations in the natural fine soils may remain stable in the short term. Due to the requirement for excavations to facilitate the construction, as well as possibly spalling soils in possible seasonally elevated perched water, care should be taken to ensure that instability of excavations does not affect existing structures and services (e.g. foundations, roads, boundary walls or buildings) both on and off-site, and temporary support may be required in order to achieve this. Further advice should therefore be sought from the appointed structural engineer and specialist contractor regarding temporary works.

General guidance can be found within CIRIA Report 97: Trenching Practice, dated 2001.

Care should be taken to ensure that falls from excavation faces do not adversely affect the integrity of foundation concrete.

All excavations on site should be in accordance with HSE guidelines and stability should be practically maintained at all times.

10.2.2 Dewatering

Groundwater was encountered during the return monitoring in WS1, WS2 and WS5 at depths of between 1.36m, 1.98m and 1.53m bgl (as of June 2025).

On the basis of the data obtained; dewatering may be required in shallow excavations beneath the site, should the seasonal water level rise during construction works.

Groundwater is expected to rise in wetter winter months, and ongoing groundwater monitoring is recommended to determine the seasonal groundwater level below the site.

Consideration should be given to a summer build programme when groundwater is expected to be lower.

10.3 EXISTING SERVICES/SUBSTRUCTURES

Due to the historical development of the site environs, existing services or sub-structures should be anticipated.

Where foundations or obstructions are encountered during excavations for the proposed foundations, all new foundations should be extended downwards to fully penetrate all redundant former construction.

10.4 BEARING STRATA

Bearing resistance for the firm and firm to stiff CLAY at the anticipated foundation formation level of 1.0m to 2.5m bgl is provided below pending confirmation of the required foundation actions, foundation widths, foundation depths and tolerable settlement.

10.4.1 Atterberg Limits and Material Properties

Atterberg limits tests conducted on the fine soils at depths of between 1.0m and 5.0m bgl indicate that the strata comprise inorganic CLAY of predominantly high plasticity (CH) and locally intermediate and very high plasticity (CI/CV). The modified plasticity index was determined to be between 25% and 52% indicating soils of medium and high-volume change potential.

For the purposes of this assessment and in accordance with NHBC Standards Chapter 4.2, Building Near Trees, the fine soils beneath the site are classified as being of high-volume change potential.

10.4.2 Desiccation

Using the ratio of the moisture content (MC) to the liquid limit (LL) (an empirical indicator of desiccation, after Driscoll, 1983), the test results indicate that the CLAY strata across beneath the site are potentially desiccated (MC:LL ratio 0.26-0.43). Although the soils the Weald Clay Formation are known to be overconsolidated, where a MC:LL ratio of <0.5 is typical, an assessment in accordance with BRE Digest 412 Desiccation in Clay Soils, 1996, including a number of material properties and shear strength profiles indicates that desiccation is expected to have occurred to depths of up to 1.5m bgl around the periphery of the site within the proximity of trees.

Desiccated fine soils (silt and clay) result from moisture being withdrawn from the soil, typically by root action. Heave forces occur following the re-hydration of these soils, by swelling on account of increased moisture content.

Moisture content within fine soils can increase due to seasonal weather variations (rain) and also the removal of trees, whereby moisture is no longer being drawn from the soil by root action. The effect of heave is increased when trees are removed. The upward heave force can lift foundations causing structural damage (cracking of masonry, movement of door/window frames). Conversely during periods of dry weather, the moisture content reduces causing fine soils to shrink and the upward heave force to reduce; in such an event the foundation (re)settles. To remove the risk of continued and abnormal movement beneath the base of new foundations due to swelling and shrinking of fine soils the foundations should be placed beneath the desiccated zone.

Mitigation measures to prevent heave in the desiccated soils encountered across the site should be incorporated into the below ground construction within the influence of trees.

The soil sampling and testing undertaken provides for a preliminary assessment only based on limited sampling and testing locations. To enable a comprehensive desiccation assessment, consideration should be given to additional soil sampling, in-situ testing and profiling and laboratory analysis including soil suction tests.

10.4.2 Design Parameters

Characteristic values for design parameters for the strata encountered beneath the site are included in table 10.4.2.

In the absence of laboratory triaxial test data an estimated critical state angle of shearing resistance (ϕ'_{crit}) of 22° and 28° is assumed for the CLAY soils and the MUDSTONE of the Weald Clay Formation beneath the site, using Tables 2 and 4 of BS8002:1994 September 2001. The undrained cohesion is assumed to be zero.

Table 10.4.2: Design Parameters			
Strata	Volume Change Potential	Unit Weight (kN/m ³)	Critical State Angle of Shearing Resistance (ϕ'_{crit})
CLAY	High	17-19	22
MUDSTONE	Negligible	20	28

Characteristic values of undrained shear strength ($C_{u,k}$) of 40kN/m² and 85kN/m² have been assumed for the firm and firm to stiff CLAY respectively at the anticipated foundation level of 1.5m to 2.5m bgl.

The characteristic value of undrained shear strength was derived using the results of the empirical relationships between C_u and the SPT N_{60} value ($E_r=78\%$, $N_{60}=9$ and 15), plasticity index after Stroud M.A and the results of laboratory testing. (The Standard Penetration Test in Insensitive Clays and Soft Rocks, Proceedings of the European Symposium on Penetration Testing, 2, 367-376 (1975).

Please note that when using this data for design purposes, the effects of eccentric loading are taken into account, and that the bearing pressure is limited to account for maximum tolerable settlement beneath the structures and adjacent properties.

Geotechnical laboratory material property test results are presented within **Appendix IV**.

10.5 TREE INFLUENCE ON FOUNDATIONS

When considering the influence of trees on foundations, the material properties of the strata beneath the site and the distance and species of the trees to the foundations are the determining factors.

For the purposes of this assessment the overlying natural fine soils at shallow depth beneath the site are classified as being of high volume change potential. An adjustment to foundation depths in accordance with NHBC Standards Chapter 4.2, Building Near Trees, 2024 is therefore required.

Mitigation measures to prevent heave in the overlying desiccated soils encountered should be incorporated into the below ground construction within the influence of trees. Mitigation measures to prevent heave should extend to all aspects of in-ground construction, which may include services such as drainage and manholes.

Should roots or desiccated soils be encountered during the groundworks, and/or previously unidentified trees or tree stumps encountered during the site preparation works, foundations should be extended beneath the roots/desiccated soils and/or the depth adjusted to accommodate the species of tree/tree stump encountered. A record of the findings associated with roots, desiccated soils and trees/tree stumps should be kept during the groundworks phase.

Mitigation measures to protect existing adjacent tree species during the construction process may need to be considered.

10.6 FOUNDATION TYPE, DEPTH AND ALLOWABLE BEARING PRESSURE

10.6.1 Trench Fill/Strip Foundations

Should the depths of foundations, the adjustments in accordance with NHBC Standards and the requirements of temporary works be overcome, conventional shallow foundations in firm and firm to stiff CLAY at the anticipated foundation formation depths of 1.5-2.5m bgl may be suitable for the proposed buildings.

Using assumed maximum vertical characteristic actions of 85kN/m run and 140kN/m run (1.5-2.5m bgl) and Design Approach 1 of Eurocode 7 (checking for a limit state of rupture or excessive deformation), Combination 1 and Combination 2 are both satisfied where the vertical design actions (V_d) are less than the design value of the vertical bearing resistances (R_d) in each case. The GEO limit state requirement is therefore satisfied.

It is assumed that the action is vertical, and it is also assumed that the base of the foundations and the ground surface are horizontal. The vertical design actions include the trench fill foundations, assumed to be a maximum thickness of 2.5m, and also accounts for overburden.

The vertical characteristic actions of **85kN/m run** and **140kN/m run** correspond to the bearing resistance in Table 10.6.1 of **85kN/m²** and **140kN/m²** when applied to trench fill foundations 1.0m wide constructed on firm and firm to stiff **CLAY** at depths of between 1.5m and 2.5m bgl, in the area of the proposed development buildings. The serviceability state is satisfied with the total settlement being restricted to **25mm**.

Table 10.6.1: Bearing Resistance				
Plot Location /Strata Type	Depth BGL (m)	Footing Width (m)	Bearing Resistance (kN/m ²)	Comment
WS1	2.3	1.0	85	Extend foundations beneath locally softened soils and potentially desiccated soils locally at depths shown. Also consider high volume change potential soils and further adjustments to foundation depths in accordance with NHBC Chapter 4.2.
	2.5		140	
WS2	1.6		140	
WS3	2.2		140	
WS4, WS10	1.5		85	
	2.0		140	
WS5, WS6, WS7	1.5		140	
WS8, WS9	1.5		85	
	2.5		140	
WS11	1.5		85	
	1.8		140	

Consider temporary works due to potentially spalling soils and possible seasonally elevated perched water.

The total settlement beneath trench fill foundations 1.0m wide is anticipated to be less than 25mm for the soils encountered.

Please note that increasing foundation widths to accommodate increased line loads will result in an increase in the total settlement anticipated.

Include mitigation measures to accommodate differential movement between foundations spanning firm and firm to stiff CLAY.

Notwithstanding the above it is recommended that the formation beneath each section of the proposed re-development works is inspected to assess the competency of the bearing strata prior to pouring of foundation concrete. The formation should not be allowed to soften due to surface water, rainwater or groundwater ingress prior to pouring of foundation concrete.

It should be noted that the design actions and design layout/dimensions of the proposed works have not been supplied and the above bearing resistance accounts for conventional construction only.

The moments resulting in eccentricity of loadings, and the settlement, sliding and overturning and the requirements for propping would need to be considered in the design of any retaining structures.

It should also be noted that the above recommendations have been made using data in window sample boreholes completed.

10.6.2 Piled Foundations

Should the issues of temporary works or foundation depths due to trees or desiccation be deemed uneconomical for conventional construction, a piled foundation solution may be required.

The advice of a piling specialist should be sought to determine the working loads of their proprietary piling technique when considering the ground and groundwater conditions encountered beneath the site, and the health and safety implications of working within the confines of the site and adjacent neighbouring properties.

Consideration should be given to undertaking additional ground investigation work such as cable and percussion drilling to a depth suitable to enable piled foundation design.

10.6.3 Floor Slabs and Heave

It is assumed at this stage that the ground floor slabs beneath the proposed buildings will be suspended on ground beams.

Mitigation measures to prevent heave in the overlying desiccated soils should be incorporated into the below ground construction within the influence of trees.

Mitigation measures to prevent heave should extend to all aspects of in-ground construction, which may include services such as drainage and manholes.

10.7 CONCRETE CLASSIFICATION

In accordance with Building Research Establishment (BRE) Special Digest 1: 2005 - Concrete in Aggressive Ground, the following laboratory test data has been used to derive classifications for buried concrete (Table C1, natural ground locations) beneath the site:

 Soluble Sulphate (2:1 extract)	– 0.0088 to 0.104g/l
 pH	– 5.5 to 8.3
 Total Sulphate SO ₄	– 0.025 – 0.11%
 Total Sulphur	– 0.0074 – 0.045%
 Total Potential Sulphate	– 0.0222 – 0.135%
 Oxidisable Sulphide	< 0.3%

“BRE guidance suggests that ‘if significant number of determination of oxidisable sulphides is above 0.3%, then use the results of total potential sulphate to determine the concrete class’.

Oxidisable sulphides have not been calculated above 0.3% SO₄ in the samples tested which do not exceed the threshold where the concrete classification is based on oxidisable sulphide and total potential sulphate.

Based on the results obtained for soluble sulphate, the Design Sulphate (DS) Class for shallow buried concrete beneath the site is DS-1. Assuming static groundwater (unproductive strata), the Aggressive Chemical Environment for Concrete (ACEC) Class is AC-1s.

It should be noted that additional considerations for the determination of concrete class and appropriate aggregate use are set out in BRE Special Digest 1. These are considerations specific to the soil type, the proposed development and the type of concrete foundations to be used at the site.

Laboratory results for the pH, sulphate and sulphur testing are included within **Appendix III**.

10.8 PAVEMENT DESIGN

The results of DCP/TRL testing indicate CBR values bottoming out at 2.1% to 4.0% for the overlying horizons, at the locations tested across the site.

However, due to the potential for desiccation to have slightly artificially increased the CBR value locally, following scarifying and proof rolling, consideration may be given to an estimated design CBR value of 2.5% and 3% for thin and thick construction respectively for a 'heavy clay' (PI ~ 40%) in accordance with Design Guidance for Road Pavement Foundations IAN 73 06 HD25[rev1] 2009.

The results of DCP testing are enclosed in **Appendix IV**.

10.9 SOAKAWAY DRAINAGE

Shallow soakaway drainage in the CLAY soils overlying the site is not expected be suitable for the new development.

An alternative to shallow soakaways should therefore be sought.

11.0 CONCLUSIONS AND RECOMMENDATIONS

This tier 1 PRA desk study and Site Investigation including tier 2 GQRA has provided an assessment of the site's history, geo-environmental setting and an evaluation of ground conditions.

11.1 ENVIRONMENTAL

Table 11.1 summarises the pertinent environmental risks providing advice on further works and assessment.

Table 11.1: Environment Risk Summary			
Medium	Risk Item	Risk Description	Comments/Recommendations
Soils	1	Potential for undiscovered soil contamination, albeit very limited risk.	Enact watching brief during groundworks.
	2	Any imported Topsoil should it be required, should be chemically suitable for use in private gardens.	Import suitable Topsoil (BS3882) to sustain planting.
	3	Ensure material encountered is suitable for desired water main.	Consult local water authority prior to water main installation.
	No abnormal ground conditions encountered and all concentrations of analytical determinands acceptable. In-situ soils are not considered to be contaminated.		
Ground Gas	Preliminary risk assessment and gas monitoring has determined very low risk from ground gas. One round of monitoring has been completed which has determined acceptable gaseous concentrations. Ground gas protection not considered necessary.		
Radon	Information from the Envirocheck report within the PRA (using data supplied by the BGS) indicates that 'The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level)' and that no radon protection measures are required. Notwithstanding the above, a Radon report is recommended immediately prior to the re-development as radon guidance periodically changes and the above advice may be outdated by the time of any re-development. The HSA website (ukradon.org) can be used to purchase radon reports, where an address-specific radon report may be obtained. It should however be noted that for redevelopment sites, a GeoReport provided by the British Geological Survey may be more appropriate.		
Groundwater	Ground conditions are not considered to present a notable risk to groundwater or controlled waters.		

Once the above risks have been evaluated/implemented the environmental risk assessment can be considered complete and the development suitable to proceed.

11.2 GROUND HAZARDS SUMMARY

This report and the Clients preferred foundation solution should be presented to the Local Authority or appropriate build warranty provider for approval prior to construction. Table 12.2 summarises the pertinent Ground Hazards Summary.

