

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



Report prepared at
Land at Stevenage Road
Hitchin
SG4 7JY

On behalf of
Bugler Homes Limited

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Prepared by	Vanessa Bell MSc (Hons)	Geo-Environmental Consultant	18/12/2025
Prepared by	Orlando Blackwell BEng (Hons) MSc (Eng)	Principal Engineer	18/12/2025
Prepared and Approved by	James Burkitt BEng (Hons) CEnv MRICS	Managing Director	18/12/2025

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Aviron Associates Limited
Badgemore House
Badgemore Park
Gravel Hill
Henley on Thames
Oxfordshire
RG9 4NR

Telephone numbers 01491 413 722
07787 771 686

james@aviron.co.uk
www.aviron.co.uk

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1.0 PROJECT AND SITE INFORMATION

1.1 APPOINTMENT

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

Land at Stevenage Road, Ashbrook, Hitchin, SG4 7JY (hereafter referred to as the “site”).

The site investigation follows on from a previous desk study report completed by Aviron in October 2025 (Preliminary Risk Assessment, reference 25-268.01) which formed a tier 1 assessment by completing a preliminary risk assessment (PRA) 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 on Stevenage Road, in Ashbrook, 1.7 kilometres (km) south-east of Hitchin town centre and 3km north-west of Stevenage. The site is accessed via Stevenage Road, off the A602 that runs parallel with the site access road. Figure 1 is presented as the Site Location Plan.
National Grid Ref.	Centred at approximately 520120, 227940.
Current Land Use	The site currently comprises a large, grassed field. Figures 2 and 3 are presented as the Existing Site Layout Plans, using an aerial view and topographical survey, showing the positions of the walkover photographs.

Table 1.2: Site Details

	Figure 4 is presented as the Site Photographs.
Surrounding Land Use	The site is almost entirely surrounded by leisure facilities (e.g. football pitches that are associated with the school nearby), isolated residential buildings, roads and a stream.
Proposed Land Use	The proposed scheme comprises the erection of 50no. residential dwellings (including affordable housing), new public open space, associated parking, landscaping and access. Figure 5 is presented as the Proposed Development Plan.

1.3 SITE WALKOVER SURVEY

A site walkover survey was undertaken on 14 October 2025 and included an inspection of the site and surrounding area, where safe and accessible. 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	No buildings on-site. There is a locked gate at the site access point on the south-eastern part of the site. There are overhead cables running across the east of the site in a north-south direction.
Basements	None observed.
Visual Topography and Site Surfacing	The site comprises a large, grassed field which slopes gently downwards in an east-south-easterly direction.
Retaining Structures and Slopes	The site slopes gently downwards in an east-south-easterly direction. An overgrown bank up to approximately 2 metres (m) in height is located within the north-western site boundary, creating a level amenity space for the adjacent sports pitches.
Drainage Issues	The land along the eastern boundary, which is the lowest part of the site contains lush vegetation and is slightly boggy. There could therefore become a drainage issue at this location, especially in wetter months.
Surface Waters	Softened ground surface following prolonged rain, particularly in the eastern part of the site.
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.

Table 1.3: Summary of Site Walkover Survey

	Made ground may however be encountered locally as unmade surfacing at the site entrances, and within the overgrown bank inside the north-western boundary.
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)	None observed.
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 any proposed buildings.

1.3.2 Summary of Contaminative Site Characteristics

No significant evidence of potentially contaminative activities observed at the site.

2.0 DESK STUDY REVIEW

Historical Ordnance Survey (OS) maps were obtained as part of a Envirocheck database search reported within the aforementioned PRA. Database information within the PRA 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	Site History	Surrounding Land History
1881 (1:2,500) 1884 (1:10,560) 1898 (1:2,500) 1899 (1:10,560)	The site is shown to have comprised undeveloped agricultural land or pasture intersected by a path and surrounded by field boundaries, tracks or roads. Ash Brook shown to have formed the eastern site boundary at this time, flowing in a northerly direction.	The site is shown to have been surrounded by agricultural land or pasture in all directions. It is bound by a road to the south-west. A small settlement at Ashbrook is located approximately 100–250m E, and Ippollitts is around 800m SW. A railway line is present approximately 500m NE. Off-site features include gravel pits (500m, 700m, and 900m NW), a chalk pit (900m NW), a gravel pit (800m SE), and an iron foundry (900m SW).
1924 (1:2,500) 1924 (1:10,560) 1924-25 (1:10,560)	No notable changes identified at the site. The track that bounds to the southwest is called Hambridge Way.	A pumping house is shown 250m NW.
1946 (1:10,560) 1947-50 (1:10,560)	No notable changes identified at the site.	No notable changes identified in the surrounding area.
1960 (1:10,000) 1964 (1:10,000) 1965 (1:2,500) 1966-81 (1:2,500) 1976 (1:10,000) 1981-82 (1:10,000) 1984 (1:2,500) 1986 (1:2,500)	No notable changes identified at the site.	The pumping house previously identified approximately 250m NW is labelled as “Kingshott.” By the time of the 1981–1982 mapping edition, a large area from around 500m NW had been developed with residential housing, and a school had been constructed approximately 150m to the NW. A sewage works was present about 250m S. The gravel pit located 500m SE had expanded during the early 1960s but was recorded as disused by 1981–1982.
1992-93 (1:2,500) 1992 (1:10,000)	No notable changes identified at the site.	An additional school building or structure being constructed adjacent to the site between 2006-2025, and a small depot to the south-east by 1992.

Table 2.1: History of the Site and Surrounding Land

Date	Site History	Surrounding Land History
1993 (1:2,500) 1999 (1:10,000) 1993 (aerial photograph) 2000 (aerial photograph) 2006-2016 incl (1:10,000)		
2025 (1:10,000) 2025 walkover	Site is used for agriculture or pastoral purposes. No structures present aside from overhead cables.	Land use in the immediate vicinity is a mix of agriculture, leisure and housing. To the east and south-east there are a small number of dwellings. To the west there are school sports pitches.
Note: All distances are approximate.		

2.1.1 Anecdotal Evidence

No anecdotal evidence available at the time of reporting.

2.1.2 Summary of Historical Landuses

The site has remained undeveloped throughout the available mapping history.

No significant industrial or commercial landuses shown in the surrounding area. A number of gravel pits were shown; the nearest was 500m (SW). One of the gravel pits was extended in the early 1960s (500m SE) but by 1981-1982 had become disused and possibly infilled. Small depot noted to the south-east by 1992.

2.2 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

2.2.1 Anticipated Geology

Relevant geological information has been sourced using the British Geological Survey (BGS) extract sheet 221 of Hitchin and is 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 Glaciofluvial Deposits, Mid Pleistocene - majority of the site	Cromerian	Not recorded	Sand and gravel	Secondary aquifer - A
Superficial Alluvium - strip along the south-east of the site, associated with Ash Brook	Holocene	Not recorded	Clay, silt, sand and gravel	Secondary aquifer - A
Superficial Head Deposits - triangular area in SE, between the Glaciofluvial deposits and Alluvium	Holocene	Not recorded	Clay, silt, sand and gravel	Secondary aquifer - A
Solid Holywell Nodular Chalk Formation and New Pit Chalk Formation	Cenomanian - Turonian	100-115m	Undifferentiated Chalk	Principal aquifer

An area of artificial ground – ‘worked ground, undivided – void’ is marked 84m to the north of the site.

The BGS website indicates that there are no references to 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 250m 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)
TL22NW306 – OLE - W3 - INVESTIGATION – 31m east			
Topsoil	Topsoil	0.0	0.1
Possibly Drift	Sandy CLAY	0.1	0.6
	SAND and GRAVEL	0.6	3.4
	Silty CLAY	3.4	4.6
Groundwater	N/A – seepages	4.6	
TL22NW47 – HILLCREST, ASHBROOK, IPPOLLITTS– 178m east			
Drift	Tough, hard, CLAY	0.0	9.5
	Red SAND (water bearing)	9.5	12.5
	Blue CLAY	12.5	17.7
Solid	CHALK (hard thin layer)	17.7	39.6
	CHALK (sticky)	39.6	45.7
Groundwater	9.1m (drift) and 20.7m (chalk)		
TL22NW62 - PROP.BYPASS AT LITTLE A602 WYMONOLEY BH6 – 175m south-east			
Topsoil	Topsoil	0.0	0-3
Drift	Silty sandy CLAY	0.3	1.4
Solid	White structureless CHALK	1.4	8.0
	Unweathered CHALK with occasional flints	8.0	21.5
	Hard to very hard medium hard in part, brittle blocky CHALK	21.5	25.0
Groundwater	14.6m		

2.2.3 Hydrogeology

The hydrogeology of the site has been determined by the superficial geology of the Glaciofluvial Deposits, Head Deposits and Alluvium, which are classified by the Environment Agency as a secondary aquifer – ‘A’, undifferentiated’ and ‘A’ respectively, and the Chalk bedrock which is classified as a principal aquifer.

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

Secondary (undifferentiated) aquifers have been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Principal aquifers are described as *layers of rock or drift deposits that have high intergranular and/or fracture permeability. They usually provide a high level of water storage and may support water supply and/or river base flow on a strategic scale. In most cases, these aquifers were previously classified as major aquifers.*

The combined classification groundwater vulnerability beneath the site is noted as 'secondary aquifer - high vulnerability'.

Both the Envirocheck report and the Environment Agency website (November 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. At least four records between 674-682m SE relate to private water supply from a well or borehole. A record 890m N is for General Farming and Domestic purposes. An abstraction for Public Water Supply is situated 1525m to the SE.

The BGS groundwater flooding susceptibility for the site is shown as follows: in the north-west – 'Limited Potential for Groundwater Flooding to Occur', in the centre – 'Potential for Groundwater Flooding of Property Situated Below Ground Level', and in the east – 'Potential for Groundwater Flooding to Occur at Surface'.

2.2.4 Hydrology

The Envirocheck report indicates that the nearest surface water feature is located on site. The historical mapping shows that Ash Brook flows in a northerly direction along the eastern boundary and near the northern boundary. In addition, there is Ippollitts Brook 480m to the north-west.

The Envirocheck report indicates that there is three 'Discharge Consents' for premises within 250m of the site. The records relate to discharges of final/treated effluent (137m SE and 202m S) and storm overflow (216m SE).

The Envirocheck report indicates that there are three records of 'Pollution Incidents to Controlled Waters' within 500m. A release of unknown pollutant (431m NW), Crude Sewage (446m N and 462m W). All three incidents were categories as significant.

There are no 'Local Authority Pollution Prevention and Controls' for premises within 250m of the site. The nearest record is related to iron, steel and non-ferrous metal foundry processes 933m to the southwest.

The eastern section of the site, presumably associated with Ash Brook, is located in an area that is at risk of 'extreme flooding' and 'flooding' from rivers without defences. The site is not located in a flood water storage area, nor does it benefit from flood defences.

A strip of land inside the eastern boundary falls within areas of 1 in 30, 1 in 100 and 1 in 1000 year flood extents.

2.3 LANDFILLS AND BIO-GROUND GAS

2.3.1 Landfills, Waste Management Facilities and Infilled Ground

The Envirocheck report indicates that there 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 undeveloped. Although Made Ground may be encountered locally at site entrance points and within the overgrown bank in the north-west. Significant organic biodegradable material is not expected.
Alluvial Strata (CO ₂ + CH ₄)	Human health Explosion	Low	Alluvial deposits on-site associated with Ash Brook. The Alluvial deposits are located along the eastern boundary.
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 significant infilled ground recorded 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 'rare'.
Soil Vapours	Human health Explosion	Very Low	No evidence of fuel storage.
COMBINED RISK RATING = LOW			

A combined Low risk from ground gas ingress and explosion is considered and ground gas monitoring is considered necessary. Gas monitoring would be advised during future ground investigation.

2.4 RADON GAS

The Envirocheck Report indicates that the site is split between a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level), and an Intermediate probability radon area where 1% to 3% of homes are affected by Radon. It is indicated that no radon protective measures are necessary in the construction of new dwellings or extensions.