Table 11.2: Ground Hazards Summary		
Construction Issue	Ground Hazard	Recommendation
Below Ground Obstructions	Foundations or made ground may be anticipated locally at shallow depth from the historical use of the site, particularly in the area of dilapidated buildings in the north-western corner.	Shallow obstructions likely to be removed with conventional excavation plant and hydraulic breaking equipment.
Foundations	Potentially desiccated soils noted to depths of up to 1.5m bgl around the periphery of the site within the proximity of trees. Softened soils noted locally to depths of between 1.5m and 2.3m bgl. Conventional shallow foundations at anticipated formation level of circa 1.5-2.5m bgl in firm and firm to stiff CLAY are subject to adequate bearing resistance, further increased adjustments to foundation depths due to the influence of trees in accordance with NHBC Chapter 4.2, and the requirements of temporary works. Shallow excavations in fine soils during dry conditions may be stable in the short term, however instability may be expected to occur due to spalling. Groundwater encountered during return monitoring in June 2025 at depths of between 1.36m and 1.98m bgl.	Bearing resistance of 85kN/m² and 140kN/m² may be acceptable for trench fill foundations at depths of 1.5m to 2.5m bgl in firm and firm to stiff CLAY, subject to design requirements. Seasonal dewatering may be required. Excavations stability in CLAY soils subject to spalling. CLAY soils determined as high volume change potential (NHBC Chapter 4.2, Building Near Trees).
Floor Slab and Heave	Suspended.	Heave protection required in clay soils within the influence of trees. Mitigation measures to prevent heave should extend to all aspects of in-ground construction, which may include services such as drainage and manholes.
Buried Concrete	Non-aggressive ground conditions encountered.	Concrete classification determined as DS-1, AC-1s.
Pavements	Estimated CBR value of 2.5% and 3.0% for thin and thick construction respectively for 'heavy clay' (IAN 73 06 HD25[rev1] 2009).	Complete CBR testing once road pavement foundation formation depth known.
Drainage	Shallow soakaways are not considered suitable due to the relatively impermeable clay soils encountered.	Consideration alternative to shallow soakaway drainage.

Table 11.2: Ground Hazards Summary		
Construction Issue	Ground Hazard	Recommendation
Abnormals	A piled foundation solution may be required where foundations are within influence of trees.	Consideration may need to be given to additional ground investigation such as cable and percussion drilling to enable piled foundation design.

12.0 PROJECT INSTRUCTION AND LIMITATIONS

12.1 SCOPE OF WORKS

The following scope of work was undertaken to an agreed brief set out in Aviron's proposal and involves the following:

- 🚧 Eleven window sample boreholes to depths of up to 5.0m bgl, including SPTs at 1m intervals.
- 🚧 Install three of the boreholes with monitoring pipe to enable return gas and groundwater readings.
- 🚧 CBR DCP/TRL tests to determine road pavement parameters at a number of locations.
- 🚧 Log the strata within each exploratory hole noting any water strikes.
- 🚧 Collect disturbed soil samples from exploratory holes and submit for geochemical laboratory tests to determine the presence or absence of soil contaminants, and geotechnical material property tests to enable foundation recommendations and allow roadway and drainage design.
- 🚧 All soil samples shall be collected in accordance with the instruction and ground conditions and submitted to UKAS/MCERTS accredited laboratories for testing.
- 🚧 Prepare an interpretative GERA report to interpret ground conditions with respect to potential environmental risks and provide recommendations for foundation design and engineering parameters.

Aviron has relied upon information received from the Client and their agents as accurate, unless contradicted by written documentation or site observations.

12.2 PUBLISHED GUIDANCE

This report follows the technical approach presented on Land contamination risk management (LCRM), accessed on gov.uk website. The guidance replaced the Contaminated Land Report 11 (CLR11) "Model Procedures for the Management of Land Contamination" prepared by the Environment Agency in 2004. CLR11, which was withdrawn in 2020, provided guidance on the application of management processes when assessing potentially contaminated land.

This project and report have been designed to fulfil the information requirements set out in LCRM.

This report is additionally prepared in accordance with current guidance notes, standards and practices as set out by the Environment Agency and statutory organisations in order to establish potential and significant contaminant linkages as defined in Part IIA of the Environmental Protection Act 1990.

12.3 LIMITATIONS

Aviron's scope of work has been designed to meet the timeframe and as such it may follow that further work would be prudent upon evaluation of the ground conditions. The scope of work provided shall provide a view of site conditions and understanding of potential geo-environmental risks and possible mitigation procedures.

The information used in this report has been derived from the site investigation, which in turn were based on known current and historical land uses identified at the site and surrounding area, available to Aviron at the time of the investigation.

Intrusive points chosen relate to the data collected and the risk assessment and recommendations will rely on these points only. It therefore follows that some areas of the site will not be examined. It is always possible that some areas not investigated may contain conditions which would be impossible to determine due to lack of evidence or time and budget restrictions.

This report provides recommendations for foundation design based upon the ground conditions encountered and where possible makes predictions for possible variations in ground conditions. However, it is always possible that not all variations in ground conditions can be accounted for and shall also be dependent upon design loadings and foundation construction techniques used. It should be acknowledged that ground conditions may vary from intrusive point to intrusive point and without undertaking continuous investigation it is impossible to entirely understand variations in ground conditions. Our recommendations should therefore not supersede the project's Consulting Structural and Civil Engineers design.

This report comprises a Ground Investigation Report in accordance with BS EN 1997-2, unless otherwise stated. This report does not constitute a Geotechnical Design Report (BS EN 1997-2) and geotechnical recommendations in this report are for guidance only.

In accordance with the BS EN 1998-1:2004+A1:2013 'Eurocode 8: Design of Structures for Earthquake Resistance – Part 1', the UK is located in an area of very low seismicity, and seismic loading need not be considered.

Unless otherwise stated, a preliminary or detailed risk assessment of unexploded ordnance (UXO) is outside the scope of this report.

Also, unless otherwise stated, an assessment of invasive species such as Japanese Knotweed and Himalayan Balsam is outside the scope of this report.

Should changes in legislation, statutory requirements or industry practices occurred following issue of this report, this report should be viewed in light of these changes.

Should a notable time period elapse between the date issue of this report and the date of application of this report changes to site dynamics may occur and in particular the site inspection notes may no longer be applicable should any change of use occur to the site in the interim.

13.0 REFERENCES AND OTHER SOURCES OF INFORMATION

Previous Reports

Aviron, Preliminary Risk Assessment – reference 25-129.01, dated January 2025

References

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BS EN ISO 22476-3:2005+A1:2011 Standard Penetration Test

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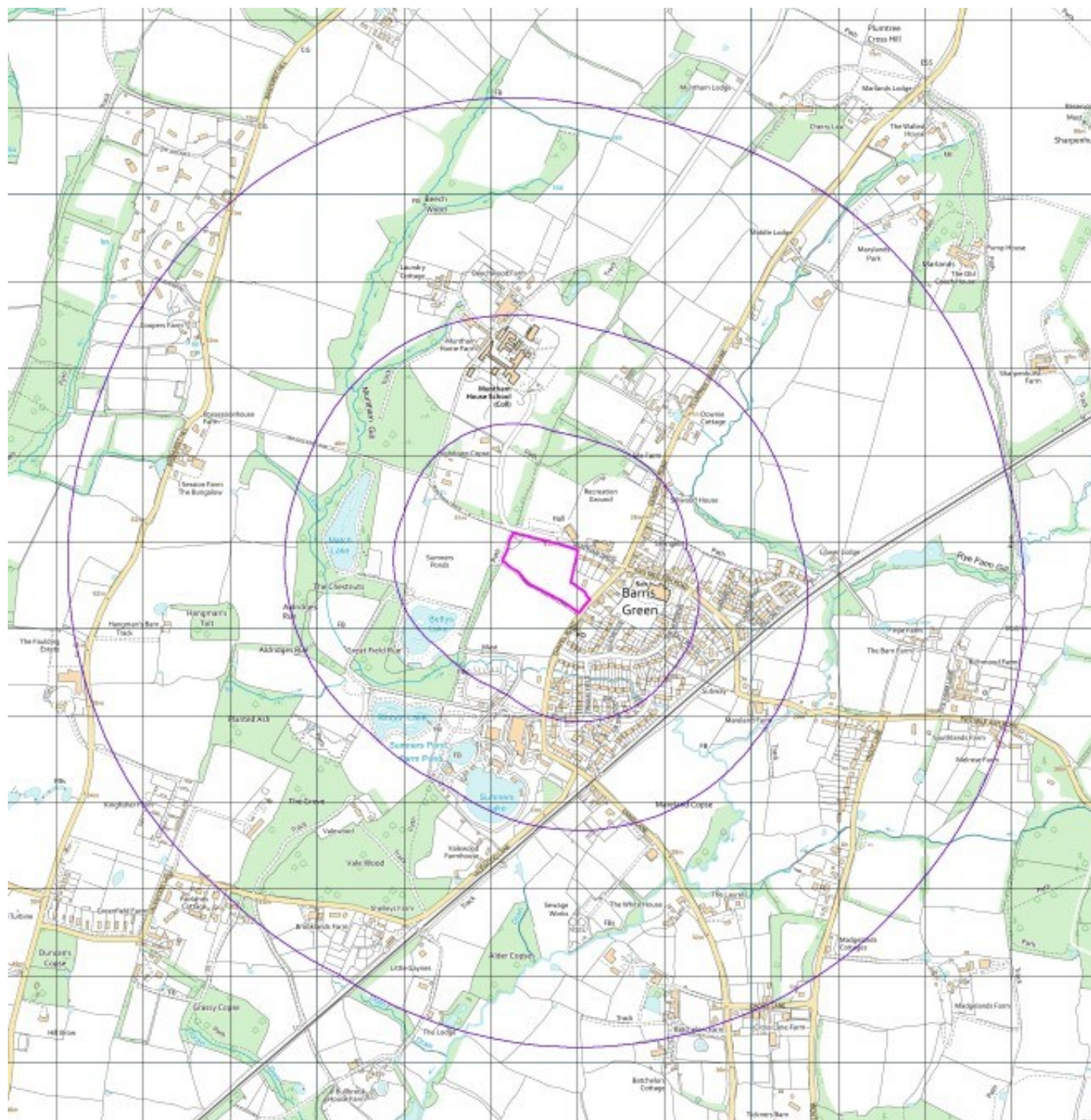
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Figures

- | | |
|---|---|
| 1 | Site Location Plan |
| 2 | Existing Site Layout Plan |
| 3 | Site Photographs |
| 4 | Proposed Development Plan |
| 5 | Exploratory Hole Location Plan - Existing Layout |
| 6 | Exploratory Hole Location Plan - Proposed Development |



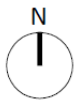
Approximate Site Boundary

Drawing Title
Site Location Plan

Project Title
Land adj. to 5 Muntham Drive,
Barns Green, Horsham, RH13 0PT

Checked by	JB
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Legend

-  Approximate Site Boundary
-  Photo Direction

Notes

Figure 2

Drawing Title

Existing Site Layout Plan

Project Number 25-129.02

Project Title

Land adj. to 5 Muntham Drive,
Barns Green, Horsham, RH13 OPT

Drawn by OB

Checked by JB

Scale NTS





Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9

Legend

Notes

Figure 3

Drawing Title

Site Photographs

Project Number 25-129.02

Project Title

Land adj. to 5 Muntham Drive,
Barns Green, Horsham, RH13 OPT

Drawn by OB

Checked by JB

Scale NTS





Legend



Approximate Site Boundary

Notes

Figure 4

Drawing Title
Proposed Development Plan

Project Number 25-129.02

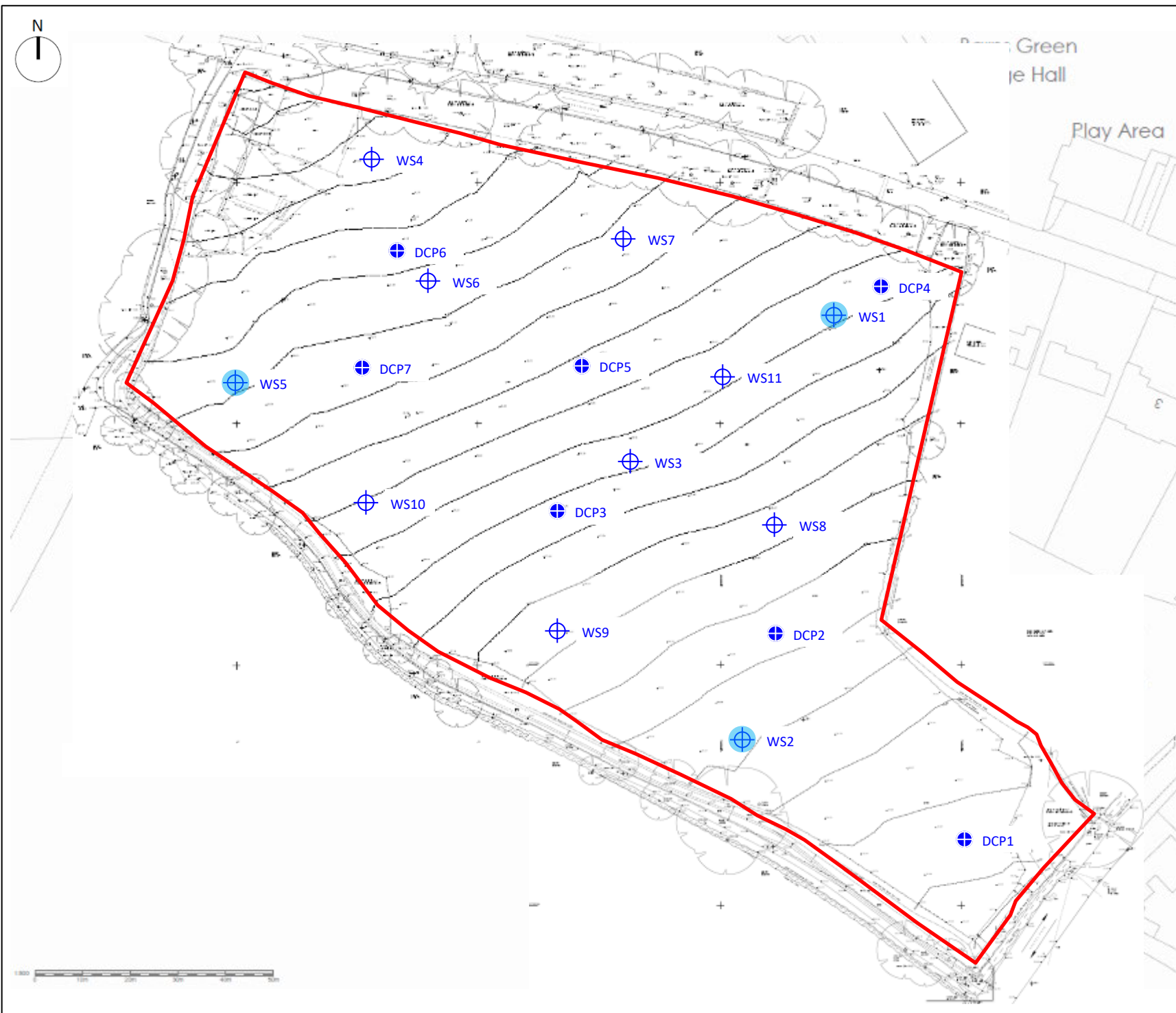
Project Title
Land adj. to 5 Muntham Drive,
Barns Green, Horsham, RH13 OPT