A Radon report is recommended immediately prior to any re-development plans 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 likely limited presence of Made Ground	Yes
2. Local soil contamination	Metals, hydrocarbons (TPH/PAH), asbestos.	Limited risk of soil contamination. No structures, aside from track.	Yes
3. Asbestos	Asbestos	Limited risk of Asbestos Containing Soils (ACS) and Asbestos Containing Materials (ACMs). No buildings.	No
4. Groundwater	Groundwater is not anticipated at shallow depth beneath the site.	Site is underlain by secondary aquifers above a principal aquifer. Not located in an SPZ.	Yes
5. Surface Water	Ash Brook along eastern site boundary.	Ash Brook flowing in a northerly direction along the eastern site boundary.	Yes
6. Ground gases/vapours	Hazardous bio-ground gas. Complete routine bio-ground gas monitoring.	Alluvial deposits noted along the eastern boundary. Other significant hazardous ground gas sources are not 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; Superficial strata comprising secondary aquifers above solid geology comprising a principal aquifer.
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.	Gardens areas proposed at the site.	Yes
Adjacent land users	Occupants of surrounding residencies.	Adjacent residential dwellings (limited) 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 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 secondary aquifers above a principal aquifer. No public water supply boreholes within 1000m of the site. The site is not located in an SPZ.	Yes
Surface waters	Controlled water such as lakes, streams, rivers or coastal waters.	Ash Brook flows along the eastern site boundary.	Yes
Ecological receptors	Sensitive areas of ecological significance defined under Part 2A of EPA 1990.	Site located in a Nitrate Vulnerable Zone which is relevant to agriculturalists (not developers). Also, in an area of Adopted Green Belt.	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 4.5: Initial Conceptual Site Model (for plausible pollutant linkage pathways)

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
Sources 1 and 2 Site-wide and local soil contamination	Construction workers	Direct contact	Unlikely	Mild	Very Low <i>Note 1.</i> Site in use as agricultural land or pasture. It is not occupied with buildings. Very limited potential for made ground and contaminants that may normally be associated with any buildings locally.	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> Secondary aquifers beneath the site, overlying a principal aquifer bedrock. Domestic buildings off-site to the SE. Site predominantly soft surfaced.	3
	Soft landscaping	Root uptake	Low Likelihood	Mild	Low <i>Note 3.</i> No evidence of made ground following walkover and desk based study. Vegetation is well established with no signs of 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> Secondary A aquifer beneath the site, overlying a Principal aquifer bedrock. The site is not located in an SPZ. No evidence of significant potential contamination sources made ground following walkover and desk based study	7

Table 4.5: Initial 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>See Note 4.</i>	8
	Ecology	Direct contact via run-off	Unlikely	Mild	Very Low <i>See Note 4.</i>	9
Source 3 Asbestos	Construction workers	Inhalation	Low likelihood	Minor	Very Low <i>Note 5.</i> No potential for ACMs due to absence of existing buildings.	10
	End users	Inhalation	Low likelihood	Minor	Low <i>See Note 5.</i>	11
	Adjacent land users	Inhalation	Unlikely	Mild	Very Low <i>See Note 5.</i>	12
Sources 4 and 5 Groundwater	Construction workers	Direct contact	Unlikely	Mild	Very Low <i>Note 6.</i> Secondary A aquifer beneath the site, overlying a Principal aquifer bedrock. Groundwater and surface water contamination from site unlikely as risk of soil contamination is low.	13
	End users					
	Adjacent land users					
	Water supply pipes					
	Soft landscaping	Root uptake	Unlikely	Mild	Very Low <i>See Note 6.</i>	14
	Groundwater Surface water Ecology	Lateral migration through hydrogeology	Unlikely	Mild	Very Low <i>See Note 6.</i>	15
Source 6 Ground gases and Soil vapours (on/off site source)	Construction workers	Inhalation of vapours/gas	Low likelihood	Minor	Very Low <i>Note 7.</i> Alluvium is potential source of ground gas identified within the site. Made ground possible in the overgrown bank in the north-west. Possible made ground at site entrance points.	16
	End users	Inhalation of vapours/gas	Low likelihood	Mild	Low <i>See Note 7.</i> Perceived risk increased due	17

Table 4.5: Initial Conceptual Site Model (for plausible pollutant linkage pathways)						
Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
					to long-term occupancy.	

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

3.6 CONSIDERATIONS FOR SITE INVESTIGATION

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

1. Complete precautionary site-wide soil contamination testing of overlying soils to determine the presence or absence of contaminants, and targeted investigation of the overgrown bank inside the north-western boundary. Additionally, pH, sulphate and sulphur testing should be completed to enable design of buried concrete.
2. Complete ground gas monitoring to provide quantification to the qualitative risk assessment.

To assess the risk, the following analysis should be completed:

-  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.

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 5 November 2025.

Exploratory Hole Location Plans are enclosed as **Figures 6 and 7**.

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 WS15 were spatially positioned around the site to target the proposed development buildings, for shallow soil sampling and laboratory testing. The monitoring installation in WS1 was constructed in an area proposed for sustainable drainage in the north-east of the site to determine the periodic groundwater level.	Monitoring wells were installed into WS1, WS3, WS8, WS10 and WS14
Machine Trial Pits (SP, TP)		
	SP1, SP2, SP3 and SP4 were spatially located in areas proposed for open space and sustainable drainage, to facilitate soil infiltration testing. TP1 and TP2 were completed in the overgrown bank inside the north-western boundary of the site and TP3 near to the brook along the eastern boundary.	Not Installed

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 WS15 were drilled to depths of 4.0m 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 4.0m bgl within the boreholes in accordance with BS EN SO 22476-3 "Standard Penetration Test 2005". Drilling refusal (SPT N > 50) occurred routinely at depths of between 2.0m and 4.0m bgl, where the boreholes were terminated to prevent jamming and damage to the drilling rig and tooling. The desired depth of 5.0m bgl initially proposed was therefore not achieved.

Disturbed soil samples were also collected from bored arisings for geochemical and geotechnical laboratory tests which are further discussed within section 5.0.

4.2.2 Trial Pits

Trial Pits SP1 to SP4 and TP1 and TP2 were excavated to depths of up to 1.8m bgl using a 2.5 tonne tracked 360° excavator.

The purpose of the trial pits was to determine ground conditions, enable soil infiltration testing in accordance with BRE 365 Soakaway Design 2016 to determine parameters for shallow soakaways, and soil sample collection for laboratory geochemical and geotechnical testing.

4.2.3 Dynamic Cone Penetrometer (DCP/TRL)

Eight Dynamic Cone Penetrometer (DCP) tests (DCP1-DCP8) 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 6 and 7**.

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/ reworked Topsoil	Predominantly silty gravelly SAND, and locally SILT and CLAY. Reworked locally in TP1 and TP2 to up to 0.8m within the overgrown bank inside the north-western boundary, and in SP4.	GL	0.2 – 0.8
Possibly Alluvium	Locally in TP3 in the east of the site, as very clayey very sandy cobbly GRAVEL	0.3	1.8+
Glaciofluvial Deposits	Overlying horizon of firm and stiff very silty very sandy gravelly CLAY, locally.	0.3 – 0.4	0.7 – 1.4
	Medium dense and dense SAND. GRAVEL locally in WS8 to 2.3m.	0.2 – 1.4	4.0+
	Firm to stiff and stiff locally very stiff slightly silty sandy slightly gravelly CLAY. Locally soft in WS10 at 2.0-2.5m.	0.7 – 1.6	4.0+

4.3.1 Field Observations

The following visual and olfactory observations were made:

-  Reworked Topsoil observed in the overgrown bank inside the north-western boundary.
-  Soft low strength soils noted locally in WS10 in the south-east of the site at 2.0m to 2.5m bgl.
-  No significant roots or rootlets recorded during the site investigation works.
-  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 between 3 and 5 November 2025 at the depths detailed in table 4.4.1.

Table 4.4.1: Groundwater During Investigation

Location	Depth – bgl (during GI)	Comments
WS1-WS9, WS11-WS15	Dry to depths of up to 4.0m	The water encountered is expected to represent water locally within the coarse horizons of the Alluvium and Glaciofluvial Deposits.
WS10	1.9m	
SP1-SP4, TP1-TP2	Dry to depths of up to 1.4m	
TP3	1.6m, rising to 1.45m after 20 mins	

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	1.0-3.9	3.9
WS3	GL-1.0	1.0-3.0	3.0
WS8	GL-1.0	1.0-4.0	4.0
WS10	GL-1.0	1.0-3.3	3.3
WS14	GL-1.0	1.0-2.0	2.0

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 WS3	Depth – bgl WS8	Depth – bgl WS10	Depth – bgl WS14
24 November 2025	1.55m	Dry to 3.08m	3.6m	1.83m	Dry to 2.03m
December 2025	TBC	TBC	TBC	TBC	TBC
January 2026	TBC	TBC	TBC	TBC	TBC

Further to comments made regarding the groundwater within table 4.4.1, the groundwater encountered is expected to be water locally within the coarse horizons of the Alluvium and Glaciofluvial Deposits.

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
SP1 (0.1m)	Topsoil	To provide baseline concentrations of Shallow Topsoil/Reworked (<0.5m deep). <i>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.</i>	ES-1
TP1 (0.35m)	Reworked Topsoil		ES-1
TP2 (0.5m)	Reworked Topsoil		ES-1
TP3 (0.25m)	Topsoil		ES-1
WS5 (0.15m)	Topsoil		ES-1
WS11 (0.1m)	Topsoil		ES-1
WS14 (0.25m)	Topsoil		ES-1
WS5 (0.7m)	Natural Soil	To provide baseline concentrations of natural soils (<1m deep) where root growth will occur.	ES-1
COMP1 (0.1-0.40m)	Topsoil/ Reworked Topsoil	Composite sample to enable characterisation of overlying soils for off-site disposal purposes.	WAC

Chemical sampling and testing targeted the overlying units of Topsoil/reworked Topsoil 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 where root growth may occur.

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 Normec i2 Analytical.

5.2 SOIL GEOTECHNICAL TESTING

A programme of geotechnical laboratory testing was undertaken at GEO Site and Testing Services Limited and Normec i2 Analytical. 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	14 (14)
Particle Size Distribution (PSD) <i>The objective of PSD testing is to determine grading of coarse (sand and gravel) soils</i>	BS EN ISO 17892 Part 4: 2016	6
Aviron LC Suite - pH, water soluble sulphate, total sulphate & total sulphur <i>To enable concrete classification to be specified</i>	UKAS accredited	12 (including 8 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.

7.0 ASSESSMENT OF GEOCHEMICAL SOIL RESULTS

The development proposed shall involve 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 1% 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)
SP1 (0.1m)	Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
TP1 (0.35m)	Made Ground	All determinants recorded at acceptable concentrations	n/a	n/a
TP2 (0.5m)	Made Ground	All determinants recorded at acceptable concentrations	n/a	n/a
TP3 (0.25m)	Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
WS5 (0.15m)	Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
WS5 (0.7m)	Natural Clay	All determinants recorded at acceptable concentrations	n/a	n/a
WS11 (0.1m)	Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
WS14 (0.25m)	Topsoil	All determinants recorded at acceptable concentrations	n/a	n/a
COMP1 (0.1-0.40m)	Topsoil/Made Ground	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

7.2.1 Human Health Risk

All determinants 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 unlikely current and historical land uses have chemically impacted the site.

It is recommended a discovery strategy is enacted and as necessary in the event of contaminative discoveries, suitable remediation (and subsequent verification) is undertaken to the requirement and approval of the local planning authority.

7.2.2 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 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?
24 November 2025	981-979mB	Falling	Yes	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	1.4	2.7	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	18.3	19.2	Oxygen has been recorded at ambient concentrations, above 16%, being the point where it is considered there is potential for asphyxiation.
Vapour*	0.0 (<0.1)	0.0 (<0.1)	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 monitoring during worst-case condition and GSV for carbon dioxide which is between below 0.07l/h the site is likely to conform the Characteristic Situation 1 (CS1).

Bio-ground gas protection is unlikely to be necessary. However, a further two rounds of monitoring should be completed and are planned for December 2025 and January 2026.