Drawn by OB

Checked by JB

Scale NTS





Legend

-  Window Sample Borehole
-  Monitoring Well
-  DCP / TRL

Notes

Figure 5

Drawing Title

Exploratory hole Location Plan—Existing Site Layout

Project Number 25-129.02

Project Title

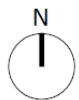
Land adj. to 5 Muntham Drive,
Barns Green, Horsham, RH13 0PT

Drawn by AC

Checked by JB

Scale NTS





Legend

-  Window Sample Borehole
-  Monitoring Well
-  DCP / TRL

Notes

Figure 6

Drawing Title

Exploratory hole Location Plan—Proposed Development Plan

Project Number 25-129.02

Project Title

Land adj. to 5 Muntham Drive,
Barns Green, Horsham, RH13 OPT

Drawn by AC

Checked by JB

Scale NTS



Appendices

- I Exploratory Hole Logs and Photographs
- II Field Monitoring Results
- III Soil Contamination Results and Assessment Criteria
- IV Soil Geotechnical Results

Appendix

I Exploratory Hole Logs and Photographs



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT				Project No. 25-129.02		Borehole: WS1					
Client: Shanly Homes				Start: 05/06/2025		End: 05/06/2025		Sheet: 1 of 1			
Method/Plant Used: Premier Rig (3D)				Co-ordinates: NT				Ground Level: NT			

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results							Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy slightly gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. Rootlets. (TOPSOIL)		(0.5)		0.1 - 0.3	1	WAC								
Firm light brown orange frequently mottled light grey silty slightly sandy CLAY. Rootlets to 1.3m. (WEALD CLAY FORMATION)		0.5 (1.1)		0.7	2	ES								
				1.0		SPT	1	1	2	2	2	2	8	HP
				1.25										HP 9.6
				1.5										HP 10.8
Firm poorly laminated light brown mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		(0.6)		1.75										HP 6.8
				2.0		SPT	1	1	1	1	3	3	8	HP 10.2
				2.25										HP 8.9
Firm to stiff laminated brown occasionally black slightly clayey slightly sandy SILT. (WEALD CLAY FORMATION)		(0.3)		2.5										HP 8.3
Stiff poorly laminated light brown mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		(0.4)		2.75										HP 6.6
Stiff becoming very stiff laminated light grey with occasional light brown partings slightly silty gravelly CLAY. Gravel is fine to medium sub-angular of mudstone. Occasional fine shell fragments. Occasional fine partings of selenite. (WEALD CLAY FORMATION)		2.9 (1.5)		3.0		SPT	3	3	3	5	5	5	18	HP 6.4
				3.25										HP 11+
				3.5										HP 11+
				3.75										HP 11+
				4.0		SPT	3	4	4	7	9	13	33	HP 11+
				4.25										HP 11+
		4.4		4.4		SPT	16	9	24	20	6		50	HP 11+ For 170mm

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. Rootlets noted to 1.3m bgl. Gas and groundwater monitoring well installed to 4.4m bgl.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results						N' Value	Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	75mm		
Light brown slightly clayey very sandy slightly gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. Rare sub-angular fine to coarse gravel size fragments of brick. Rootlets. (Reworked TOPSOIL)		(0.4)		0.3	1	ES								
Firm light brown orange frequently mottled light grey silty slightly sandy CLAY. Rootlets to 1.1m. (WEALD CLAY FORMATION)		(0.8)												
Firm laminated brown occasionally black slightly clayey slightly sandy SILT. (WEALD CLAY FORMATION)		(0.4)												
Stiff becoming very stiff light grey pale orange occasionally mottled pale grey silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		(1.1)		2.0		SPT	5	4	4	4	4	5	17	
		2.7		2.7		SPT	18	7	32	15			47	For 95mm

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	2.50	2.40	Very slow	2.40	
Remarks									By		
Groundwater encountered from 2.4m bgl. No visual or olfactory evidence of contamination. Rootlets noted to 1.1m bgl. Gas and groundwater monitoring well installed to 2.7m bgl. SPT: Standard Penetration Test. HP: Hand Penetrometer. B: Bulk Sample. D: Disturbed Sample									Logged	AC	
									Checked	OB	



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT						Project No. 25-129.02		Borehole: WS3			
Client: Shanly Homes						Start: 05/06/2025		End: 05/06/2025		Sheet: 1 of 1	
Method/Plant Used: Premier Rig (3D)				Co-ordinates: NT				Ground Level: NT			

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results							Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy rarely gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.6)		0.1	1	ES								
Soft becoming firm light brown orange frequently mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		0.6		1.0		SPT	1	1	1	1	1	2	5	
		(1.7)		1.25										HP 7.8
				1.5										HP 6.6
				1.75										HP 11+
				2.0	2	LC/SPT	1	1	2	4	5	7	18	HP 10.4
		2.3												
Stiff poorly laminated light brown rarely mottled light grey slightly silty slightly sandy occasionally gravelly CLAY. Gravel is medium angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		(0.6)												
Very stiff poorly laminated dark brown dark grey slightly very silty occasionally gravelly CLAY. Gravel is medium to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		2.9		3.0		SPT	3	3	4	7	9	15	35	
		(0.5)												
Very weak, poorly laminated light brown mottled orange MUDSTONE. (WEALD CLAY FORMATION)		(0.2)		3.5		SPT	21	4	50				50	For 75mm
		3.6												

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots present in borehole. Borehole backfilled with arisings.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT				Project No: 25-129.02	Borehole: WS4
Client: Shanly Homes			Start: 05/06/2025	End: 05/06/2025	Sheet: 1 of 1
Method/Plant Used: Premier Rig (3D)		Co-ordinates: NT		Ground Level: NT	

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results						Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy rarely gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. Rootlets. (TOPSOIL)		(0.4)		0.1	1	ES							
Soft to firm light brown orange frequently mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		0.4		0.6	2	ES							
		(0.9)		1.0		SPT	1	2	1	2	2	2	
Firm becoming stiff and very stiff poorly laminated brown grey occasionally mottled orange silty occasionally gravelly CLAY. Gravel is medium to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		1.3											
		(1.7)		2.0	3	LC/SPT	1	2	3	4	5	4	16
		3.0		3.0		SPT	7	10	13	14	14	9	50 For 295mm

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots present in borehole. Borehole backfilled with arisings.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT				Project No. 25-129.02		Borehole: WS5	
Client: Shanly Homes				Start: 05/06/2025		End: 05/06/2025	
Method/Plant Used: Premier Rig (3D)				Co-ordinates: NT		Ground Level: NT	
						Sheet: 1 of 1	

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results							Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy rarely gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. Rootlets. (TOPSOIL)		(0.4)		0.1 - 0.3	1	WAC								
Firm light brown orange frequently mottled light grey silty slightly sandy CLAY. Rootlets to 1.1m. (WEALD CLAY FORMATION)		0.4 (1.1)		1.0		SPT	1	1	2	3	4	4	13	
		1.5		1.25										HP 11+
		1.5		1.5										HP 11+
Firm to stiff poorly laminated light brown mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		(1.1)		1.75										HP 11+
		2.0		2.0		SPT	2	3	3	4	4	5	16	HP 11+
		2.6												
Stiff becoming very stiff laminated brown grey occasionally mottled orange silty gravelly CLAY. Gravel is fine to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		(1.6)		3.0		SPT	3	3	4	6	8	8	26	
		4.0		4.0		SPT	5	5	8	8	9	10	35	
Very weak, poorly laminated brown grey frequently mottled bright orange red MUDSTONE. (WEALD CLAY FORMATION)		(0.3)		4.5		SPT	13	12	24	24	2		50	For 150mm
		4.5												

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. Roots noted to 1.1m bgl. Gas and groundwater monitoring well installed to 4.5m bgl.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT				Project No. 25-129.02		Borehole: WS6					
Client: Shanly Homes				Start: 05/06/2025		End: 05/06/2025		Sheet: 1 of 1			
Method/Plant Used: Premier Rig (3D)				Co-ordinates: NT				Ground Level: NT			

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results						Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy rarely gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3)		0.1 - 0.3	1	WAC							
Firm light brown orange frequently mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		0.3 (1.4)		1.0		SPT	2	3	3	4	3	3	HP 11+
				1.25									HP 11+
				1.5									
Firm to stiff becoming stiff to very stiff poorly laminated brown grey occasionally mottled orange silty occasionally gravelly CLAY. Gravel is medium to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		1.7 (1.5)		1.75									HP 11+
				2.0		SPT	2	2	3	4	4	4	
		3.2		3.0	2	LC/SPT	2	5	6	7	8	8	
Very weak, poorly laminated brown grey frequently mottled bright orange red MUDSTONE. Rare partings of fine shell fragments. (WEALD CLAY FORMATION)		(0.4)		3.6		SPT	10	13	13	16	16	5	For 235mm
		3.6											

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots present in borehole. Borehole backfilled with arisings.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT					Project No. 25-129.02		Borehole: WS7			
Client: Shanly Homes					Start: 05/06/2025		End: 05/06/2025		Sheet: 1 of 1	
Method/Plant Used: Premier Rig (3D)				Co-ordinates: NT			Ground Level: NT			

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results						Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy rarely gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.4)											
		0.4											
Firm and stiff light brown orange frequently mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		(1.0)		1.0	1	D/SPT	2	2	3	3	4	4	14 HP 11+
				1.25									HP 11+
		1.4		1.5	2	D							HP 11+
				1.75									HP 11+
Stiff becoming very stiff poorly laminated light brown pale orange occasionally mottled light grey very silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		(1.8)		2.0	3	D/SPT	1	2	3	4	5	6	18 HP 11+
				2.25									HP 11+
				2.5	4	D							HP 11+
				2.75									HP 11+
				3.0	5	D/SPT	7	7	7	8	10	11	36 HP 11+
		3.2		3.25									HP 11+
Very stiff poorly laminated dark grey dark brown frequently mottled dark orange red very silty sandy occasionally gravelly CLAY. Gravel is fine to medium sub-angular of mudstone. (WEALD CLAY FORMATION)		(1.5)		3.5	6	D							HP 11+
				3.75									HP 11+
				4.0	7	D/SPT	5	4	6	7	13	14	40 HP 11+
				4.25									HP 11+
				4.5									HP 11+
		4.7		4.7	8	D/SPT	11	13	14	14	18	4	50 For 235mm

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots present in borehole. Borehole backfilled with arisings.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT				Project No. 25-129.02	Borehole: WS8
Client: Shanly Homes			Start: 05/06/2025	End: 05/06/2025	Sheet: 1 of 1
Method/Plant Used: Premier Rig (3D)		Co-ordinates: NT		Ground Level: NT	

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results						Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy rarely gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.4)											
		0.4											
Soft to firm light brown orange frequently mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		(1.0)		1.0	1	D/SPT	1	1	1	2	2	2	7
				1.25									HP 8.1
		1.4		1.5									HP 8.4
		(1.1)		1.75									HP 9.7
Firm poorly laminated light brown pale orange occasionally mottled light grey very silty slightly sandy slightly gravelly CLAY. Gravel is medium to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)				2.0	2	D/SPT	1	2	2	2	3	3	10
				2.25									HP 8.4
		2.5											
Very weak, poorly laminated brown grey frequently mottled bright orange red MUDSTONE. Rare partings of fine shell fragments. (WEALD CLAY FORMATION)		(0.5)		3.0	3	D/SPT	10	15	25	25			50 For 150mm
		3.0											

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots present in borehole. Borehole backfilled with arisings.									Logged	AC	
									Checked	OB	
SPT: Standard Penetration Test. HP: Hand Penetrometer. B: Bulk Sample. D: Disturbed Sample											



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT				Project No. 25-129.02		Borehole: WS9	
Client: Shanly Homes				Start: 05/06/2025		End: 05/06/2025	
Method/Plant Used: Premier Rig (3D)				Co-ordinates: NT		Ground Level: NT	
						Sheet: 1 of 1	

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results							Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy slightly gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. Rootlets. (TOPSOIL)		(0.5)												
		0.5												
Firm light brown orange frequently mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		(1.0)		1.0	1	D/SPT	1	1	2	2	3	3	10	
		1.5		1.25										HP 11+
		1.5		1.5	2	D								HP 9.6
Firm poorly laminated brown pale orange mottled light grey very silty slightly sandy slightly gravelly CLAY. Gravel is medium to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		(0.9)		1.75										HP 10.2
		2.0		2.0	3	D/SPT	1	1	1	2	2	3	8	HP 7.9
		2.25		2.25										HP 7.3
		2.4		2.5	4	D								HP 7.7
Firm poorly laminated brown occasionally black slightly clayey slightly sandy SILT. (WEALD CLAY FORMATION)		(0.2)		2.75										HP 7.7
Firm to stiff poorly laminated brown pale grey silty slightly sandy slightly gravelly CLAY. Gravel is fine to medium sub-rounded of mudstone. (WEALD CLAY FORMATION)		(0.9)		3.0	5	D/SPT	1	3	6	3	3	3	15	HP 9.8
		3.25		3.25										HP 11+
		3.5		3.5	6	D								HP 10.6
Very weak, poorly laminated light grey rarely mottled brown MUDSTONE. (WEALD CLAY FORMATION)		(0.5)		4.0	7	D/SPT	1	5	7	12	20	11	50	For 265mm
		4.0												

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	3.90	3.85	Slow	3.80	
Remarks									By		
Groundwater encountered from 3.8m bgl. No visual or olfactory evidence of contamination. No roots present in borehole. Borehole backfilled with arisings.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT					Project No. 25-129.02		Borehole: WS10			
Client: Shanly Homes					Start: 05/06/2025		End: 05/06/2025		Sheet: 1 of 1	
Method/Plant Used: Premier Rig (3D)				Co-ordinates: NT			Ground Level: NT			

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results						Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy slightly gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. Rootlets. (TOPSOIL)		(0.5)											
		0.5											
Firm light brown orange frequently mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		(0.6)											
		1.1		1.0		SPT	1	1	2	2	3	3	10
		1.5		1.25									HP 9.8
				1.5									HP 11+
				1.75									HP 11+
				2.0		SPT	3	3	5	5	7	6	23
				2.25									HP 11+
				2.5									HP 11+
		2.6											
Very stiff poorly laminated dark grey brown very silty slightly sandy slightly gravelly CLAY. Gravel is medium to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		(0.4)		2.75									HP 9.4
		3.0		3.0		SPT	2	4	6	12	22	10	50
													For 245mm

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots present in borehole. Borehole backfilled with arisings.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Site: Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT					Project No. 25-129.02		Borehole: WS11			
Client: Shanly Homes					Start: 05/06/2025		End: 05/06/2025		Sheet: 1 of 1	
Method/Plant Used: Premier Rig (3D)				Co-ordinates: NT			Ground Level: NT			

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests			SPT Results						Notes
				Depth	No	Type	75mm	75mm	75mm	75mm	75mm	N' Value	
Light brown slightly clayey very sandy rarely gravelly SILT. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3) 0.3		0.2	1	ES							
Firm light brown orange frequently mottled light grey silty slightly sandy CLAY. (WEALD CLAY FORMATION)		(1.3) 1.6		1.0	2	D/SPT	2	2	2	2	3	3	10 HP 9.5
				1.25									HP 8.3
				1.5	3	D							HP 11+
Firm poorly laminated brown occasionally black slightly clayey slightly sandy SILT. (WEALD CLAY FORMATION)		(0.2) 1.8		1.75									HP 11+
Stiff to very stiff poorly laminated brown pale orange mottled light grey very silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		(0.6) 2.4		2.0	4	D/SPT	5	5	7	7	9	8	31 HP 11+
				2.25									HP 11+
Very stiff to hard poorly laminated brown orange occasionally mottled light grey mottled dark red very silty slightly sandy slightly gravelly CLAY. Gravel is medium to coarse angular to sub-angular of mudstone. (WEALD CLAY FORMATION)		(0.6) 3.0		2.5	5	D							HP 11+
				2.8		SPT	15	10	20	22	8		50 For 170mm
				3.0	6	D							HP 11+

Casing record			Chiselling records			Water level observations (depths in metres below gl)					
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
05/06/2025	101	1.00				05/06/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots present in borehole. Borehole backfilled with arisings.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WS1 arisings



WS2 arisings



WS3 arisings



WS4 arisings



WS5 arisings



WS6 arisings



WS7 arisings



WS8 arisings



WS9 arisings



WS10 arisings



WS11 arisings

Appendix

II Field Monitoring Results

MONITORING DATA SHEET

SITE Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 OPT
PROJECT 25-129.02



VISIT NUMBER 1
DATE 26/06/2025

EQUIPMENT GFM435 + MiniRAE
TAKEN BY JD

Record of Stable Concentrations										Interpretation		
Location	Time	Flow (l/h)	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Baro. Pres. (mB)	PID (ppm)	Water (m bgl)	Base Well (m bgl)	CH4 GSV (l/h)	CO2 GSV (l/h)	CS
Site	7:55am		0.0	20.4	0	1010	0.0		n/a	n/a	n/a	n/a
WS1	8:00am	0.0	0.0	20.1	0.2	1011	0.1	1.36	4.42	0	0	CS-1
WS2	8:15am	0.0	0.0	19.9	0.5	1011	0.3	1.98	2.79	0	0	CS-1
WS5	8:25am	0.0	0.0	20.1	0.2	1011	0.5	1.53	4.53	0	0	CS-1

Weather Observations						Pressure Observations				Notes	
State of Ground	Cloud Cover	Wind	Rain	Air Temperature °C		Source	Pressure Records		Trend		
Dry	Clear	Calm	None	Before	17	Metoffice	Location	Henley	Falling		
Moist	Sunny	Light	Slight	After	18	GFM435	Time	5:30am	Steady	Worst case conditions? (<1000mB and Falling)	
Wet	Slight	Moderate	Moderate				Pressure	1010mb	Rising		
Snow	Cloudy	Strong	Heavy								
Frozen	Overcast										
	Fog/Mist										

Appendix

III Soil Contamination Results and Assessment Criteria

Aviron Associates Ltd
Badgemore House
Henley
Oxfordshire
RG9 4NR

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
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t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

e: james@aviron.co.uk
orlando@aviron.co.uk
alex@aviron.co.uk
david@aviron.co.uk

Analytical Report Number : 25-029426

Project / Site name:	Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT	Samples received on:	05/06/2025
Your job number:	25-129.02	Samples instructed on/ Analysis started on:	05/06/2025
Your order number:	25-129.02	Analysis completed by:	18/06/2025
Report Issue Number:	1	Report issued on:	18/06/2025
Samples Analysed:	10 soil samples		

Signed:



Anna Goc
PL Head of Reporting Team
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: 25-029426

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

Your Order No: 25-129.02

Lab Sample Number	571354	571355	571356	571357	571358
Sample Reference	WS1	WS2	WS2	WS3	WS3
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)	0.7	0.3	1	0.1	2
Date Sampled	04/05/2025	45752	04/05/2025	04/05/2025	04/05/2025
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	17	13	19	8.3	20
Total mass of sample received	kg	0.1	NONE	0.9	0.9	0.5	0.6	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	KKR	KKR	-	KKR	-
Analysis completed	N/A	N/A	N/A	18/06/2025	18/06/2025	-	18/06/2025	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.1	7.7	5.5	7	6.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	340	710	1100	790	420
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	94	36	210	35	47
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	0.104	-	0.0237
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	104	-	23.7
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	46.8	18.2	-	17.3	-
Total Sulphur	mg/kg	50	MCERTS	180	320	450	360	180
Organic Matter (automated)	%	0.1	MCERTS	0.4	2.5	-	3.1	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06	-	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	0.36	0.44	-	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	0.32	0.42	-	0.1	-
Pyrene	mg/kg	0.05	MCERTS	0.3	0.39	-	0.11	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.1	0.14	-	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	0.19	0.22	-	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	0.13	-	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.06	-	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.08	0.13	-	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.09	-	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.06	0.11	-	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.49	2.19	-	< 0.80	-
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Analytical Report Number: 25-029426
 Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT
 Your Order No: 25-129.02

Lab Sample Number	571354	571355	571356	571357	571358
Sample Reference	WS1	WS2	WS2	WS3	WS3
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)	0.7	0.3	1	0.1	2
Date Sampled	04/05/2025	45752	04/05/2025	04/05/2025	04/05/2025
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	14	16	-	14	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1	-	1.4	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	0.3	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	38	31	-	28	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	20	-	17	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	19	35	-	36	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	19	-	18	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.2	1.9	-	2.1	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	61	71	-	68	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010	-
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010	-
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0	-
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0	-
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	-	< 10	-

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010	-
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	-	< 0.020	-
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	< 10	-
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	< 10	-
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	-	< 10	-

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	-
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	-
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	-
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0	-

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

Analytical Report Number: 25-029426
 Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT
 Your Order No: 25-129.02

Lab Sample Number	571359	571360	571361	571362	571363
Sample Reference	WS4	WS4	WS4	WS6	WS11
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)	0.1	0.6	2	3	0.2
Date Sampled	04/05/2025	04/05/2025	04/05/2025	04/05/2025	04/05/2025
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	10	16	12	11	10
Total mass of sample received	kg	0.1	NONE	0.9	0.9	0.5	0.5	0.9

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	-	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KKR	KKR	-	-	KKR
Analysis completed	N/A	N/A	N/A	18/06/2025	18/06/2025	-	-	18/06/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.3	8.3	7.5	8.2	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	840	290	250	270	720
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	42	56	18	24	30
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	0.0088	0.012	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	8.8	12	-
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	20.7	28.1	-	-	14.9
Total Sulphur	mg/kg	50	MCERTS	440	150	74	84	280
Organic Matter (automated)	%	0.1	MCERTS	3.7	0.4	-	-	2.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.15	< 0.05	-	-	0.07
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.63	< 0.05	-	-	0.29
Pyrene	mg/kg	0.05	MCERTS	0.67	< 0.05	-	-	0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.33	< 0.05	-	-	0.13
Chrysene	mg/kg	0.05	MCERTS	0.47	< 0.05	-	-	0.21
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.66	< 0.05	-	-	0.22
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.23	< 0.05	-	-	0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.53	< 0.05	-	-	0.16
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.32	< 0.05	-	-	0.11
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.42	< 0.05	-	-	0.15

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	4.41	< 0.80	-	-	1.69
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Analytical Report Number: 25-029426
 Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT
 Your Order No: 25-129.02

Lab Sample Number	571359	571360	571361	571362	571363
Sample Reference	WS4	WS4	WS4	WS6	WS11
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)	0.1	0.6	2	3	0.2
Date Sampled	04/05/2025	04/05/2025	04/05/2025	04/05/2025	04/05/2025
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	17	36	-	-	14
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	0.7	-	-	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	-	-	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	39	-	-	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	25	-	-	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	40	15	-	-	44
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	18	-	-	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2	1	-	-	1.5
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	96	53	-	-	64

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	-	-	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	-	-	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	-	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	-	< 10
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	-	-	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	-	-	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	< 5.0

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

Analytical Report Number : 25-029426

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

* 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 *
571354	WS1	None Supplied	0.7	Brown clay and sand
571355	WS2	None Supplied	0.3	Brown clay and sand with vegetation
571356	WS2	None Supplied	1	Brown clay and sand
571357	WS3	None Supplied	0.1	Brown clay and sand with vegetation
571358	WS3	None Supplied	2	Brown clay and sand
571359	WS4	None Supplied	0.1	Brown clay and loam with vegetation
571360	WS4	None Supplied	0.6	Brown clay and sand with vegetation
571361	WS4	None Supplied	2	Brown clay and sand with vegetation
571362	WS6	None Supplied	3	Brown clay and sand
571363	WS11	None Supplied	0.2	Brown clay and loam with vegetation

Analytical Report Number : 25-029426

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

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
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
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
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
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
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
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	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

Analytical Report Number : 25-029426

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

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
Soil Descriptions	Textural classification	In-house method	L019B	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 30°C.

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

Analytical Report Number : 25-029426

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

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/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS1	N/A	S	571354	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS1	N/A	S	571354	c	Metals in soil by ICP-OES	L038B	c
WS1	N/A	S	571354	c	Monohydric phenols in soil	L080-PL	c
WS1	N/A	S	571354	c	Organic matter (Automated) in soil	L009B	c
WS1	N/A	S	571354	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS1	N/A	S	571354	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS1	N/A	S	571354	c	Total Sulphur in soil	L038B	c
WS1	N/A	S	571354	c	Total cyanide in soil	L080-PL	c
WS1	N/A	S	571354	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS1	N/A	S	571354	c	Total sulphate (as SO4 in soil)	L038B	c
WS1	N/A	S	571354	c	pH in soil (automated)	L099-PL	c
WS11	N/A	S	571363	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS11	N/A	S	571363	c	Metals in soil by ICP-OES	L038B	c
WS11	N/A	S	571363	c	Monohydric phenols in soil	L080-PL	c
WS11	N/A	S	571363	c	Organic matter (Automated) in soil	L009B	c
WS11	N/A	S	571363	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS11	N/A	S	571363	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS11	N/A	S	571363	c	Total Sulphur in soil	L038B	c
WS11	N/A	S	571363	c	Total cyanide in soil	L080-PL	c
WS11	N/A	S	571363	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS11	N/A	S	571363	c	Total sulphate (as SO4 in soil)	L038B	c
WS11	N/A	S	571363	c	pH in soil (automated)	L099-PL	c
WS2	N/A	S	571355	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS2	N/A	S	571355	c	Metals in soil by ICP-OES	L038B	c
WS2	N/A	S	571355	c	Monohydric phenols in soil	L080-PL	c
WS2	N/A	S	571355	c	Organic matter (Automated) in soil	L009B	c
WS2	N/A	S	571355	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS2	N/A	S	571355	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS2	N/A	S	571355	c	Total Sulphur in soil	L038B	c
WS2	N/A	S	571355	c	Total cyanide in soil	L080-PL	c
WS2	N/A	S	571355	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS2	N/A	S	571355	c	Total sulphate (as SO4 in soil)	L038B	c
WS2	N/A	S	571355	c	pH in soil (automated)	L099-PL	c
WS2	N/A	S	571356	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS2	N/A	S	571356	c	Total Sulphur in soil	L038B	c
WS2	N/A	S	571356	c	Total sulphate (as SO4 in soil)	L038B	c
WS2	N/A	S	571356	c	pH in soil (automated)	L099-PL	c
WS3	N/A	S	571357	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS3	N/A	S	571357	c	Metals in soil by ICP-OES	L038B	c
WS3	N/A	S	571357	c	Monohydric phenols in soil	L080-PL	c
WS3	N/A	S	571357	c	Organic matter (Automated) in soil	L009B	c
WS3	N/A	S	571357	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS3	N/A	S	571357	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS3	N/A	S	571357	c	Total Sulphur in soil	L038B	c
WS3	N/A	S	571357	c	Total cyanide in soil	L080-PL	c
WS3	N/A	S	571357	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS3	N/A	S	571357	c	Total sulphate (as SO4 in soil)	L038B	c
WS3	N/A	S	571357	c	pH in soil (automated)	L099-PL	c
WS3	N/A	S	571358	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS3	N/A	S	571358	c	Total Sulphur in soil	L038B	c
WS3	N/A	S	571358	c	Total sulphate (as SO4 in soil)	L038B	c
WS3	N/A	S	571358	c	pH in soil (automated)	L099-PL	c
WS4	N/A	S	571359	c	BTEX and/or Volatile organic compounds in soil	L073B	c

Analytical Report Number : 25-029426

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

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/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS4	N/A	S	571359	c	Metals in soil by ICP-OES	L038B	c
WS4	N/A	S	571359	c	Monohydric phenols in soil	L080-PL	c
WS4	N/A	S	571359	c	Organic matter (Automated) in soil	L009B	c
WS4	N/A	S	571359	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS4	N/A	S	571359	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS4	N/A	S	571359	c	Total Sulphur in soil	L038B	c
WS4	N/A	S	571359	c	Total cyanide in soil	L080-PL	c
WS4	N/A	S	571359	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS4	N/A	S	571359	c	Total sulphate (as SO4 in soil)	L038B	c
WS4	N/A	S	571359	c	pH in soil (automated)	L099-PL	c
WS4	N/A	S	571360	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS4	N/A	S	571360	c	Metals in soil by ICP-OES	L038B	c
WS4	N/A	S	571360	c	Monohydric phenols in soil	L080-PL	c
WS4	N/A	S	571360	c	Organic matter (Automated) in soil	L009B	c
WS4	N/A	S	571360	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS4	N/A	S	571360	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS4	N/A	S	571360	c	Total Sulphur in soil	L038B	c
WS4	N/A	S	571360	c	Total cyanide in soil	L080-PL	c
WS4	N/A	S	571360	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS4	N/A	S	571360	c	Total sulphate (as SO4 in soil)	L038B	c
WS4	N/A	S	571360	c	pH in soil (automated)	L099-PL	c
WS4	N/A	S	571361	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS4	N/A	S	571361	c	Total Sulphur in soil	L038B	c
WS4	N/A	S	571361	c	Total sulphate (as SO4 in soil)	L038B	c
WS4	N/A	S	571361	c	pH in soil (automated)	L099-PL	c
WS6	N/A	S	571362	c	Sulphate, water soluble, in soil (16hr extraction)	L038B	c
WS6	N/A	S	571362	c	Total Sulphur in soil	L038B	c
WS6	N/A	S	571362	c	Total sulphate (as SO4 in soil)	L038B	c
WS6	N/A	S	571362	c	pH in soil (automated)	L099-PL	c

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Analytical Report Number : 25-029429

Project / Site name:	Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT	Samples received on:	05/06/2025
Your job number:	25-129.02	Samples instructed on/ Analysis started on:	05/06/2025
Your order number:	25-129.02	Analysis completed by:	16/06/2025
Report Issue Number:	1	Report issued on:	16/06/2025
Samples Analysed:	1 10:1 WAC sample		

Signed:



Anna Goc
PL Head of Reporting Team
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: 25-029429