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		
1. Undiscovered contamination	Potential for undiscovered soil contamination in the event of agricultural site disposals/burying of waste.	Enact discovery strategy
No Longer Considered to be Potential Sources		
Site-wide and local soil contamination	Based on the site history, the ground conditions beneath the site and the laboratory results it is unlikely site-wide soil contamination exists at the site.	Enact discovery strategy for any potentially undiscovered soil contamination.
Local soil contamination	Based on the site history, the ground conditions beneath the site and the laboratory results it is unlikely local soil contamination exists at the site.	Enact discovery strategy for any potentially undiscovered soil contamination.
Asbestos	Based on the site history, the ground conditions beneath the site and the laboratory results it is unlikely asbestos soil contamination exists at the site.	Enact discovery strategy for any potentially undiscovered soil contamination.
Groundwater and Surface Water	Groundwater and Surface contamination is not considered to exist beneath or adjacent to the site	n/a
Bio-ground gases/vapours	Ground gas concentrations are considered to represent CS1 and gas protection is unlikely to be necessary.	Monitoring shall be completed in December 2025 and January 2026 as part of project instructions and conclude the risk assessment.
Radon	Radon protection not required (as of the date of reporting)	Procure radon report immediately prior to construction in the event guidance has changed.

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

Source	Receptor	Pathway	Probability	Consequence	Risk & Justification	Linkage No.
1. Undiscovered contamination	Construction workers	Direct contact	Unlikely	Mild	Very Low <i>Note 8.</i> No evidence of soil contamination following investigation. However, there remains potential, albeit limited, for discovery of possible (buried) soil contamination. Action. Enact Discovery Strategy and any subsequent (and as necessary) remediation and verification.	18
	End users	Direct contact	Unlikely	Mild	Very Low <i>See Note 8.</i>	19
	Adjacent land users	Direct contact via run-off	Unlikely	Mild	Very Low <i>See Note 8.</i>	20
	Soft landscaping	Root uptake	Unlikely	Mild	Very Low <i>See Note 98</i>	21
	Water supply pipes	Direct contact	Unlikely	Mild	Very Low <i>See Note 8.</i>	22
	Buildings & infrastructure	Direct contact	Unlikely	Mild	Very Low <i>Note 9.</i> Non-aggressive ground conditions encountered. See section 10.7.	23
	Groundwater	Vertical migration through hydrogeology	Unlikely	Mild	Very Low <i>Note 10.</i> No evidence of soil contamination following investigation.	24
	Surface waters	Vertical and lateral migration through hydrogeology	Unlikely	Mild	Very Low <i>See Note 10.</i>	25
	Ecology	Direct contact via run-off	Unlikely	Mild	Very Low <i>See Note 10.</i>	26

9.3 RISK COMMENTARY

9.3.1 Contamination Risk from Soil to Human Health – Construction Workers

Concentrations of soil determinants 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 (albeit very low) for undiscovered contamination and thus a Discovery Strategy should be enacted.

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 determinants 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 unlikely to be necessary.

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

Special design for domestic water supply are 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 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 were identified. However, a potential risk was considered from alluvial strata.

To further evaluate ground gas risk one round of ‘worst-case’ precautionary monitoring has been completed which recorded acceptable GSV and maximum concentrations within in site. The concentrations recorded suggest Characteristic Situation 1 (CS1).

Bio-ground gas protection is unlikely to be necessary. However, a further two rounds of monitoring should be completed and are planned for December 2025 and January 2026.

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 levels of the proposed development buildings are 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. Although the qualitative risk of ground dissolution of soluble rocks is noted to be very low in the Envirocheck report within the PRA, the quantitative risk of ground dissolution of soluble rocks is outside the scope of this report. Any solution features encountered during the groundworks phase will need to be addressed appropriately.

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/ reworked Topsoil	Predominantly silty gravelly SAND, and locally SILT and CLAY.	GL	0.2 – 0.8	0.36
Possibly Alluvium	Locally in TP3 in the east of the site, as very clayey very sandy cobbly GRAVEL	0.3	1.8+	-
Glaciofluvial Deposits	Overlying horizon of firm and stiff very silty very sandy gravelly CLAY, locally.	0.3 – 0.4	0.7 – 1.4	0.71
	Medium dense and dense SAND. GRAVEL locally in WS8 to 2.3m.	0.2 – 1.4	4.0+	-
	Firm to stiff and stiff locally very stiff slightly silty sandy slightly gravelly CLAY. Locally soft in WS10 at 2.0-2.5m.	0.7 – 1.6	4.0+	-
Notes				
Soft low strength soils noted locally to depths of up to 2.5m bgl in WS10. Potential for desiccation to depths of up to 2.5m bgl, locally in WS11.				
Groundwater				
Groundwater at depths of between 1.55m and 3.6m bgl locally in WS1, WS8 and WS10, with the installations dipped 'dry' in WS3 and WS14 to depths of up to 3.85m bgl, during the return monitoring (November 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:

-  Adequate bearing resistance to support the proposed development buildings.
-  Soft low strength soils noted locally to depths of up to 2.5m bgl in WS10 in the area of Plots 1-3, possibly Plots 4-7. Deeper foundations or possibly piled foundations therefore expected to be required in the area of Plots 1-7.
-  Potential desiccation noted to depths of up to 2.5m bgl in WS11, Plots 4-7, possibly Plots 8 and 15. Deeper foundations or possibly piled foundations therefore expected to be required in the area of Plots 4-8 and Plot 15.
-  High volume change potential CLAY soils and the influence of trees.

Requirements of temporary works in locally coarse soils and elevated groundwater.

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

Assumed maximum 'characteristic action' (or line load) of up to 150kN/m run on conventional shallow foundations 1.0m wide on medium dense SAND or firm to stiff CLAY, at the anticipated foundation formation level of 1.0-2.5m 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.

A presumed bearing pressure of 150kN/m² on strip/trench fill foundations up to 1.0m wide is also suitable for the CHALK of weathering Grade Dc, encountered in the south-west of the site in WS13 and WS15 at 1.0m bgl, pending further ground investigation work to confirm the extent of the chalk and the weathering grade.

Due to low strength soils and the potential for desiccation to have occurred, deeper foundations or possibly piled foundations are expected to be required in the area of Plots 1-8 and Plot 15, also pending further ground investigation work in this area.

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. However, due to the requirement for excavations to facilitate the construction, as well as coarse soils in elevated groundwater, 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.

In accordance with CIRIA C574, Engineering in Chalk, 2002, temporary excavations in structureless (weathered) CHALK (Grade Dm, Dc) may be permitted at angles of 33°. In CHALK of weathering Grade C and B (if encountered during the groundworks), temporary excavations at angles of 45° may be permitted.

Steeper temporary excavations in Grade C and B CHALK may be possible; however, this will need to be assessed on site at the time of groundworks.

It should be noted that CHALK is highly frost susceptible and 0.5m of the excavation face is likely to be affected by frost and small blocks of chalk will be gradually split or wedged out. Local orientation of discontinuities will also affect temporary excavations. The crest of any excavations should not be surcharged (loaded) and a perimeter exclusion zone adopted to avoid this from occurring.

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 Earthworks

Information regarding the mechanical handling of chalk including excavation, stockpiling and transportation, and placing and spreading of chalk are included in CIRIA C574, Engineering in Chalk, 2002. For example, when intact chalk is crushed, a clay and silt size granular material results, and as detailed in CIRIA C574, where the crushed weight of material exceeds 15%, the crushed materials will dominate the strength of earthworks fill. Also, in adverse weather conditions, when the moisture content of chalk is within 5% of the liquid limit, trafficking of chalk is not possible.

Consideration will therefore need to be given to the ground conditions encountered, the earthworks class of the chalk, the weather conditions, and the appropriate compaction method to be adopted.

10.2.3 Dewatering

Groundwater was recorded at depths of between 1.55m and 3.6m bgl locally in the wells constructed in WS1, WS8 and WS10, with the installations dipped 'dry' in WS3 and WS14 to depths of up to 3.85m bgl, during the return monitoring (November 2025). On the basis of the data obtained; dewatering is expected to be required locally in shallow excavations beneath the site.

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 medium dense SAND, firm to stiff CLAY and CHALK of weathering Grade Dc at the anticipated foundation formation level of 1.0-2.5m 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

Results of particle size distribution analysis indicate that the coarse soils across the site at depths of between 1.0m and 2.0m bgl comprise clayey and very clayey silty and very silty gravelly SAND and silty sandy GRAVEL of negligible volume change potential.

Atterberg limits tests conducted on the fine soils sampled at depths of between 1.0m and 4.0m bgl indicate that the strata comprise inorganic CLAY of predominantly high and very high plasticity (CH/CV) and locally low and intermediate plasticity (CL/CI). The modified plasticity index was determined to be between 11% and 50% indicating soils of low, 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 coarse soils beneath the site are classified as being of negligible-volume change potential and the fine soils beneath the site are classified as being of high-volume change potential. The CHALK of weathering Grade Dc in the south-west of the site is classified as being of negligible 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 beneath the site are potentially desiccated (MC:LL ratio 0.32-0.49). Although the natural soils 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 2.5m bgl locally in WS11.

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, possibly on piles.

Mitigation measures to prevent heave in the desiccated soils encountered across the site should be incorporated into the below ground construction, as well as in clay soils 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 32° and 23° is assumed for the SAND and CLAY soils beneath the site, using Table 2 of BS8002:1994 September 2001. The coarse soils are assumed to be medium dense, moderately graded and rounded. The undrained cohesion of the fine soils 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})
SAND	Negligible	19	32
CLAY	High	17-19	23
CHALK	Negligible	19	30

For assessment purposes a characteristic value of the angle of shearing resistance (ϕ) of 32° has been determined for the medium dense SAND strata and a characteristic value of undrained shear strength ($C_{u,k}$) of 75kN/m² has been assumed for the firm to stiff CLAY strata, at the anticipated foundation level of 1.0-2.5m bgl.

The characteristic value of the angle of shearing resistance was derived using the relationship between ϕ and the average SPT N-value (GEO 005, $E_r=69\%$, $N_{60}= 15+$) after Peck, Hanson and Thornburn (Foundation Engineering, 1967). Bearing capacity factors determined by Vesic (Analysis of Ultimate Loads of Shallow Foundations, 1973) have been applied. It is assumed that groundwater will not rise above the base of foundations. 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 (GEO 005, $E_r=69\%$, $N_{60}= 15+$), 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 coarse soils and chalk across the site are classified as being of negligible volume change potential. The 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, 2025 is therefore required in this regard.

Mitigation measures to prevent heave in the overlying desiccated soils encountered locally in WS11 (Plots 4-7, possibly Plots 8 and 15), should be incorporated into the below ground construction, as well as 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.

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 medium dense SAND, firm to stiff CLAY and CHALK of weathering Grade Dc at the anticipated foundation formation depths of 1.0-2.5m bgl may be suitable for the proposed buildings.

Using an assumed maximum vertical characteristic action of 150kN/m run (1.0-2.5 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 groundwater level will not rise above the base of foundations in SAND soils.

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 assumed maximum vertical characteristic action of **150kN/m run** corresponds to the bearing resistance in Table 10.6.1 of **150kN/m²** when applied to trench fill foundations 1.0m wide constructed on medium dense SAND and firm to stiff **CLAY** at depths of 1.0-2.5m bgl, in the area of the specific development buildings. The serviceability state is satisfied with the total settlement being restricted to **25mm**.

Ordinarily and in accordance with CIRIA C574, Engineering in Chalk, 2002, an allowable bearing pressure of 225kN/m² would apply to CHALK of weathering Grade Dc, however, pending confirmation of the weathering grade, a reduced bearing pressure of 150kN/m² is advisable. Settlement beneath strip/trench fill foundations up to 1.0m wide loaded to 150kN/m² in CHALK of weathering Grade Dc would be restricted to less than 25mm.