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

Your Order No: 25-129.02

Lab Sample Number				571394
Sample Reference				COMP
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.10-0.30
Date Sampled				04/05/2025
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	11
Total mass of sample received	kg	0.1	NONE	2

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	6.8
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.3
Loss on Ignition @ 450°C	%	0.2	MCERTS	3.8
Acid Neutralisation Capacity	mmol/kg	-9999	NONE	-0.61

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	0.1
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.13
Pyrene	mg/kg	0.05	MCERTS	0.13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.05
Chrysene	mg/kg	0.05	MCERTS	0.08
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
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Petroleum Hydrocarbons

Mineral Oil (EC10 - EC40) EH_CU_ID_AL	mg/kg	10	NONE	< 10
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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
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Analytical Report Number: 25-029429

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

Your Order No: 25-129.02

Lab Sample Number				571394
Sample Reference				COMP
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.10-0.30
Date Sampled				04/05/2025
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



4041



Environmental Science

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Waste Acceptance Criteria Analytical Results							
Report No:		25-029429					
					Client: Aviron Associates Ltd		
Location		Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT			Landfill Waste Acceptance Criteria Limits Inert Waste Landfill Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill Hazardous Waste Landfill		
Lab Reference (Sample Number)		571394					
Sampling Date		04/05/2025					
Sample ID		COMP					
Depth (m)		0.10-0.30					
Solid Waste Analysis							
TOC (%)**		1.3			3%	5%	6%
Loss on Ignition (%) **		3.8			--	--	10%
BTEX (µg/kg) **		< 10			6000	--	--
Sum of PCBs (mg/kg) **		< 0.007			1	--	--
Mineral Oil (mg/kg) BH, ID, CU, AL		< 10			500	--	--
Total PAH (WAC-17) (mg/kg)		< 0.85			100	--	--
pH (units)**		6.8			--	>6	--
Acid Neutralisation Capacity (mmol / kg)		-0.61			--	To be evaluated	To be evaluated
Eluate Analysis		10:1		10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)		mg/l		mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *		< 0.00100		< 0.0100	0.5	2	25
Barium *		0.0098		0.098	20	100	300
Cadmium *		< 0.000100		< 0.00100	0.04	1	5
Chromium *		0.0032		0.032	0.5	10	70
Copper *		0.022		0.22	2	50	100
Mercury *		< 0.000500		< 0.00500	0.01	0.2	2
Molybdenum *		< 0.000400		< 0.00400	0.5	10	30
Nickel *		0.0016		0.016	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 *		0.0071		0.071	4	50	200
Chloride *		0.98		9.8	800	15000	25000
Fluoride*		0.17		1.7	10	150	500
Sulphate *		2.5		25	1000	20000	50000
TDS*		16		160	4000	60000	100000
Phenol Index (Monohydric Phenols) *		< 0.010		< 0.10	1	-	-
DOC		6.77		67.7	500	800	1000
Leach Test Information							
Stone Content (%)		< 0.1					
Sample Mass (kg)		2					
Dry Matter (%)		89					
Moisture (%)		11					
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.

Analytical Report Number : 25-029429

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

* 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 *
571394	COMP	None Supplied	0.10-0.30	Brown clay and loam with vegetation

Analytical Report Number : 25-029429

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

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 1:1 ratio 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
One stage WAC 10:1 leachate preparation	One stage batch test at a liquid to solid ratio of 10 L/kg	BS EN 12457-2-2002	L043B	W	ISO 17025
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 on 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

Analytical Report Number : 25-029429

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

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
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
Soil Descriptions	Textural classification	In-house method	L019B	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 30°C.

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

Analytical Report Number : 25-029429

Project / Site name: Land adj. To 5 Muntham Drive, Bams Green, RH13 0PT

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/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
COMP	N/A	L	571394	bc	One stage WAC 10:1 leachate preparation	L043B	b
COMP	N/A	S	571394	bc	BTEX and/or Volatile organic compounds in soil	L073B	c
COMP	N/A	S	571394	bc	Loss on ignition of soil @ 450°C	L047-PL	c
COMP	N/A	S	571394	bc	PCB's By GC-MS in soil	L027B	c
COMP	N/A	S	571394	bc	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
COMP	N/A	S	571394	bc	Total organic carbon (Automated) in soil	L009B	c
COMP	N/A	S	571394	bc	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
COMP	N/A	S	571394	bc	pH at 20°C in soil	L005B	c



**Residential with Homegrown Produce
Soil Screening Values
Private Gardens**

Determinant	1% SOM (mg/kg)	2.5% SOM (mg/kg)	6% SOM (mg/kg)	Criteria	Determinant	1% SOM (mg/kg)	2.5% SOM (mg/kg)	6% SOM (mg/kg)	Criteria
METALS, SEMI-METALS, INORGANICS + PAH					Pyrene	620	1,200	2,000	LQM S4UL
Arsenic	37	37	37	C4SL/LQM S4UL	Phenols	78	0.98	1.1	LQM S4UL
Boron	290	290	290	LQM S4UL	TOTAL PETROLEUM HYDROCARBONS				
Cadmium	11	11	11	LQM S4UL	Benzene	0.087	0.17	0.37	LQM S4UL
Chromium III	910	910	910	LQM S4UL	Toluene	130	290	660	LQM S4UL
Chromium IV	6	6	6	LQM S4UL	Ethylbenzene	47	110	260	LQM S4UL
Copper	2,400	2,400	2,400	LQM S4UL	o-xylene	60	140	330	LQM S4UL
Mercury	1.2	1.2	1.2	LQM S4UL	m-xylene	59	140	320	LQM S4UL
Nickel	180	180	180	LQM S4UL	p-xylene	56	130	310	LQM S4UL
Lead	200	200	200	LQM S4UL	Aliphatic EC 5-6	42	78	160	LQM S4UL
Selenium	250	250	250	LQM S4UL	Aliphatic EC >6-8	100	230	530	LQM S4UL
Zinc	3,700	3,700	3,700	LQM S4UL	Aliphatic EC >8-10	27	65	150	LQM S4UL
Free Cyanide	34	34	34	ATRISK	Aliphatic EC >10-12	130	330	760	LQM S4UL
Acenaphthene	210	510	1100	LQM S4UL	Aliphatic EC >12-16	1,100	2,400	4300	LQM S4UL
Acenaphthylene	170	420	920	LQM S4UL	Aliphatic EC >16-35	65,000	92,000	110,000	LQM S4UL
Anthracene	2,400	5,400	11,000	LQM S4UL	Aliphatic EC >35-44	65,000	92,000	110,000	LQM S4UL
Benzo(a)anthracene	7.2	11	13	LQM S4UL	Aromatic EC 5-7 (benzene)	70	140	300	LQM S4UL
Benzo(a)pyrene	2.2	2.7	3	LQM S4UL	Aromatic EC >7-8 (toluene)	130	290	660	LQM S4UL
Benzo(b)fluoranthene	2.6	3.3	3.7	LQM S4UL	Aromatic EC >8-10	34	83	190	LQM S4UL
Benzo(ghi)perylene	320	340	350	LQM S4UL	Aromatic EC >10-12	74	180	380	LQM S4UL
Benzo(k)fluoranthene	77	93	100	LQM S4UL	Aromatic EC >12-16	140	330	660	LQM S4UL
Chrysene	15	22	27	LQM S4UL	Aromatic EC >16-21	260	540	930	LQM S4UL
Dibenz(ah)anthracene	0.24	0.28	0.3	LQM S4UL	Aromatic EC >21-35	1,100	1,500	1,700	LQM S4UL
Fluoranthene	280	560	890	LQM S4UL	Aromatic EC >35-44	1,100	1,500	1,700	LQM S4UL
Fluorene	170	400	860	LQM S4UL	Aromatic EC >44-70	1,600	1,800	1,900	LQM S4UL
Indeno(123-cd)pyrene	27	36	41	LQM S4UL	ASBESTOS				
Naphthalene	2.3	5.6	13	LQM S4UL	None Detectable				Aviron Adopted Value
Phenanthrene	95	220	440	LQM S4UL					

Appendix

IV Soil Geotechnical Results



Laboratory Report



Contract Number: 79261

Client Ref: **25-129.02**

Client PO: **25-129.02**

Date Received: **12-06-2025**

Date Completed: **24-06-2025**

Report Date: **24-06-2025**

Client: **Aviron Associates LTD**

This report has been checked and approved by:

Contract Title: **Land adj. to 5 Muntham Drive, Barns Green, RH13 0PT**

For the attention of: **Orlando**

Brendan Evans
Senior Office Administrator

Description	Qty
Determination of water content BS EN ISO 17892-1:2014 - @ Non Accredited Test	18
4 Point Liquid & Plastic Limit.. BS EN ISO 17892-12 - * UKAS	15

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:

Brendan Evans (Senior Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)

Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)

Wayne Honey (HR & HSE Manager)

Contract Number	79261	
Project Name	Land adj. to 5 Muntham Drive, Barns Green, RH13 0PT	
Date Tested	23/06/2025	
	DESCRIPTIONS	

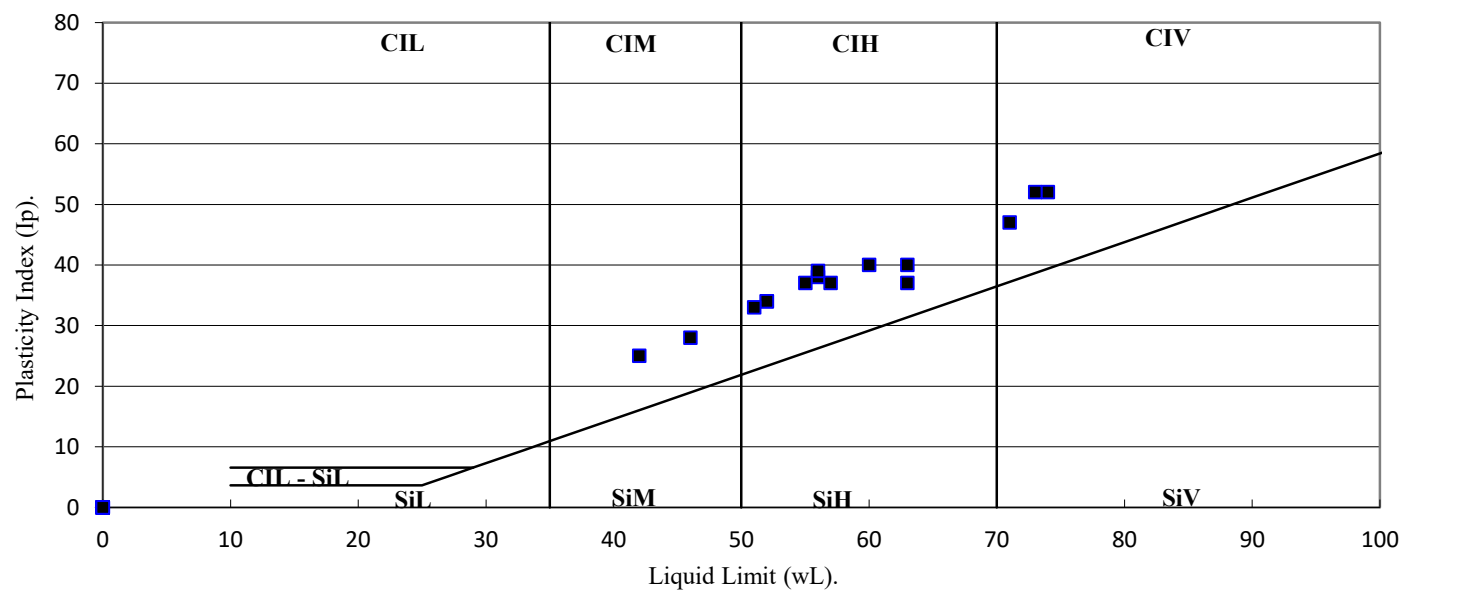
Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
WS7		D	1.00	-		Brown sandy silty CLAY
WS7		D	1.50	-		Brown silty CLAY
WS7		D	2.00	-		Brown silty CLAY
WS7		D	2.50	-		Brown silty CLAY
WS7		D	3.00	-		Brown silty CLAY
WS7		D	3.50	-		Brown silty CLAY
WS7		D	4.00	-		Brown silty CLAY
WS7		D	4.70	-		Brown silty CLAY
WS8		D	1.00	-		Brown silty CLAY
WS8		D	2.00	-		Brown silty CLAY
WS8		D	3.00	-		Brown silty CLAY
WS9		D	1.00	-		Brown silty CLAY
WS9		D	2.00	-		Brown silty CLAY
WS9		D	3.00	-		Brown silty CLAY
WS9		D	4.00	-		Grey silty CLAY
WS11		D	1.00	-		Brown silty CLAY
WS11		D	2.00	-		Brown silty CLAY
WS11		D	3.00	-		Brown silty CLAY
				-		
				-		
				-		
				-		
				-		
				-		

Operator
Clayton Jenkins

Contract Number	79261	
Project Name	Land adj. to 5 Muntham Drive, Barns Green, RH13 0PT	
Date Tested	23/06/2025	
Test Comments	80g/30° Fall cone used with increasing water content	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Water Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
WS7		D	1.00	-		13.3	42	17	25	100	CI Intermediate Plasticity
WS7		D	1.50	-		18.3					
WS7		D	2.00	-		16.7	52	18	34	100	CH High Plasticity
WS7		D	2.50	-		18.9					
WS7		D	3.00	-		14.9	52	18	34	100	CH High Plasticity
WS7		D	3.50	-		19.1					
WS7		D	4.00	-		22.7	56	18	38	100	CH High Plasticity
WS7		D	4.70	-		22.9	57	20	37	100	CH High Plasticity
WS8		D	1.00	-		27.3	63	23	40	100	CH High Plasticity
WS8		D	2.00	-		27.5	74	22	52	100	CV Very High Plasticity
WS8		D	3.00	-		16.2	55	18	37	100	CH High Plasticity
WS9		D	1.00	-		20.9	56	17	39	100	CH High Plasticity
WS9		D	2.00	-		31.2	63	26	37	100	CH High Plasticity
WS9		D	3.00	-		28.5	71	24	47	100	CV Very High Plasticity
WS9		D	4.00	-		19.2	73	21	52	100	CV Very High Plasticity
WS11		D	1.00	-		16.2	51	18	33	100	CH High Plasticity
WS11		D	2.00	-		25.3	60	20	40	100	CH High Plasticity
WS11		D	3.00	-		16.1	46	18	28	100	CI Intermediate Plasticity
				-							
				-							
				-							
				-							
				-							
				-							

SYMBOLS : NP = Non Plastic NB: All liquid limits are 4 point and wet sieved
PLASTICITY CHART
 BS EN ISO 14688-2:2018 Clause 4.4



*For sample descriptions please see sample descriptions sheet

Operator
Clayton Jenkins



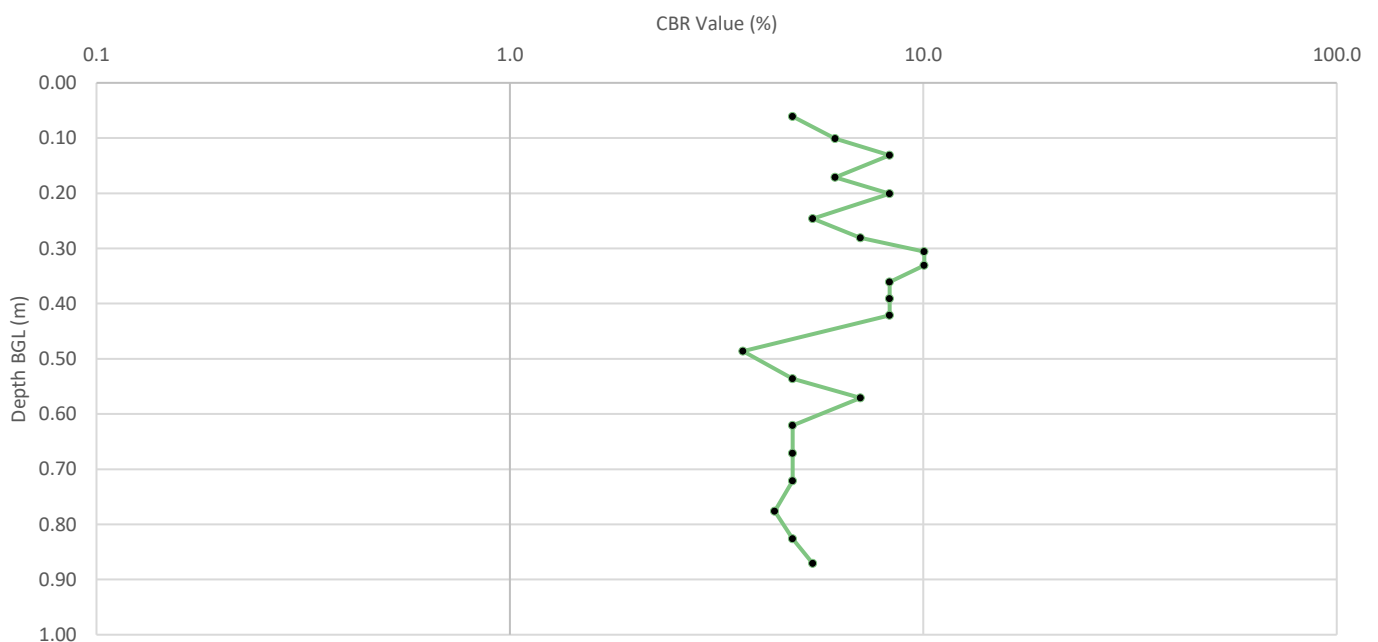
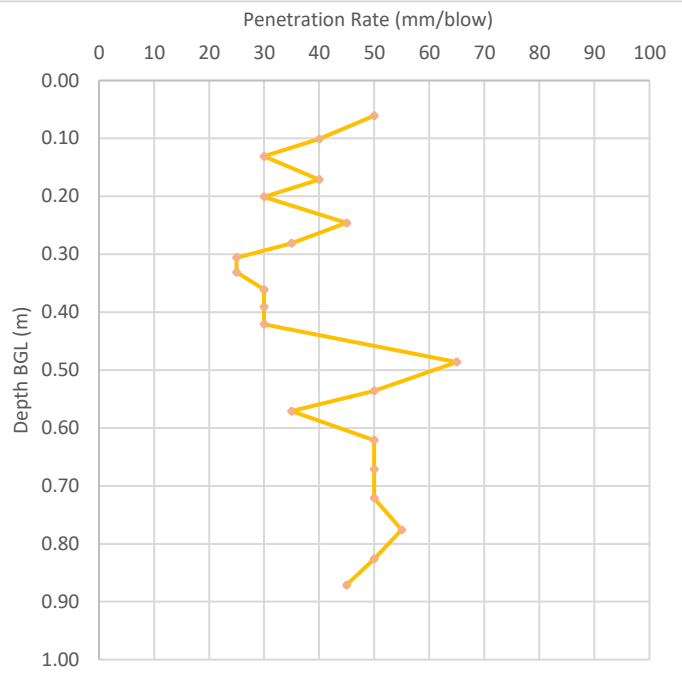
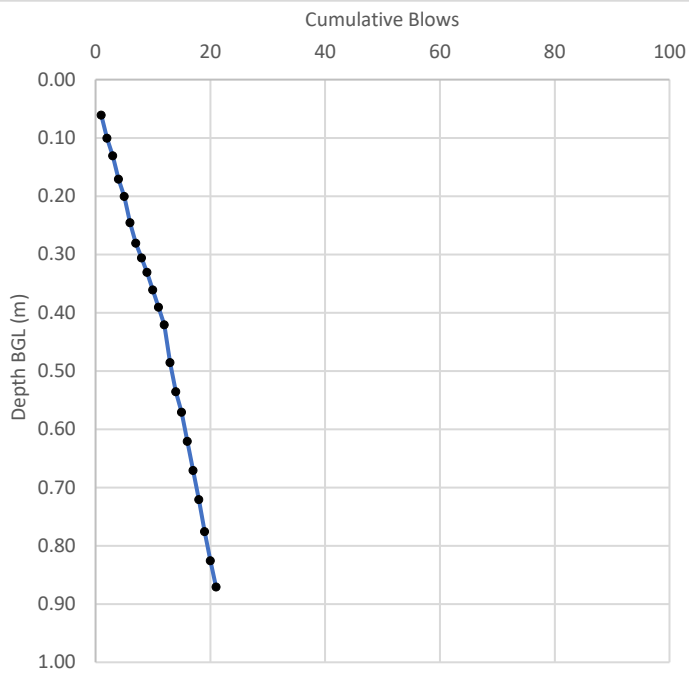
Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP1
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:		Zero Error (mm):		Approx AOD (m):	
Grass Over Topsoil		39			

[illegible]



Dynamic Cone Penetrometer

Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP1
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	





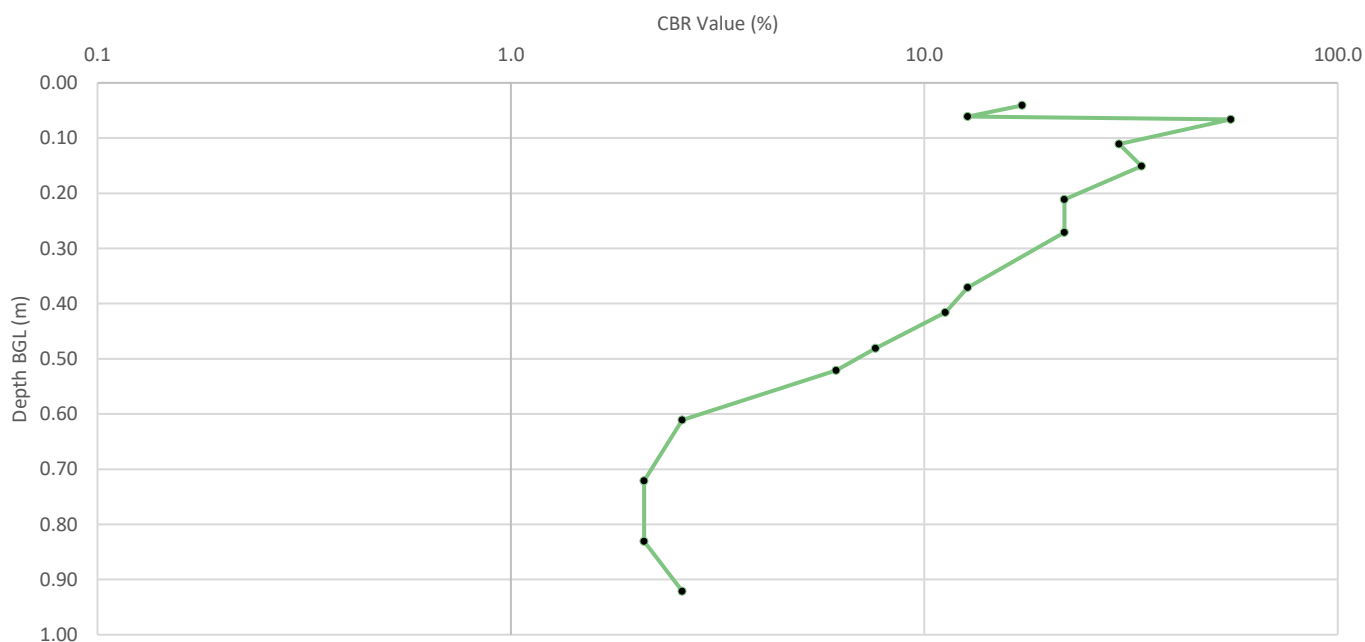
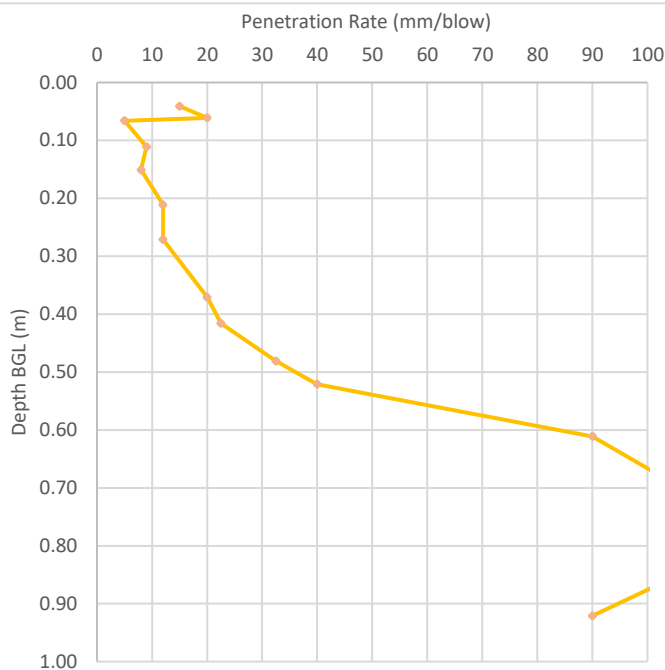
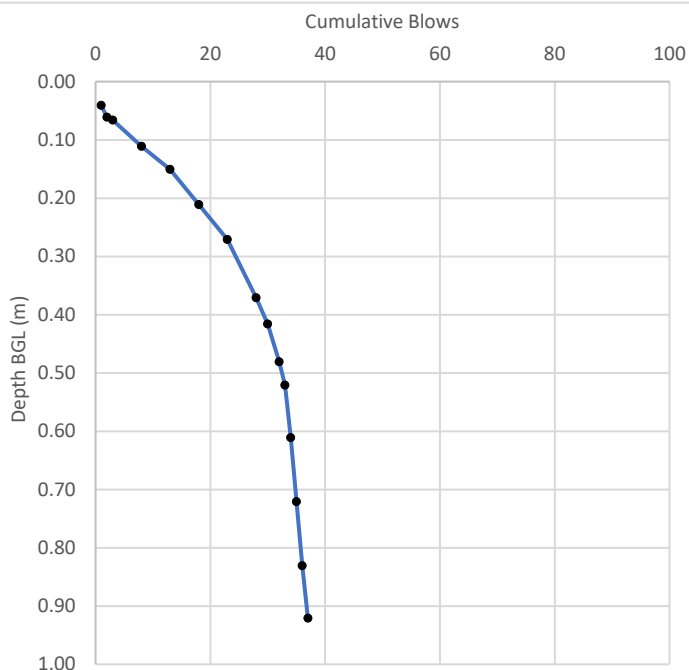
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Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:		Zero Error (mm):		Approx AOD (m):	
Grass Over Topsoil		39			

[illegible]



Dynamic Cone Penetrometer

Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP2
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	





Dynamic Cone Penetrometer

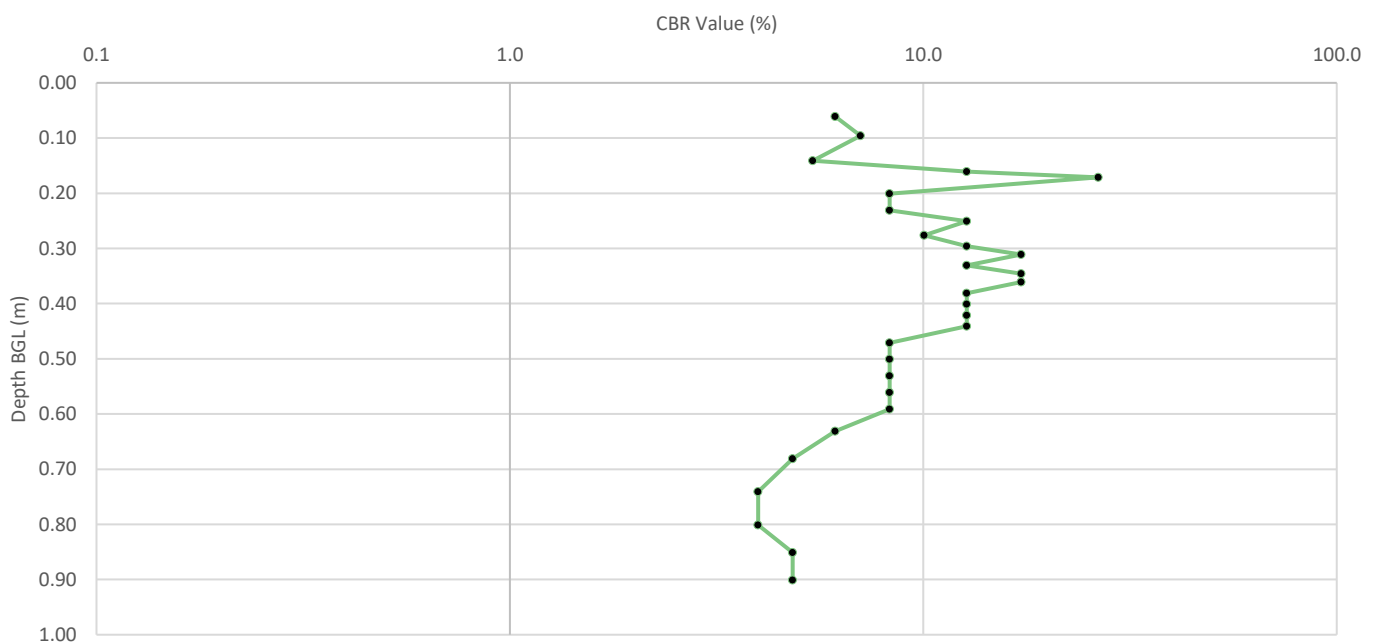
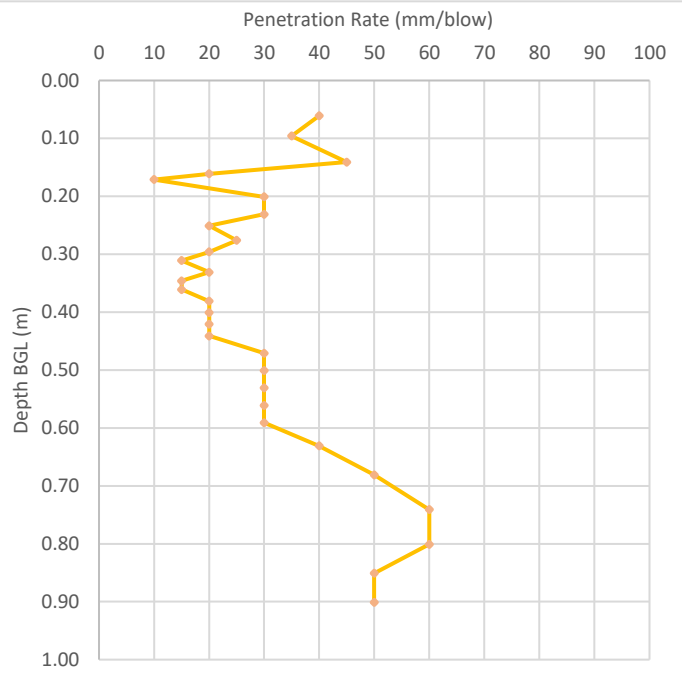
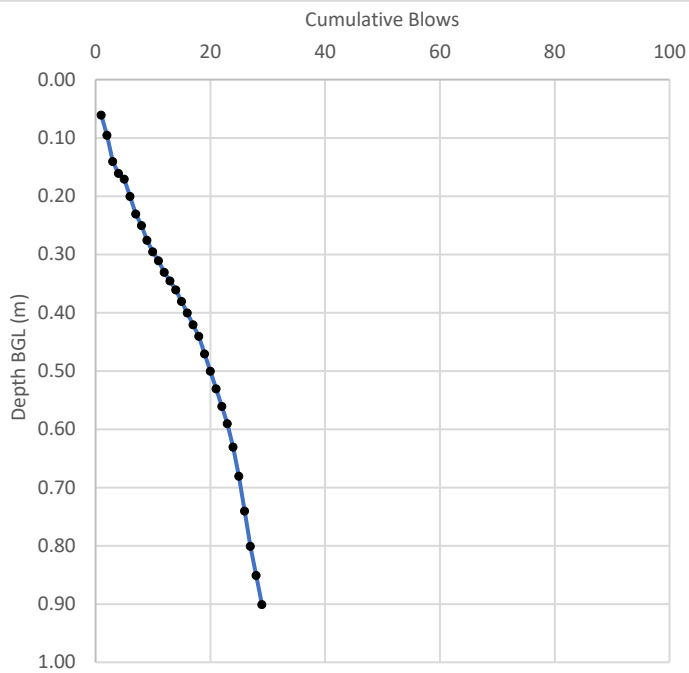
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Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	