Table 10.6.1: Bearing Resistance				
Borehole Location / Plot / Strata Type	Depth BGL (m)	Footing Width (m)	Bearing Resistance (kN/m ²)	Comment
North of Site				
WS2-WS8 Plots 26-50 Medium dense SAND (GRAVEL locally in WS8)	1.0-1.5	1.0	150	Extend foundations beneath very silty and clay soils to depths of 1.0-1.5m. Consider high volume change potential soils and further adjustments to foundation depths in accordance with NHBC Chapter 4.2.
Centre and West of Site				
WS9, WS12, WS14 Plots 9-14, 16-18, 23-25 Firm to stiff CLAY	1.0-1.3	1.0	150	Extend foundations beneath very silty soils to depths of 1.0-1.3m. Consider high volume change potential (VCP) soils and further adjustments to foundation depths in accordance with NHBC Chapter 4.2. Consider additional sampling and testing to reduce VCP to low in the area of Plots 18-20.
South and South-East of Site				
WS10-WS11 Plots 1- 8, 15 Firm to stiff CLAY	2.5	1.0	150	Extend foundations beneath low strength soils and potentially desiccated soils to 2.5m bgl. Consider further ground investigation to confirm the soil strength, material properties and desiccation profile.
South-West of Site				
WS13, WS15 Plots 19-22 CHALK of weathering Grade Dc	1.0	1.0	150	Consider further ground investigation to confirm the extent of chalk and the weathering grade.
Additional Notes				
Piled Foundations Plots 1-9	Piled foundations may be required in the area of WS10, including Plots 1-7, due to soft low strength soils noted to depths of up to 2.5m bgl.			

	Piled foundations may also be required in the area of WS11, and within the influence of trees along the site boundary, including Plots 4-8 and 15 due to the potential for desiccation to have occurred to depths of up to 2.5m bgl. Temporary works and control of groundwater may influence the feasibility of a shallow foundation solution in these areas.
Consider temporary works due to coarse soils and elevated groundwater. The total settlement for trench fill foundations 1.0m wide is anticipated to be less than 25mm for the bearing resistance provided and 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 SAND, CLAY and CHALK locally.	

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 loosen or 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 reduced bearing resistance, particularly in the area of WS10, temporary works, and foundation depths due to trees or desiccation in the area of WS11 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 clay soils within the influence of trees and in desiccated soils, should be incorporated into the below ground construction.

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)	– 0.0017 to 0.0149g/l
 pH	– 6.3 to 8.2
 Total Sulphate SO ₄	– 0.019 – 0.06%
 Total Sulphur	– 0.0063 – 0.042%
 Total Potential Sulphate	– 0.0189 – 0.126%
 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 mobile groundwater (secondary (A) aquifers and a principal aquifer), the Aggressive Chemical Environment for Concrete (ACEC) Class is AC-1.

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 4.8% to >20% for the overlying horizons at the locations tested across the site.

However, due to the potential for desiccation to have artificially increased the CBR value locally, following scarifying and proof rolling, consideration should be given to an estimated design CBR value of 3% and 4% for thin and thick construction respectively for a 'silty clay' (PI ~ 30% at 1.0m bgl) in accordance with Design Guidance for Road Pavement Foundations IAN 73 06 HD25[rev1] 2009.

Consideration should also be given to completing 'soaked' CBR testing at the road foundation formation level once known.

A higher CBR value of 10% may be assumed where CHALK of weathering Grade Dc is exposed at road pavement foundation formation. A minimum of 450mm of non-frost susceptible materials should be included in the total pavement thickness. Please note that further advice is included in CIRIA C574, 2002 regarding mechanical handling of chalk. Of note, weather conditions may have an adverse effect on the CBR which would be expected to reduce significantly with an increase in moisture content.

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

10.9 SOAKAWAY DRAINAGE

10.9.1 Investigation Design

In order to complete a 'compliant' infiltration test in accordance with Building Research Establishment (BRE) Digest D365, February 2016, Soakaway Design trial pits should be excavated and then filled and drained with three-cycles of water. The time taken for the water to drain to 25% full within the trial pit is the determining factor in order to complete a successful and compliant infiltration test.

Prior to undertaking the infiltration testing it is near impossible to determine a time-period in which to resource the testing, in terms of attendance of site operatives, technicians and plant machinery. As such a best estimate has to be that a balance is struck between technical and commercial viability.

Following review of the ground conditions it was considered unlikely the full three-cycles of testing would be achieved within the day and thus, in such a situation a default position as described below is taken in order to maximise the value of time over the duration of the plant allocated for the investigation:

-  **Day 1.** Excavate pits and secure with panels to prevent falls. Commence first cycle of filling/draining.
-  **End of Day 1 into evening/night of Day 1 to Day 2.** Commence second cycle of filling/draining on the presumption the first cycle concludes during the first day. The second cycle of draining is likely to occur during the night-time and will not be fully monitored. However, experience tells us that the third cycle of draining more often than not yields the slowest infiltration rate as a result of the test pit being fully saturated/drained on two previous cycles. Therefore, conducting this test in a secured pit, over-night, makes best endeavours to utilise 'time' in an efficient manner and seeks to complete a third cycle of testing within a pit which has been previously saturated on two occasions.
-  **Day 2.** Where applicable, complete monitoring of the second cycle. Commence third cycle of filling/draining and backfill pits.

10.9.2 Investigation Completion

Soil infiltration tests were undertaken within trial pits SP1 to SP3 in general accordance with Building Research Establishment (BRE) Digest D365, February 2016, Soakaway Design in the manner designed within section 10.9.1.

The trial pits were excavated to depths of between 1.1m and 1.4m bgl and tested to determine the suitability for conventional soakaways in the overlying soils encountered at these locations.

Excavation of the trial pits was completed at a steady rate and the trial pits were rapidly filled with a tankered water supply. The subsequent fall in water level was observed over the time period specified within the table of results.

Water filling was completed within each trial pit in the manner described within table 10.9.2 along with infiltration rates and comments.

Table 10.9.2: Soil Infiltration Rates				
Location (Test no.)	Testing depths (bgl)	Strata Tested	Infiltration Rate (m/s)	Comments
SP1 (T1)	0.60m – 1.1m	SAND	5.54×10^{-6}	Tested over 340 minutes on day-1
SP1 (T2)	0.48m – 1.1m	SAND	2.58×10^{-6}	The pit was re-filled on day-1 and left to drain over-night. Upon return to the pit on the morning of day-2, at a testing time of 860 minutes water levels were recorded at 0.96m bgl.
SP1 (T3)	0.46m – 1.1m	SAND	$*2.21 \times 10^{-6}$	The pit was re-filled on day-2, however, following 520 minutes (~9hrs) of observation the fall in water had not reach 25% full. Therefore, an extrapolated(*) rate has been determined due to day-shift end.
SP2 (T1)	0.79m – 1.4m	SAND	9.45×10^{-5}	Tested over 30 minutes on day-1
SP2 (T2)	0.73m – 1.4m	SAND	2.58×10^{-5}	Tested over 80 minutes on day-1
SP2 (T2)	0.63m – 1.4m	SAND	2.19×10^{-5}	Tested over 90 minutes on day-1
SP3 (T1)	0.46m – 1.1m	SILT/SAND	Not rate/not suitable for soakaway drainage	Testing commenced on the morning of day-1. By the end of the shift on day-1 (300mins/5hrs) the water level had failed to reach 75% full. It was decided to leave the water in the pit to continue draining overnight whereby after 1300 minutes (21.7hrs) the water level fallen below 75% full, however, following 1440 minutes (24hrs) the water failed to reach 50% full (half empty)
SP4 (T1)	0.50m – 1.0m	SILT/SAND	1.7×10^{-5}	Tested over 100 minutes on day-1
SP4 (T2)	0.79m – 1.0m	SILT/SAND	1.19×10^{-5}	Tested over 140 minutes on day-1
SP4 (T2)	0.49m – 1.0m	SILT/SAND	5.37×10^{-6}	Tested over 270 minutes on day-2

Shallow soakage drainage in the soils overlying the site may be suitable for the proposed development. However, the following may need to be considered:

-  The depth of groundwater to ensure 1m freeboard beneath infiltration devices. Accordingly, infiltration tests were completed at relatively shallow depths on account of water observations within trial pit TP3 at 1.6m bgl rising to 1.45m bgl after 20 minutes.

 The extrapolated result for test SP1(T3) due to lack of time to continue observations.

 The poor infiltration at SP3.

Soil infiltration test results are included within **Appendix V**.

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 low.	Enact Discovery Strategy/Watching Brief.
	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 has determined low risk from ground gas. One round of 'worst-case' monitoring which has determined acceptable gaseous concentrations suggestive of CS1. Ground gas protection is unlikely to be necessary, which is likely to be confirmed following monitoring visits planned for December 2025 and January 2026.		
Radon	The Envirocheck Report indicates that the site is split between a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level), and an Intermediate probability radon area where 1% to 3% of homes are affected by Radon. It is indicated that no radon protective measures are necessary in the construction of new dwellings or extensions. A Radon report is recommended immediately prior to any re-development plans 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 11.2 summarises the pertinent Ground Hazards Summary.

Table 11.2: Ground Hazards Summary		
Construction Issue	Ground Hazard	Recommendation
Below Ground Obstructions	Foundations and made ground are not anticipated; however, unknown former temporary or agricultural buildings may have been constructed locally.	Any isolated shallow obstructions likely to be removed with conventional excavation plant and hydraulic breaking equipment.
Foundations	Locally softened soils noted in WS10 to a depth of 2.5m bgl. Potentially desiccated CLAY soils noted locally in WS11 to 2.5m bgl. Conventional shallow foundations at 1.0-2.5m bgl in medium dense SAND, firm to stiff CLAY and CHALK of weathering Grade Dc 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. Piled foundations may be required locally due to softened and potentially desiccated soils in the area of Plots 1-8 and 15. Shallow excavations in fine soils during dry conditions may be stable in the short term, however instability in coarse soils expected to occur, and in wetter weather, or below the groundwater level. Water encountered during return monitoring between 1.55m and 3.6m bgl locally in WS1, WS8 and WS10 in November 2025.	Piled foundations may be required in the area of WS10 and WS11, Plots 1-8 and 15. Extend foundations beneath potentially desiccated soils and softened soils locally, possibly on piled foundations. Bearing resistance of 150N/m² may be acceptable for trench fill foundations at depths of 1.0-2.5m bgl in medium dense SAND, firm to stiff CLAY and CHALK of weathering Grade Dc, subject to adequate bearing resistance and design requirements. Dewatering may be required in shallow excavations beneath the site. Temporary excavations may be stable locally in CLAY soils, when not supported. Shoring of excavations expected to be required in coarse soils and below the groundwater level. CLAY soils determined as high volume change potential (NHBC Chapter 4.2, Building Near Trees). SAND and CHALK of negligible volume change potential.
Floor Slab and Heave	Suspended.	Heave protection required in clay soils within the influence of trees and desiccated soils. 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-1.
Pavements	Estimated CBR value of 3% and 4% for thin and thick construction respectively for 'silty clay' (IAN 73 06 HD25[rev1] 2009).	Complete soaked CBR testing once road pavement foundation formation depth known.