Blows	Cumulative Blows	Cumulative Penetration Depth (mm)	Depth Bgl (m)	AOD (m)	Penetration Rate (mm/blow)	CBR Value (%)
0		60	0.021	-0.021		
1	1	100	0.061	-0.061	40.0	6.1
1	2	135	0.096	-0.096	35.0	7.0
1	3	180	0.141	-0.141	45.0	5.4
1	4	200	0.161	-0.161	20.0	12.7
1	5	210	0.171	-0.171	10.0	26.5
1	6	240	0.201	-0.201	30.0	8.3
1	7	270	0.231	-0.231	30.0	8.3
1	8	290	0.251	-0.251	20.0	12.7
1	9	315	0.276	-0.276	25.0	10.1
1	10	335	0.296	-0.296	20.0	12.7
1	11	350	0.311	-0.311	15.0	17.3
1	12	370	0.331	-0.331	20.0	12.7
1	13	385	0.346	-0.346	15.0	17.3
1	14	400	0.361	-0.361	15.0	17.3
1	15	420	0.381	-0.381	20.0	12.7
1	16	440	0.401	-0.401	20.0	12.7
1	17	460	0.421	-0.421	20.0	12.7
1	18	480	0.441	-0.441	20.0	12.7
1	19	510	0.471	-0.471	30.0	8.3
1	20	540	0.501	-0.501	30.0	8.3
1	21	570	0.531	-0.531	30.0	8.3
1	22	600	0.561	-0.561	30.0	8.3
1	23	630	0.591	-0.591	30.0	8.3
1	24	670	0.631	-0.631	40.0	6.1
1	25	720	0.681	-0.681	50.0	4.8
1	26	780	0.741	-0.741	60.0	4.0
1	27	840	0.801	-0.801	60.0	4.0
1	28	890	0.851	-0.851	50.0	4.8
1	29	940	0.901	-0.901	50.0	4.8



Dynamic Cone Penetrometer

Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP3
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	





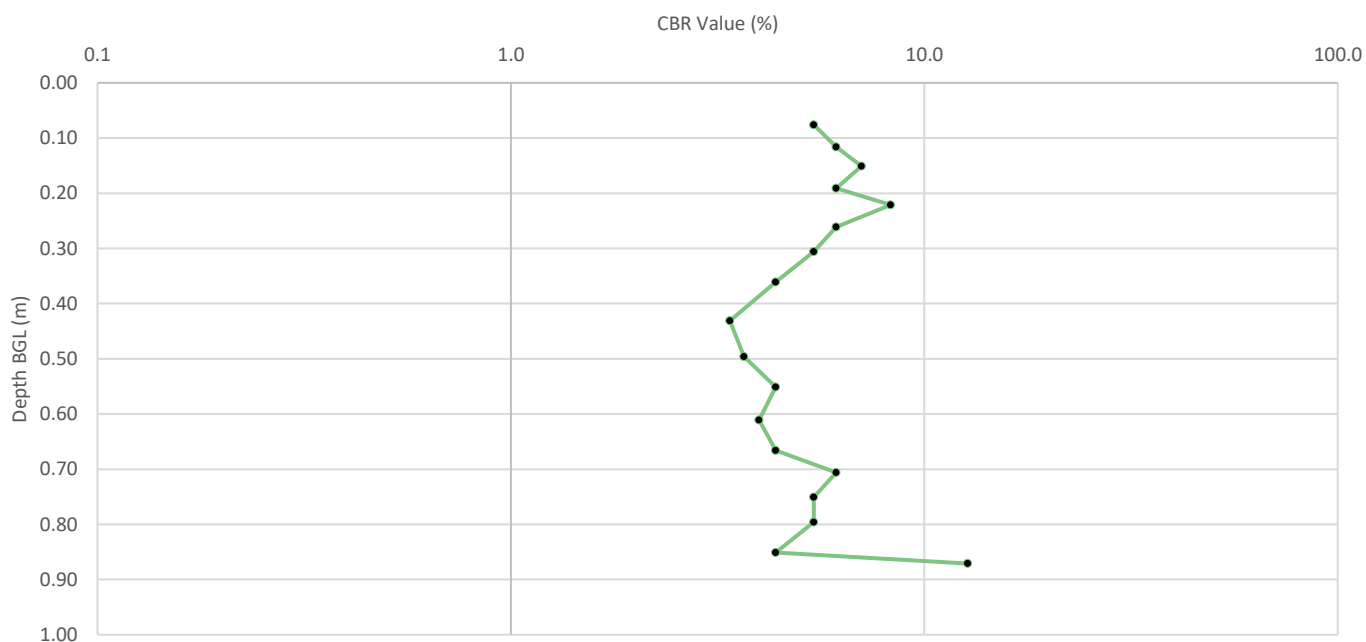
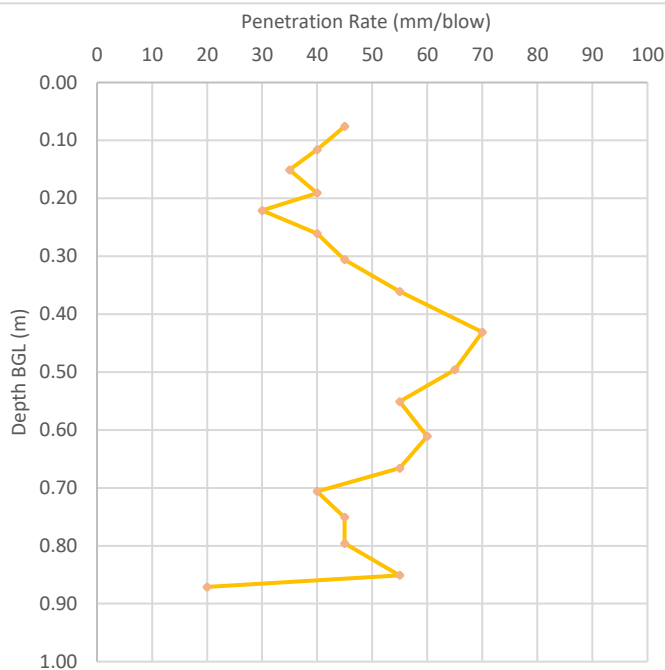
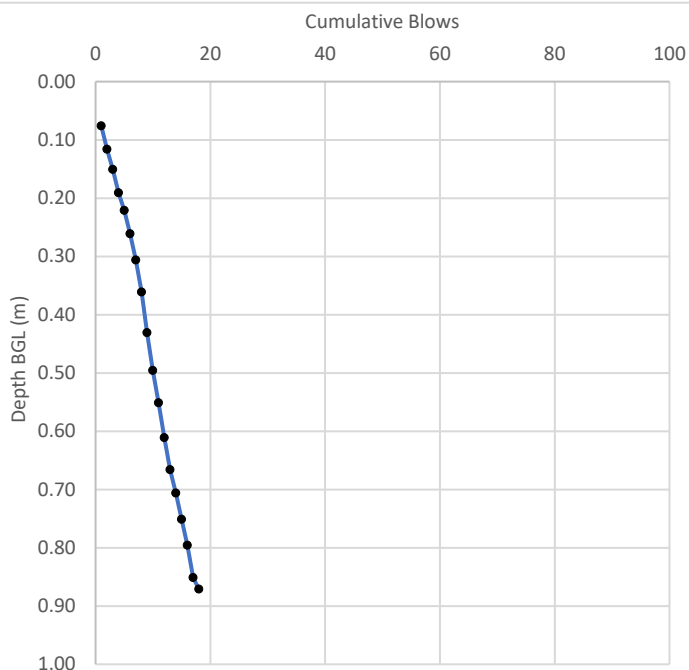
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Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations: Grass Over Topsoil		Zero Error (mm):	39	Approx AOD (m):	

[illegible]



Dynamic Cone Penetrometer

Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP4
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	





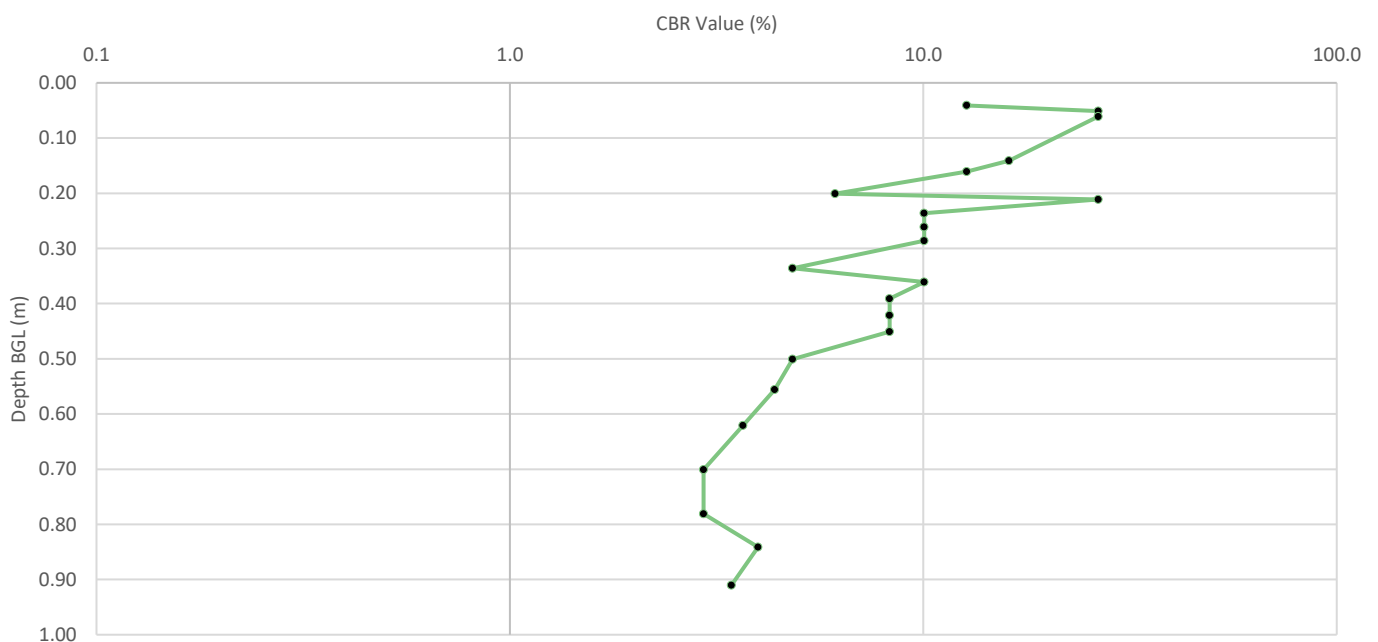
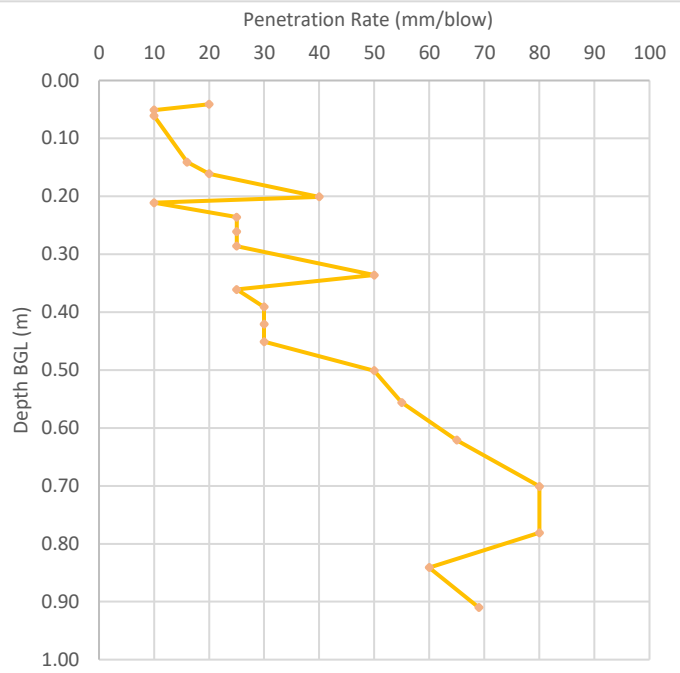
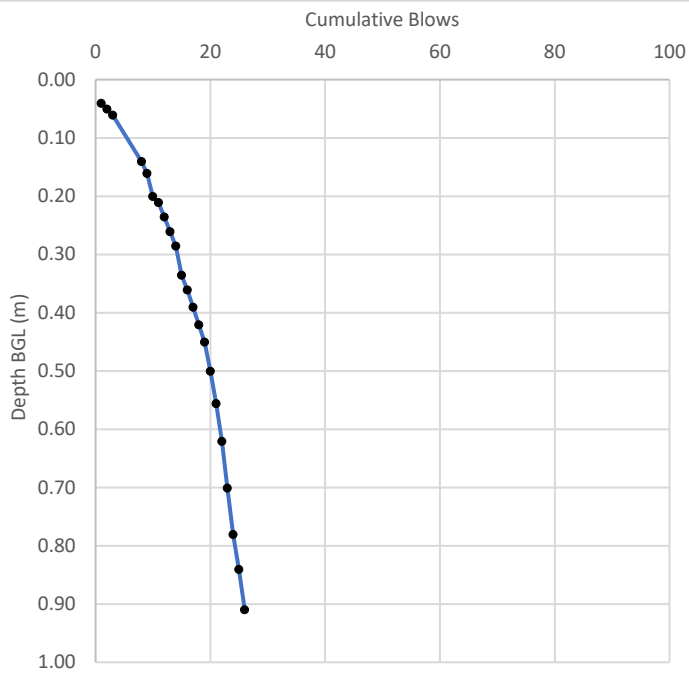
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Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations: Grass Over Topsoil		Zero Error (mm):	39	Approx AOD (m):	