Table 11.2: Ground Hazards Summary

Construction Issue	Ground Hazard	Recommendation
Drainage	Shallow soakaways may be suitable subject to design requirements.	Consider results of testing and ongoing groundwater monitoring.
Abnormals	A piled foundation solution may be required locally due to insufficient bearing resistance, potential for desiccation to have occurred, groundwater control, the requirements of temporary works and the influence of trees on foundation depths.	Consideration should 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:

-  Three days of window sample drilling to enable boreholes to depths of up to 5.0m bgl, including SPTs at 1m intervals.
-  Install five of the boreholes with monitoring pipe to enable return gas and groundwater readings.
-  Machine trial pitting to enable soil infiltration testing and for shallow soil sampling and laboratory testing.
-  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 Associates, Preliminary Risk Assessment, reference 25-268.01, dated October 2025

References

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

BS EN 1997-1:2004+A1:2013 Eurocode 7 Geotechnical Design Part 1 General Rules

BS EN 1997-2:2007 Eurocode 7 Geotechnical Design Part 2 Ground Investigation and Testing

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SR7: Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values, Science Report SC050021/SR7, Environment Agency, November 2008

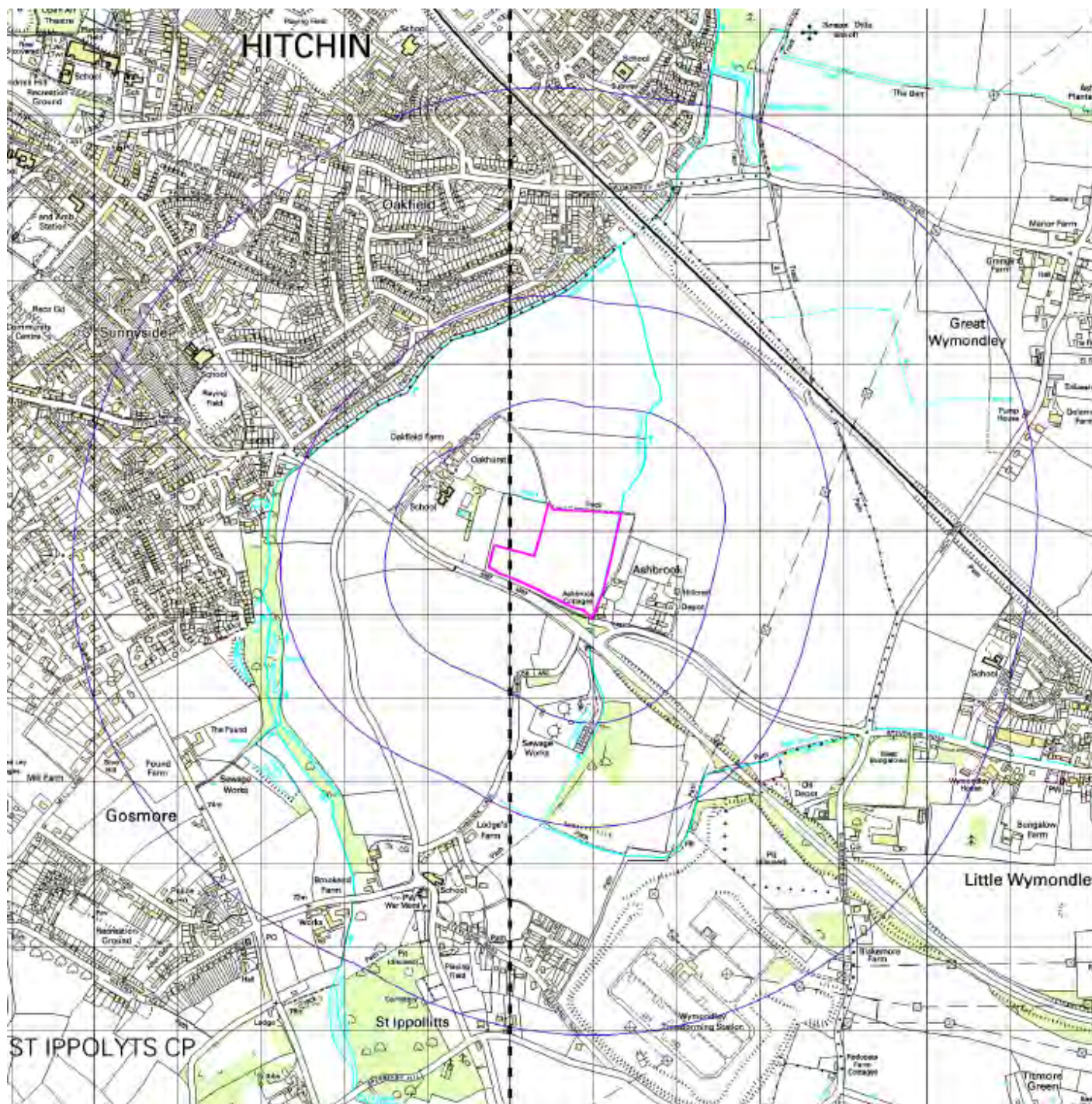
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Stroud M 1988. The Standard Penetration Test - Its Application and Interpretation, ICE Geotechnical Conference on Penetration Testing in the UK

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Figures

- | | |
|---|---|
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| 2 | Existing Site Layout Plan – Aerial View |
| 3 | Existing Site Layout Plan – Topographical |
| 4 | Site Photographs |
| 5 | Proposed Development Plan |
| 6 | Exploratory Hole Location Plan - Existing Layout |
| 7 | Exploratory Hole Location Plan - Proposed Development |



— Approximate Site Boundary

Drawing supplied by Client

Drawing Title

Site Location Plan

Project Number	25-268.01
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Project Title

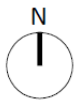
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by	DN
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Checked by	JB
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Scale	NTS
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Legend

— Approximate Site Boundary

Notes

Figure 2

Drawing Title

Existing Site Layout Plan - Aerial View

Project Number 25-268.01

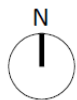
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Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS





KINGSHOTT SCHOOL

STEVENAGE ROAD

P1

P2

P3

P4

P5

P7

P6

P8

P9

Legend

-  Approximate Site Boundary
-  Photo Direction

Notes

Drawing supplied by Client

Figure 3

Drawing Title

Existing Site Layout Plan - Topographical

Project Number 25-268.01

Project Title
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

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 4

Drawing Title

Site Photographs

Project Number 25-268.01

Project Title
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS





Legend

— Site Boundary

Notes

Drawing supplied by Client

Figure 5

Drawing Title

Proposed Development Plan

Project Number 25-268.01

Project Title

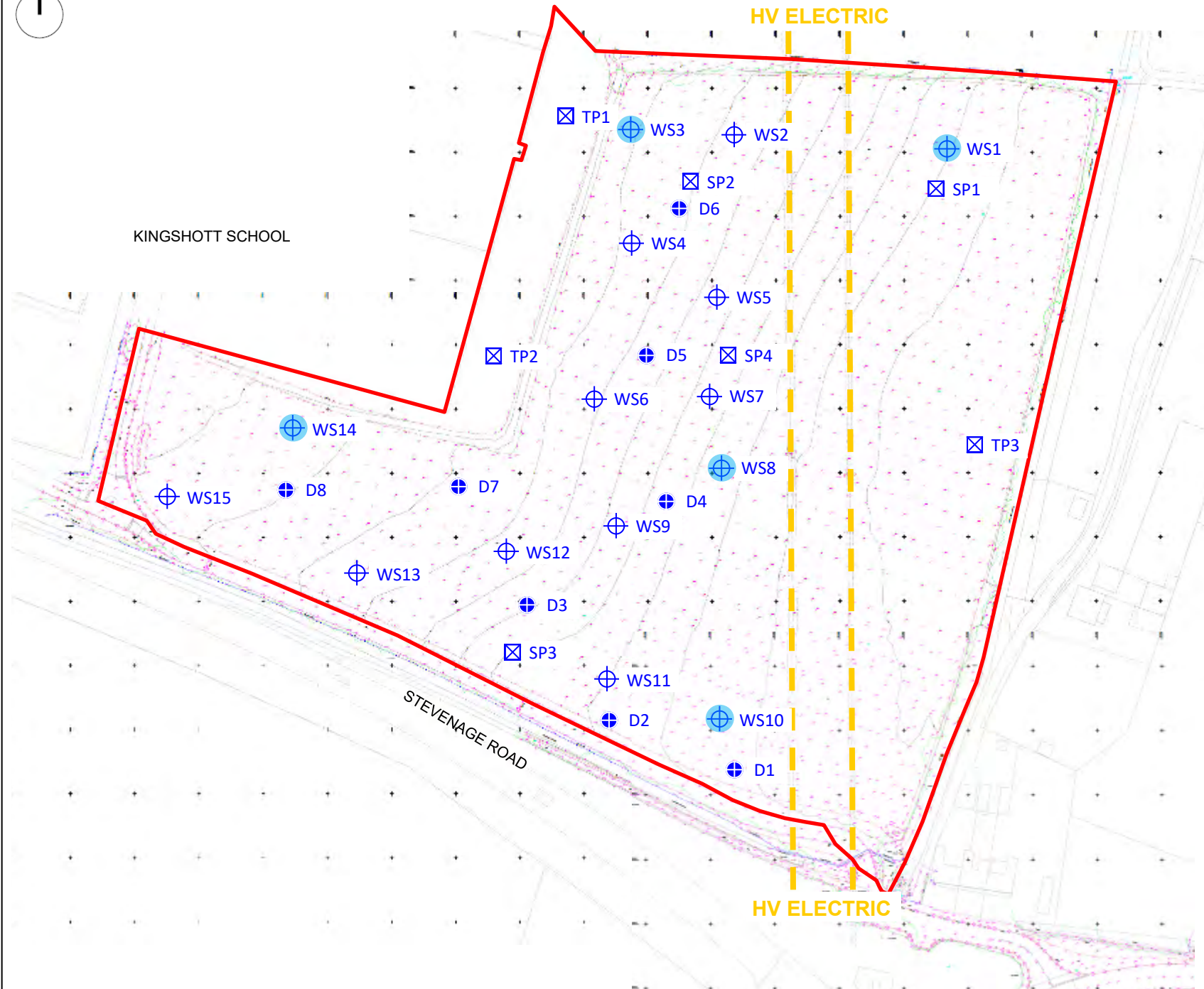
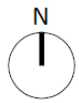
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS





Legend

-  Window Sample Borehole
-  Monitoring Well
-  Mechanical Trial Pit
-  DCP/CBR

Notes

Figure 6

Drawing Title

Exploratory Hole Location Plan -
Existing Layout

Project Number 25-268.01

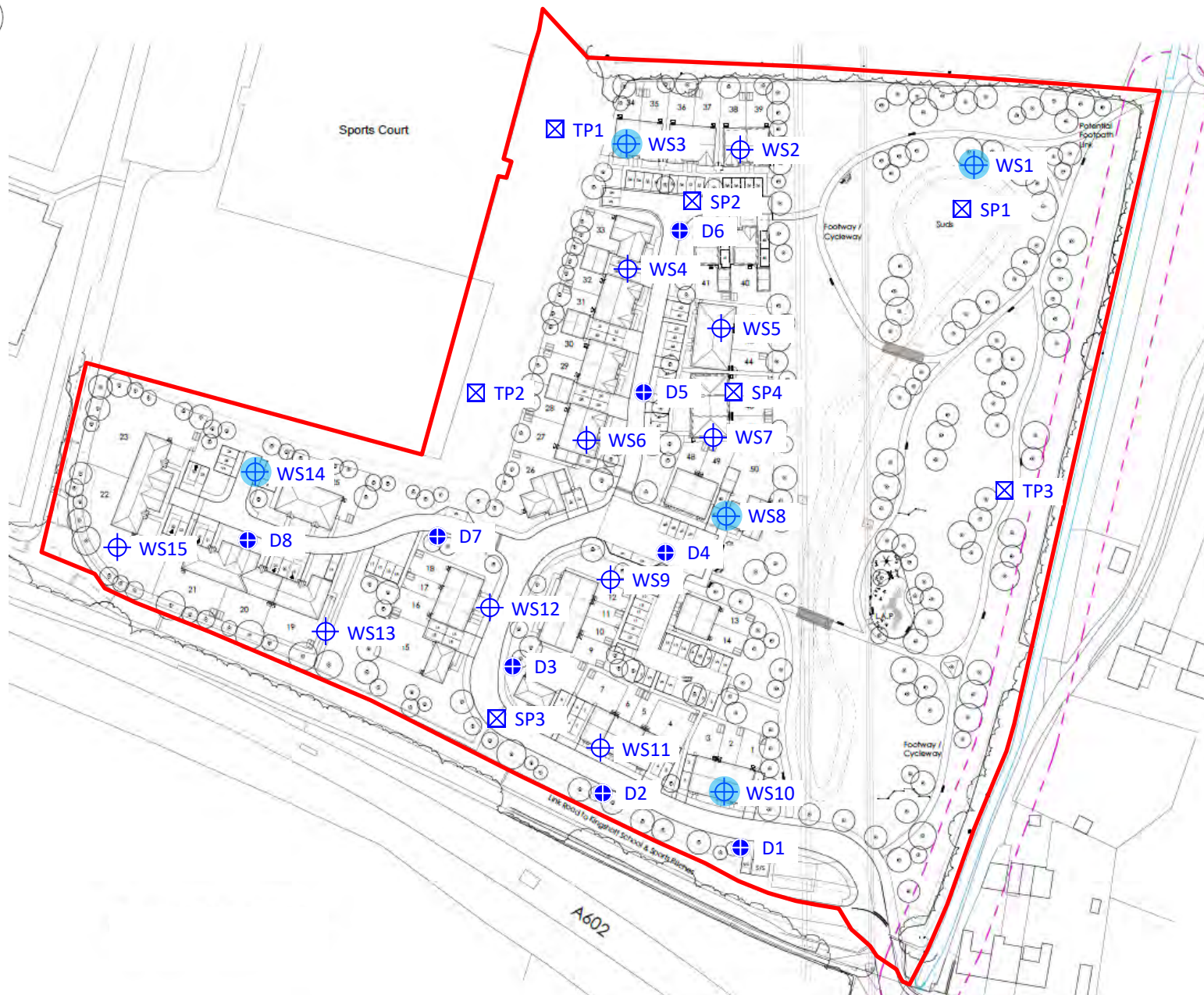
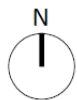
Project Title
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

Checked by JB

Scale NTS





Legend

-  Window Sample Borehole
-  Monitoring Well
-  Mechanical Trial Pit
-  DCP/CBR

Notes

Figure 7

Drawing Title

Exploratory Hole Location Plan -
Proposed Development

Project Number 25-268.01

Project Title
Land at Stevenage Road, Hitchin, SG4 7JY

Drawn by DN

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
- V Soil Infiltration Test Results

Appendix

I Exploratory Hole Logs and Photographs



WINDOW SAMPLE LOG

Project:	Land at Stevenage Road, Hitchin, SG4 7JY	Project No.	25-268.01	Borehole:	WS1
Client:	Bugler Homes Limited	Start:	03/11/2025	End:	03/11/2025
Method/Plant Used:	Archway Dart Rig (DO)	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	
Brown grey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.25) 0.25											
Light brown very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.45) 0.7											
Stiff orange brown mottled light grey slightly silty occasionally gravelly CLAY. Gravel is fine to coarse sub-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(2.1) 2.8		1.0	1	D/SPT	2	3	3	4	4	5	16
				2.0	2	D/SPT	7	5	4	5	5	6	20
Stiff becoming very stiff poorly laminated dark grey slightly silty CLAY. (GLACIOFLUVIAL DEPOSITS)		(1.2) 4.0		3.0	3	D/SPT	4	5	6	7	7	7	27
				4.0	4	SPT	9	11	11	13	14	12	50 for 275mm

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
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Gas and groundwater monitoring well installed to 3.9m bgl.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS2
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Brown grey clayey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3) 0.3		1.0	1	LC/SPT	2	5	5	6	5	5	21	
Firm light brown very silty very sandy very gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to rounded medium size cobbled of flint. (GLACIOFLUVIAL DEPOSITS)		(0.9) 1.2												
Medium dense light brown very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(1.0) 2.2												
Medium dense becoming very dense light brown slightly gravelly coarse SAND. Gravel is fine sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.8) 3.0												
				3.0	3	SPT	8	8	10	12	14	14	50	for 295mm
				3.45	4	SPT	15	15	16	17	17	18	68	

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	
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry		
Remarks									By			
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Borehole backfilled with arisings.								Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample								Checked	OB			Scale 01:25

[illegible]

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	
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry		
Remarks									By			
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Gas and groundwater monitoring well installed to 3.0m bgl.									Logged	AC		
									Checked	OB		Scale 01:25
SPT: Standard Penetration Test. HP: Hand Penetrometer. B: Bulk Sample. D: Disturbed Sample												



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS4
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Brown grey clayey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3) 0.3		1.0	1	D/SPT	2	2	3	4	4	4	15
Firm orange light brown very silty very sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.9) 1.2											
Medium dense light brown dark orange very silty slightly gravelly fine to coarse, predominantly medium SAND. Gravel is fine to medium sub-angular to rounded of flint. Occasional sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(1.1) 2.3											
Medium dense becoming very dense light brown slightly gravelly coarse SAND. Gravel is fine sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.7) 3.0											
				3.0	3	D/SPT	11	13	16	19	15	50	For 200mm

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
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Borehole backfilled with arisings.									Logged	AC	
									Checked	OB	
SPT: Standard Penetration Test. HP: Hand Penetrometer. B: Bulk Sample. D: Disturbed Sample											



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No: 25-268.01	Borehole: WS5
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Brown grey clayey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3) 0.3		0.15	1	ES								
Firm light brown very silty very sandy very gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to rounded medium size cobbled of flint. (GLACIOFLUVIAL DEPOSITS)		(1.0) 1.3		0.7	2	ES								
				1.0	3	SPT	3	3	3	4	7	8	22	
Medium dense light brown very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Occasional sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.4) 1.6												
Stiff becoming very stiff orange brown slightly silty sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.4) 2.0		2.0	4	SPT	10	14	15	15	15	5	50	
				2.45	5	SPT	16	16	17	17	17	17	68	For 255mm

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	
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry		
Remarks									By			
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Borehole backfilled with arisings.								Logged	AC			
								Checked	OB			Scale 01:25
								SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample				



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS6
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Brown grey clayey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3)												
		0.3												
Firm dark brown dark orange very silty very sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.8)												
		1.1		1.0	1	SPT	3	3	3	4	5	6	18	
Medium dense light brown very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.9)												
		2.0		2.0	2	SPT	8	10	11	15	22	2	50	For 230mm
				2.45	3		25	50					50	For 30mm

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
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. 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

Project: Land at Stevenage Road, Hitchin, SG4 7JY					Project No. 25-268.01		Borehole: WS7				
Client: Bugler Homes Limited					Start: 03/11/2025		End: 03/11/2025		Sheet: 1 of 1		
Method/Plant Used: Archway Dart Rig (DO)				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	
Dark brown slightly clayey very sandy gravelly SILT. Gravel is fine to medium sub-angular to rounded of flint. (TOPSOIL)		(0.4)												
		0.4												
Firm brown very silty very sandy very gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to rounded medium size cobbled of flint. (GLACIOFLUVIAL DEPOSITS)		(1.0)		1.0	1	D/SPT	2	2	3	4	5	4	16	
		1.4												
Medium dense brown dark orange very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.6)		1.5	2	LC								
		2.0		2.0	3	D/SPT	11	14	19	22	9		50	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	
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry		
Remarks									By			
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Borehole backfilled with arisings.								Logged	AC			
								Checked	OB			Scale 01:25
								SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample				



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS8
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Brown grey clayey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.4) 0.4											
Firm brown very silty very sandy slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.5) 0.9											
Firm to stiff brown very silty sandy occasionally gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.6) 1.5		1.0	1	D/SPT	2	2	2	4	3	4	13
Medium dense to dense light brown orange slightly clayey slightly silty very sandy GRAVEL. Gravel is fine to coarse angular to rounded of flint. Occasional angular to sub-rounded cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.8) 2.3		2.0	2	D/SPT	9	9	10	10	11	7	38
Very stiff light brown mottled light grey slightly silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(1.7) 4.0		3.0	3	D/SPT	6	7	8	10	11	12	41
				4.0	4	D/SPT	21	4	48	2			50 for 80mm

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
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Gas and groundwater monitoring well installed to 4.0m bgl.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS9
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Dark brown slightly clayey very sandy gravelly SILT. Gravel is fine to medium sub-angular to rounded of flint. (TOPSOIL)		(0.4)											
		0.4											
Firm becoming stiff orange light brown very silty very sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. Occasional angular to sub-rounded cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.9)		1.0	1	SPT	5	4	4	4	5	5	18
		1.3											
Stiff becoming very stiff light brown mottled light grey slightly silty slightly sandy rarely gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(1.7)		2.0	2	SPT	4	5	6	7	7	8	28
		3.0		3.0	3	SPT	11	12	14	14	15	7	50 For 255mm

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
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. 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

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS10
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Brown grey clayey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3) 0.3											
Firm brown very silty very sandy slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.6) 0.9											
Very stiff becoming stiff light brown silty sandy gravelly CLAY. Gravel is fine to medium sun-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(1.1) 2.0		1.0	1	LC/SPT	8	11	12	12	8	5	37
Soft becoming firm and firm to stiff pale brown grey slightly silty sandy occasionally gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(1.1) 3.1		2.0	2	SPT	1	1	2	2	1	2	7
Medium dense becoming very dense brown dark orange very clayey slightly silty slightly gravelly coarse SAND. Gravel is fine to coarse sub-rounded to rounded flint. (GLACIOFLUVIAL DEPOSITS)		(0.9) 4.0		3.0	3	SPT	3	4	5	5	6	5	21
				4.0	4	SPT	12	13	15	18	17	50	for 210mm

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
03/11/2025	101	1.00				03/11/2025	1.90	-	-	1.90	
Remarks									By		
Groundwater encountered at 1.9m. No visual or olfactory evidence of contamination. No roots or rootlets noted. Gas and groundwater monitoring well installed to 3.3m bgl. SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample									Logged	AC	
									Checked	OB	



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS11
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Dark brown very silty very sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (TOPSOIL)		(0.4) 0.4		0.1	1	ES								
Firm becoming stiff dark brown dark orange very silty very sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.8) 1.2		1.0	2	SPT	2	4	4	5	6	6	21	
Medium dense brown very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.4) 1.6												
Stiff brown silty sandy gravelly CLAY. Gravel is fine to medium sun-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.6) 2.2		2.0	3	SPT	7	5	5	5	6	7	23	
Stiff becoming very stiff dark grey pale brown slightly silty sandy occasionally gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(1.8) 4.0		3.0	4	SPT	3	3	4	4	6	6	20	
				4.0	5	SPT	9	9	10	13	15	12	50	For 275mm

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	
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry		
Remarks									By			
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Borehole backfilled with arisings.								Logged	AC			
								Checked	OB			Scale 01:25
								SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample				



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS12
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Dark brown very silty very sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (TOPSOIL)		(0.4) 0.4												
Firm to stiff light brown very silty very sandy very gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.8) 1.2		1.0	1	SPT	8	8	10	10	11	6	37	
Medium dense brown very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.4) 1.6												
Very stiff pale brown grey slightly silty sandy occasionally gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(2.4) 4.0		2.0	2	SPT	8	8	9	9	9	9	36	
				3.0	3	SPT	5	6	8	10	11	13	42	
				4.0	4	SPT	12	13	16	19	15		50	For 200mm

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	
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry		
Remarks									By			
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Borehole backfilled with arisings.								Logged	AC			
								Checked	OB			Scale 01:25
								SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample				



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY					Project No. 25-268.01		Borehole: WS13				
Client: Bugler Homes Limited					Start: 04/11/2025		End: 04/11/2025		Sheet: 1 of 1		
Method/Plant Used: Archway Dart Rig (DO)				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	
Brown grey clayey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3) 0.3		1.0	1	SPT	10	12	12	13	9	7	41	
Structureless CHALK composed of very silty sandy sub-angular to rounded GRAVEL. Clasts are very weak and weak, off white and cream. Matrix is light brown. (Grade Dc) (HOLYWELL NODULAR AND NEW PIT CHALK FORMATIONS)		(0.7) 1.0												
Structureless CHALK composed of silty sandy sub-angular to rounded GRAVEL. Clasts are very weak and weak, white and off white. Matrix is light brown. Occasional flint gravel. (Grade Dc) (HOLYWELL NODULAR AND NEW PIT CHALK FORMATIONS)		(1.0) 2.0												
				2.0	2	SPT	10	11	11	14	16	9	50	for 255mm

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
04/11/2025	101	1.00				04/11/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. 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

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.01	Borehole: WS14
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1
Method/Plant Used: Archway Dart Rig (DO)		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	
Dark brown slightly clayey very sandy gravelly SILT. Gravel is fine to medium sub-angular to rounded of flint. (TOPSOIL)		(0.4)		0.25	1	ES							
Firm brown very silty very sandy slightly gravelly CLAY. Gravel is fine to coarse sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.5)											
Very stiff pale brown grey slightly silty very sandy very gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. Occasional sub-angular to sub-rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(1.1)		1.0	2	SPT	8	7	7	7	8	8	30
		2.0		1.5	3	D							
				2.0	4	SPT	15	10	19	22	9	50	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
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry	
Remarks									By		
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Gas and groundwater monitoring well installed to 2.0m bgl.							Logged	AC			
SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample							Checked	OB			Scale 01:25