[illegible]



Dynamic Cone Penetrometer

Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP5
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	





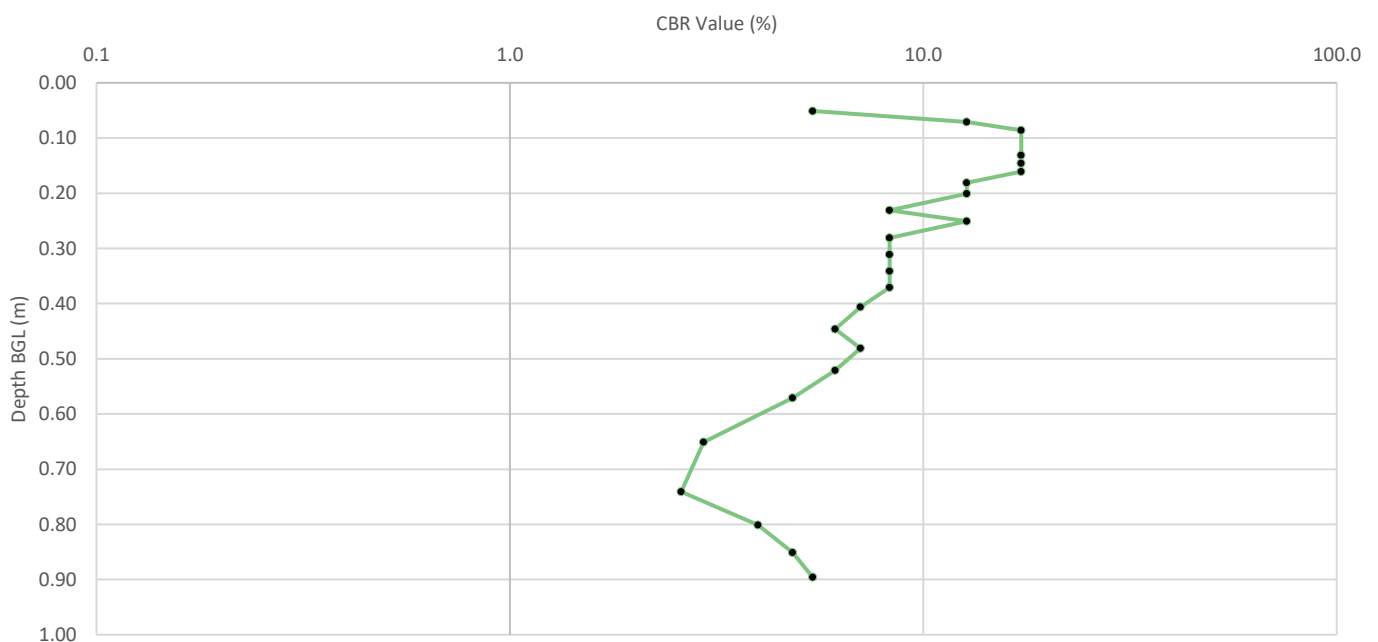
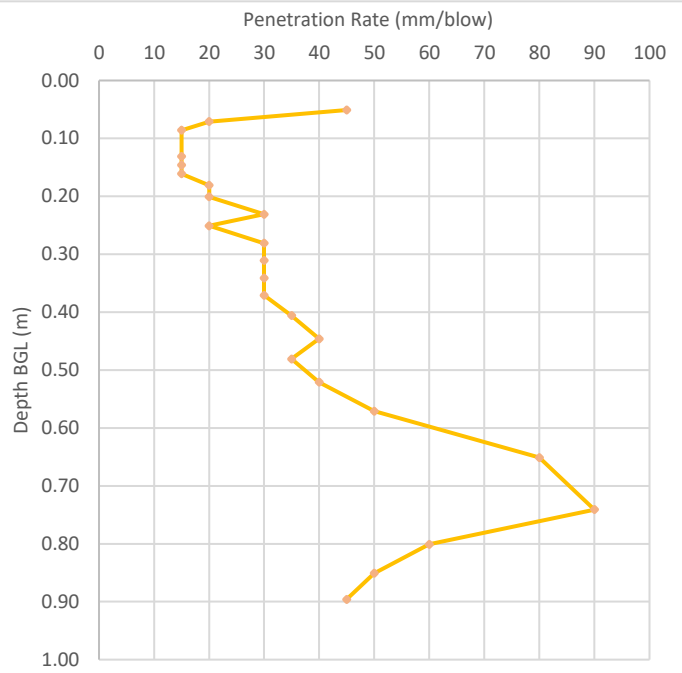
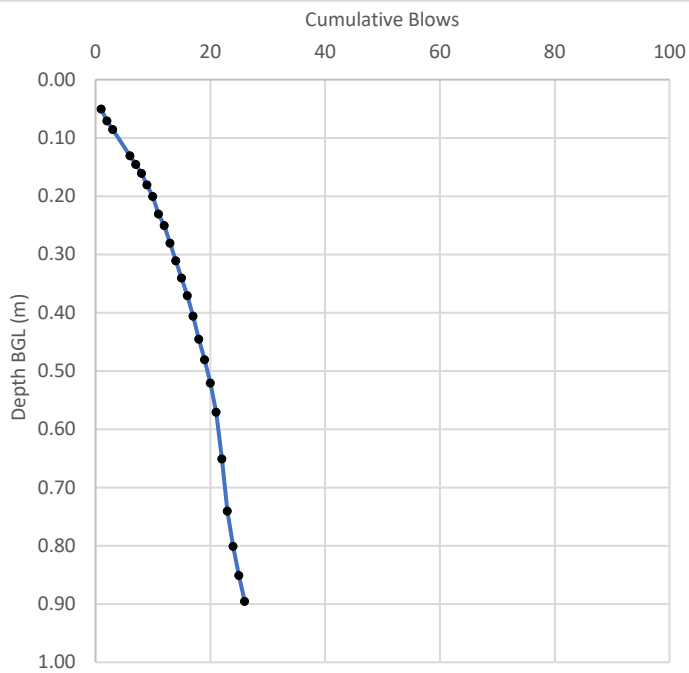
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Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations: Grass Over Topsoil		Zero Error (mm):	39	Approx AOD (m):	

[illegible]



Dynamic Cone Penetrometer

Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP6
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	





Dynamic Cone Penetrometer

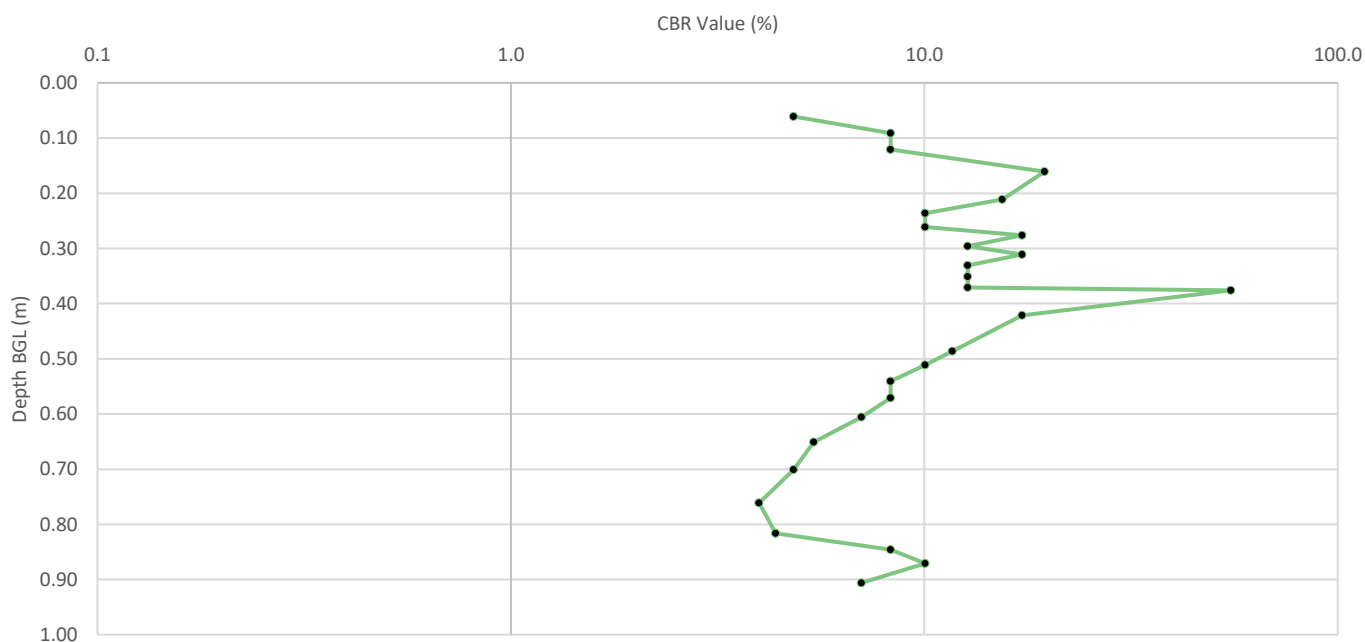
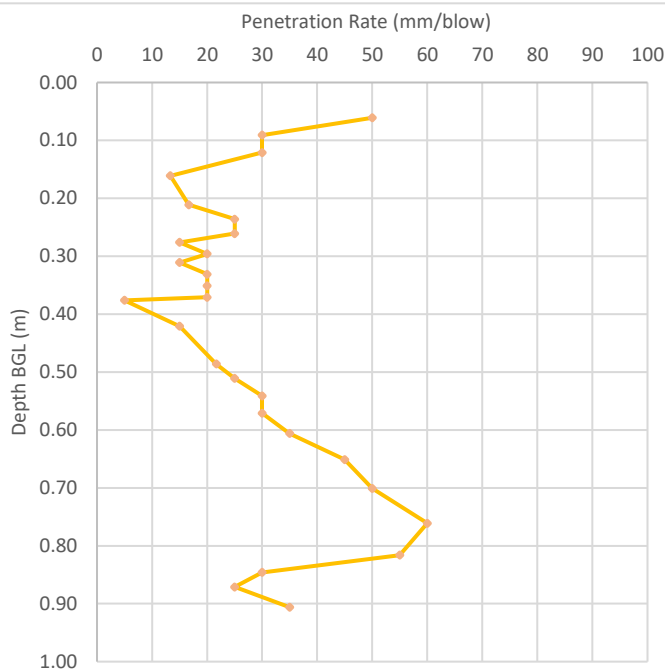
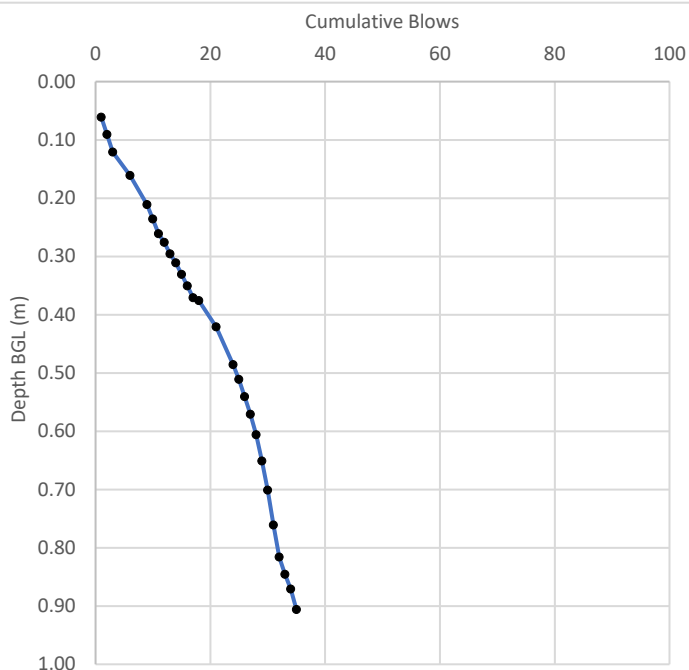
Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP7
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	

Blows	Cumulative Blows	Cumulative Penetration Depth (mm)	Depth Bgl (m)	AOD (m)	Penetration Rate (mm/blow)	CBR Value (%)
0		50	0.011	-0.011		
1	1	100	0.061	-0.061	50.0	4.8
1	2	130	0.091	-0.091	30.0	8.3
1	3	160	0.121	-0.121	30.0	8.3
3	6	200	0.161	-0.161	13.3	19.5
3	9	250	0.211	-0.211	16.7	15.4
1	10	275	0.236	-0.236	25.0	10.1
1	11	300	0.261	-0.261	25.0	10.1
1	12	315	0.276	-0.276	15.0	17.3
1	13	335	0.296	-0.296	20.0	12.7
1	14	350	0.311	-0.311	15.0	17.3
1	15	370	0.331	-0.331	20.0	12.7
1	16	390	0.351	-0.351	20.0	12.7
1	17	410	0.371	-0.371	20.0	12.7
1	18	415	0.376	-0.376	5.0	55.1
3	21	460	0.421	-0.421	15.0	17.3
3	24	525	0.486	-0.486	21.7	11.7
1	25	550	0.511	-0.511	25.0	10.1
1	26	580	0.541	-0.541	30.0	8.3
1	27	610	0.571	-0.571	30.0	8.3
1	28	645	0.606	-0.606	35.0	7.0
1	29	690	0.651	-0.651	45.0	5.4
1	30	740	0.701	-0.701	50.0	4.8
1	31	800	0.761	-0.761	60.0	4.0
1	32	855	0.816	-0.816	55.0	4.4
1	33	885	0.846	-0.846	30.0	8.3
1	34	910	0.871	-0.871	25.0	10.1
1	35	945	0.906	-0.906	35.0	7.0



Dynamic Cone Penetrometer

Project:	Land adj. to 5 Muntham Drive, Barns Green, Horsham, RH13 0PT	Project No:	25-129.02	DCP Location:	DCP7
Client:	Shanly Homes	Operator:	OC	Date:	05/06/2025
Surface Conditions & Observations:	Grass Over Topsoil	Zero Error (mm):	39	Approx AOD (m):	



AVIRON ASSOCIATES LIMITED

is a dynamic company of Chartered Environmental Surveyors and Geotechnical Engineers.

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