WINDOW SAMPLE LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY					Project No. 25-268.01	Borehole: WS15
Client: Bugler Homes Limited			Start: 03/11/2025	End: 03/11/2025	Sheet: 1 of 1	
Method/Plant Used: Archway Dart Rig (DO)		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	
Brown grey clayey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		(0.3)		1.0	1	D/SPT	3	3	5	7	9	10	31	
Firm becoming stiff light brown silty sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.7)												
Structureless CHALK composed of very silty sandy sub-angular to rounded GRAVEL. Clasts are very weak and weak, off white and cream. Matrix is light brown and orange brown. (Grade Dc) (HOLYWELL NODULAR AND NEW PIT CHALK FORMATIONS)		(1.0)												
		2.0		2.0	2	LC/SPT	10	10	10	15	19	6	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	
03/11/2025	101	1.00				03/11/2025	-	-	-	Dry		
Remarks									By			
No groundwater encountered. No visual or olfactory evidence of contamination. No roots or rootlets noted. Borehole backfilled with arisings.								Logged	AC			
								Checked	OB			Scale 01:25
								SPT: Standard Penetration Test, HP: Hand Penetrometer, B: Bulk Sample, D: Disturbed Sample				



WS1 Arisings



WS2 Arisings



WS3 Arisings



WS4 Arisings



WS5 Arisings



WS6 Arisings



WS7 Arisings



WS8 Arisings



WS9 Arisings



WS10 Arisings



WS11 Arisings



WS12 Arisings



WS13 Arisings



WS14 Arisings



WS15 Arisings



TRIAL PIT LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY						Project No. 25-268.02		Trial Pit: TP1			
Client: Bugler Homes Limited						Start: 03/11/2025		End: 03/11/2025		Sheet: 1 of 1	
Method/Plant Used: 2.5T Excavator			Co-ordinates: NT				Ground Level: NT				

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Constr.	Samples/Tests									Laboratory Test Details	
				Depth	No	Type								
Brown grey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. Frequent concrete rubble. Occasional clay tile fragments. Reworked topsoil. (MADE GROUND)		(0.4)		0.1 - 0.4	1	WAC								
		0.4		0.35	2	ES1								
Light brown dark orange very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.4)												
		0.8												

Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
1.40	0.35	0.80	03/11/2025	-	-	-	-	

Remarks No roots present in trial pit. No groundwater encountered in trial pit. No visual or olfactory evidence of contamination. Trial pit backfilled with arisings.	By	
	Logged	AC
	Checked	OB
		Scale 01:25



TRIAL PIT LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY				Project No. 25-268.02		Trial Pit: TP2							
Client: Bugler Homes Limited			Start: 03/11/2025		End: 03/11/2025		Sheet: 1 of 1						
Method/Plant Used: 2.5T Excavator		Co-ordinates: NT			Ground Level: NT								
Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests									Laboratory Test Details
				Depth	No	Type							
Light brown silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. Frequent sub-angular fine to medium gravel size fragments of brick. Reworked topsoil. (MADE GROUND)		(0.8)		0.1 - 0.4	1	WAC							
		0.5		2	ES1								
Light brown dark orange very silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-rounded to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		0.8 (0.2) 1.0											

Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
1.70	0.35	1.00	03/11/2025	-	-	-	-	
Remarks No roots present in trial pit. No groundwater encountered in trial pit. No visual or olfactory evidence of contamination. Trial pit backfilled with arisings.						By		
						Logged	AC	
						Checked	OB	Scale 01:25



TRIAL PIT LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY						Project No. 25-268.02		Trial Pit: TP3	
Client: Bugler Homes Limited						Start: 03/11/2025		End: 03/11/2025	
Method/Plant Used: 2.5T Excavator						Co-ordinates: NT		Ground Level: NT	

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Constr.	Samples/Tests									Laboratory Test Details
				Depth	No	Type							
Brown grey silty very gravelly fine to coarse SAND. Gravel is fine to medium sub-rounded to rounded of flint. Rare sub-rounded to rounded medium size cobbles of flint. (TOPSOIL)		(0.3)		0.1 - 0.4	1	WAC							
		0.3		0.25	2	ES1							
Light brown very clayey very sandy very cobbly GRAVEL. Gravel is fine to medium sub-rounded to rounded of flint. Cobbles are sub-rounded to rounded medium size of flint. (Possibly ALLUVIUM)		(1.5)											
...gravel recovered as very wet, constant wall collapse from 1.7m bgl onwards.		1.8											

Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
1.90	0.35	1.80	03/11/2025	1.60	1.45	Fast	1.45	
Remarks No roots present in trial pit. Groundwater encountered at 1.6m, standing at 1.45m. No visual or olfactory evidence of contamination. Trial pit backfilled with arisings.						By		
						Logged	AC	
						Checked	OB	Scale 01:25



TRIAL PIT LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY						Project No. 25-268.02		Trial Pit: SP1	
Client: Bugler Homes Limited						Start: 03/11/2025		End: 05/11/2025	
Method/Plant Used: 2.5T Excavator						Co-ordinates: NT		Ground Level: NT	

Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests									Laboratory Test Details
				Depth	No	Type							
Brown grey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. (TOPSOIL)		0.3		0.1	1	ES1							
Light brown very silty very gravelly medium to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to sub rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		0.8											
		1.1		1.1	2	D							

Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
2.40	0.35	1.10	03/11/2025	-	-	-	-	

Remarks No roots present in trial pit. No groundwater encountered in trial pit. No visual or olfactory evidence of contamination. Trial pit backfilled with arisings.	By	
	Logged	AC
	Checked	OB

Scale 01:25



TRIAL PIT LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY					Project No. 25-268.02		Trial Pit: SP2						
Client: Bugler Homes Limited				Start: 03/11/2025		End: 03/11/2025		Sheet: 1 of 1					
Method/Plant Used: 2.5T Excavator		Co-ordinates: NT			Ground Level: NT								
Description of Strata	Legend	Depth (m bgl) (thickness)	Well Cnstr.	Samples/Tests									Laboratory Test Details
				Depth	No	Type							
Brown grey silty slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. Rootlets. (TOPSOIL)		(0.2) 0.2		1.4	1	D							
Dark brown dark orange occasionally light brown silty very gravelly medium to coarse SAND. Gravel is fine to medium sub-angular to rounded of flint. Rootlets to 0.4m. (GLACIOFLUVIAL DEPOSITS)		(1.2) 1.2											
		1.4											

Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
1.85	0.35	1.40	03/11/2025	-	-	-	-	
Remarks Rootlets noted to 0.4m bgl. No groundwater encountered in trial pit. No visual or olfactory evidence of contamination. Trial pit backfilled with arisings.						By		Scale 01:25
						Logged	AC	
						Checked	OB	



TRIAL PIT LOG

Project: Land at Stevenage Road, Hitchin, SG4 7JY					Project No. 25-268.02		Trial Pit: SP3						
Client: Bugler Homes Limited				Start: 03/11/2025		End: 03/11/2025		Sheet: 1 of 1					
Method/Plant Used: 2.5T Excavator		Co-ordinates: NT				Ground Level: NT							
Description of Strata	Legend	Depth (m bgl) (thickness)	Well Constr.	Samples/Tests									Laboratory Test Details
				Depth	No	Type							
Light brown very silty gravelly fine to coarse SAND. Gravel is fine to coarse sub-rounded to rounded of flint. Rootlets to 0.3m. (TOPSOIL)		(0.4)		1.1	1	D							
Firm light brown very silty very sandy very gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. Frequent sub-angular to rounded medium size cobbles of flint. (GLACIOFLUVIAL DEPOSITS)		(0.5)											
Firm brown very silty very sandy gravelly CLAY. Gravel is fine to medium sub-angular to rounded of flint. (GLACIOFLUVIAL DEPOSITS)		(0.2)											
		1.1											

Dimensions (m)			Water level observations (depths in metres below gl)					
Length	Width	Depth	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
1.90	0.35	1.10	03/11/2025	-	-	-	-	
Remarks Rootlets noted to 0.3m bgl. No groundwater encountered in trial pit. No visual or olfactory evidence of contamination. Trial pit backfilled with arisings.						By		Scale 01:25
						Logged	AC	
						Checked	OB	

[illegible]

Remarks		By	
No roots present in trial pit.	Logged	AC	
No groundwater encountered in trial pit.			
No visual or olfactory evidence of contamination.			
Trial pit backfilled with arisings.	Checked	OB	Scale 01:25



TP1



TP2



TP3



TP1 arisings



TP2 arisings



TP3 arisings



SP1



SP2



SP3



SP1 arisings



SP2 arisings



SP3 arisings



SP4



SP4 arisings

Appendix

II Field Monitoring Results

MONITORING DATA SHEET

SITE Land at Stevenage Road, Hitchin, SG4 7JY
PROJECT 25-268.02



VISIT NUMBER 1
DATE 24/11/2025

EQUIPMENT GFM435 + MiniRAE
TAKEN BY OC

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	12:32		0.0	0.0	20.4	981	0.0			n/a	n/a	n/a
WS1	12:03	0.0	0.0	1.9	18.4	981	0.0	1.55	3.84	0	0	CS-1
WS3	12:41	0.0	0.0	2.7	18.3	979	0.0	Dry	3.08	0	0	CS-1
WS8	12:52	0.0	0.0	2.0	18.5	979	0.0	3.60	3.85	0	0	CS-1
WS10	13:00	0.0	0.0	1.4	19.2	979	0.0	1.83	3.29	0	0	CS-1
WS14	12:47	0.0	0.0	2.2	18.5	979	0.0	Dry	2.03	0	0	CS-1

Weather Observations						Pressure Observations				Notes	
State of Ground	Cloud Cover	Wind	Rain	Air Temperature °C		Source	Pressure Records		Trend		
						Metoffice	Location	Hitchin	Falling		
Dry	Clear	Calm	None	Before		GFM435	Time	00:00	Steady	Worst case conditions? (<1000mB and Falling)	
Moist	Sunny	Light	Slight				Pressure	990	Rising		
Wet	Slight	Moderate	Moderate	After							
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,
WD18 8YS

t:

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

t: 01923 225404

f: 01923 237404

e: info-i2analytical@normecgroup.com

Analytical Report Number : 25-060065

Project / Site name:	Land at Stevenage Road, Hitchin, SG4 7JY	Samples received on:	04/11/2025
Your job number:	25-268.02	Samples instructed on/ Analysis started on:	04/11/2025
Your order number:	25-268.02	Analysis completed by:	14/11/2025
Report Issue Number:	1	Report issued on:	14/11/2025
Samples Analysed:	9 soil samples - 1 leachate sample		

Signed:

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

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

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

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

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

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

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

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

Analytical Report Number: 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Your Order No: 25-268.02

Lab Sample Number				740977	740978	740979	740980	740981
Sample Reference				SP1	TP1	TP2	TP3	COMP
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10	0.35	0.50	0.25	0.10-0.40
Date Sampled				03/11/2025	03/11/2025	03/11/2025	03/11/2025	03/11/2025
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	23.8	12	20.5
Moisture Content	%	0.01	NONE	13	6.7	6.7	16	7.1
Total mass of sample received	kg	0.1	NONE	1.1	0.9	0.7	0.9	2

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA	DSA	-
Analysis completed	N/A	N/A	N/A	13/11/2025	13/11/2025	13/11/2025	13/11/2025	-

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	-	-	-	-	7.5
pH (L099)	pH Units	N/A	MCERTS	6.8	7.9	7.6	6.3	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	330	440	340	600	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	9.5	24	18	18	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	4.74	12.1	9	8.73	-
Total Sulphur	mg/kg	50	MCERTS	190	420	200	290	-
Organic Matter (automated)	%	0.1	MCERTS	2.1	1.8	1.6	3.8	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	-	-	0.7
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-	3
Acid Neutralisation Capacity	mmol/kg	-9999	NONE	-	-	-	-	3.2

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05	0.06	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.12	0.06	0.05	0.17	0.1
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.25	0.17	0.18	0.59	0.18
Pyrene	mg/kg	0.05	MCERTS	0.23	0.15	0.15	0.54	0.16
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.15	0.1	0.08	0.29	0.09
Chrysene	mg/kg	0.05	MCERTS	0.19	0.12	0.09	0.4	0.09
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.3	0.2	0.18	0.6	0.15
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.12	0.1	0.05	0.25	0.06
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.21	0.16	0.12	0.45	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.14	0.08	0.08	0.29	0.06
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.07	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.14	0.11	0.08	0.31	0.08
Coronene	mg/kg	0.05	NONE	-	-	-	-	< 0.05

Analytical Report Number: 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Your Order No: 25-268.02

Lab Sample Number	740977	740978	740979	740980	740981
Sample Reference	SP1	TP1	TP2	TP3	COMP
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.10	0.35	0.50	0.25	0.10-0.40
Date Sampled	03/11/2025	03/11/2025	03/11/2025	03/11/2025	03/11/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.97	1.25	1.06	4.07	-
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	-	-	-	0.96

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	21	27	28	22	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.9	0.5	0.9	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	< 0.2	0.4	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	24	27	28	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	20	22	28	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	91	57	27	76	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	27	33	26	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.3	< 1.0	< 1.0	1.1	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	85	100	89	100	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	12	< 8.0	< 8.0	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	12	< 10	< 10	-

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

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

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	-
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total BTEX	µg/kg	10	MCERTS	-	-	-	-	< 10

Analytical Report Number: 25-060065
 Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY
 Your Order No: 25-268.02

Lab Sample Number				740977	740978	740979	740980	740981
Sample Reference				SP1	TP1	TP2	TP3	COMP
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.10	0.35	0.50	0.25	0.10-0.40
Date Sampled				03/11/2025	03/11/2025	03/11/2025	03/11/2025	03/11/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

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

Analytical Report Number: 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Your Order No: 25-268.02

Lab Sample Number	740982	740983	740984	740985
Sample Reference	WS2	WS7	WS10	WS15
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	1.00	1.50	1.00	2.00
Date Sampled	03/11/2025	03/11/2025	03/11/2025	03/11/2025
Time Taken	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	16.8	15.5	71.6	< 0.1
Moisture Content	%	0.01	NONE	7.7	4.2	4.6	4
Total mass of sample received	kg	0.1	NONE	0.9	0.8	0.8	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	-	-	-	-
Analysis completed	N/A	N/A	N/A	-	-	-	-

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	-	-	-	-
pH (L099)	pH Units	N/A	MCERTS	7.6	8	8.1	8.2
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	200	230	250	310
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	21	7.6	3.3	12
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0105	0.00378	0.00165	0.00595
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	10.5	3.78	1.65	5.95
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	63	97	120	130
Organic Matter (automated)	%	0.1	MCERTS	-	-	-	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	-	-
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-
Acid Neutralisation Capacity	mmol/kg	-9999	NONE	-	-	-	-

Total Phenols

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

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

Analytical Report Number: 25-060065
 Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY
 Your Order No: 25-268.02

Lab Sample Number	740982			740983	740984	740985
Sample Reference	WS2			WS7	WS10	WS15
Sample Number	None Supplied			None Supplied	None Supplied	None Supplied
Water Matrix	N/A			N/A	N/A	N/A
Depth (m)	1.00			1.50	1.00	2.00
Date Sampled	03/11/2025			03/11/2025	03/11/2025	03/11/2025
Time Taken	None Supplied			None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status			

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	-
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	-	-	-

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-

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

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

Total BTEX	µg/kg	10	MCERTS	-	-	-	-
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Analytical Report Number: 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Your Order No: 25-268.02

Lab Sample Number				740982	740983	740984	740985
Sample Reference				WS2	WS7	WS10	WS15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				1.00	1.50	1.00	2.00
Date Sampled				03/11/2025	03/11/2025	03/11/2025	03/11/2025
Time Taken				None Supplied	None Supplied	None Supplied	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	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-

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

Analytical Report Number: 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Your Order No: 25-268.02

Lab Sample Number				740981
Sample Reference				COMP
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.10-0.40
Date Sampled				03/11/2025
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status	

10:1 WAC Leachate

Arsenic	mg/l	0.001	ISO 17025	< 0.00100
Barium	mg/l	0.00005	ISO 17025	0.00826
Cadmium	mg/l	0.0001	ISO 17025	< 0.000100
Chromium	mg/l	0.0004	ISO 17025	< 0.00040
Copper	mg/l	0.0007	ISO 17025	0.014
Mercury	mg/l	0.0005	ISO 17025	< 0.000500
Molybdenum	mg/l	0.0004	ISO 17025	0.000578
Nickel	mg/l	0.0003	ISO 17025	0.00091
Lead	mg/l	0.001	ISO 17025	< 0.0010
Antimony	mg/l	0.0017	ISO 17025	0.002
Selenium	mg/l	0.004	ISO 17025	< 0.0040
Zinc	mg/l	0.0004	ISO 17025	0.0091
Chloride	mg/l	0.15	ISO 17025	1.5
Fluoride	mg/l	0.05	ISO 17025	0.29
Sulphate	mg/l	0.045	ISO 17025	2.2
Total dissolved solids	mg/l	6	ISO 17025	39
Total monohydric phenols	mg/l	0.01	ISO 17025	< 0.010
Dissolved organic carbon	mg/l	0.1	NONE	10.5

10:1 WAC Leachate

Arsenic	mg/kg	0.01	NONE	< 0.0100
Barium	mg/kg	0.0005	NONE	0.0539
Cadmium	mg/kg	0.001	NONE	< 0.00100
Chromium	mg/kg	0.004	NONE	< 0.0040
Copper	mg/kg	0.007	NONE	0.088
Mercury	mg/kg	0.005	NONE	< 0.00500
Molybdenum	mg/kg	0.004	NONE	< 0.00400
Nickel	mg/kg	0.003	NONE	0.0059
Lead	mg/kg	0.01	NONE	< 0.010
Antimony	mg/kg	0.017	NONE	< 0.017
Selenium	mg/kg	0.04	NONE	< 0.040
Zinc	mg/kg	0.004	NONE	0.059
Chloride	mg/kg	1.5	NONE	9.8
Fluoride	mg/kg	0.5	NONE	1.9
Sulphate	mg/kg	0.45	NONE	14
Total dissolved solids	mg/kg	60	NONE	250
Total monohydric phenols	mg/kg	0.1	NONE	< 0.10
Dissolved organic carbon	mg/kg	1	NONE	68.5

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

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	25-060065					
				Client: Aviron Associates Ltd		
Location	Land at Stevenage Road, Hitchin, SG4 7JY					
Lab Reference (Sample Number)	740981			Landfill Waste Acceptance Criteria		
Sampling Date	03/11/2025			Limits		
Sample ID	COMP			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Depth (m)	0.10-0.40					
Solid Waste Analysis						
TOC (%)**	0.7			3%	5%	6%
Loss on Ignition (%) **	3			--	--	10%
BTEX (µg/kg) **	< 10			6000	--	--
Sum of PCBs (mg/kg) **	< 0.007			1	--	--
Mineral Oil (mg/kg) EH, 1D, CU, AL	< 10			500	--	--
Total PAH (WAC-17) (mg/kg)	0.96			100	--	--
pH (units)**	7.5			--	>6	--
Acid Neutralisation Capacity (mmol / kg)	3.2			--	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 *	0.00826		0.0539	20	100	300
Cadmium *	< 0.000100		< 0.00100	0.04	1	5
Chromium *	< 0.00040		< 0.0040	0.5	10	70
Copper *	0.014		0.088	2	50	100
Mercury *	< 0.000500		< 0.00500	0.01	0.2	2
Molybdenum *	0.000578		< 0.00400	0.5	10	30
Nickel *	0.00091		0.0059	0.4	10	40
Lead *	< 0.0010		< 0.010	0.5	10	50
Antimony *	0.002		< 0.017	0.06	0.7	5
Selenium *	< 0.0040		< 0.040	0.1	0.5	7
Zinc *	0.0091		0.059	4	50	200
Chloride *	1.5		9.8	800	15000	25000
Fluoride*	0.29		1.9	10	150	500
Sulphate *	2.2		14	1000	20000	50000
TDS*	39		250	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010		< 0.10	1	-	-
DOC	10.5		68.5	500	800	1000
Leach Test Information						
Stone Content (%)	20.5					
Sample Mass (kg)	2					
Dry Matter (%)	93					
Moisture (%)	7.1					
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 : 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

* 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 *
740977	SP1	None Supplied	0.1	Brown loam and clay with gravel and vegetation
740978	TP1	None Supplied	0.35	Brown loam and sand with gravel and vegetation
740979	TP2	None Supplied	0.5	Brown loam and clay with vegetation and stones
740980	TP3	None Supplied	0.25	Brown loam and clay with vegetation and stones
740981	COMP	None Supplied	0.10-0.40	Brown loam and clay with vegetation and stones
740982	WS2	None Supplied	1	Brown clay and sand with gravel and stones
740983	WS7	None Supplied	1.5	Brown sand with stones
740984	WS10	None Supplied	1	Brown sand with gravel
740985	WS15	None Supplied	2	Brown sand with gravel

Analytical Report Number : 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

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 SO ₄ 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 in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
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
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	MCERTS

Analytical Report Number : 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
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
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
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
Total petroleum hydrocarbons by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID	In-house method	L076B	D	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 : 25-060065

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

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

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution



Aviron Associates Ltd
Badgemore House
Henley
Oxfordshire
RG9 4NR

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t:

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

t: 01923 225404

f: 01923 237404

e: info-i2analytical@normecgroup.com

Analytical Report Number : 25-060066

Project / Site name:	Land at Stevenage Road, Hitchin, SG4 7JY	Samples received on:	04/11/2025
Your job number:	25-268.02	Samples instructed on/ Analysis started on:	04/11/2025
Your order number:	25-268.02	Analysis completed by:	14/11/2025
Report Issue Number:	1	Report issued on:	14/11/2025
Samples Analysed:	4 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

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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: 25-060066

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Your Order No: 25-268.02

Lab Sample Number	740986	740987	740988	740989
Sample Reference	WS5	WS5	WS11	WS14
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	0.15	0.70	0.10	0.25
Date Sampled	03/11/2025	03/11/2025	03/11/2025	03/11/2025
Time Taken	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	20.9	< 0.1
Moisture Content	%	0.01	NONE	12	6.6	11	11
Total mass of sample received	kg	0.1	NONE	0.8	1	1	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN	MJN	MJN
Analysis completed	N/A	N/A	N/A	13/11/2025	13/11/2025	13/11/2025	13/11/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.1	7.8	7.3	7.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	390	190	410	450
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	17	11	30	20
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	8.23	5.7	14.9	9.75
Total Sulphur	mg/kg	50	MCERTS	240	70	230	240
Organic Matter (automated)	%	0.1	MCERTS	2.6	0.3	2.3	2.3

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.15	< 0.05	0.16	0.14
Pyrene	mg/kg	0.05	MCERTS	0.14	< 0.05	0.16	0.14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.11	0.09
Chrysene	mg/kg	0.05	MCERTS	0.13	< 0.05	0.16	0.12
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.17	< 0.05	0.19	0.16
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.07	0.06
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.11	< 0.05	0.13	0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.08	0.07
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.09	0.08

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	0.94	< 0.80	1.22	0.95
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Analytical Report Number: 25-060066

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Your Order No: 25-268.02

Lab Sample Number	740986	740987	740988	740989
Sample Reference	WS5	WS5	WS11	WS14
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A
Depth (m)	0.15	0.70	0.10	0.25
Date Sampled	03/11/2025	03/11/2025	03/11/2025	03/11/2025
Time Taken	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	24	12	25	25
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	0.4	0.9	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.3	0.3
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	25	24	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	17	31	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	40	12	41	43
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	22	28	28
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	91	50	95	98

Petroleum Hydrocarbons

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

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

VOCs

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

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



Analytical Report Number : 25-060066

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

* 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 *
740986	WS5	None Supplied	0.15	Brown loam and clay with gravel and vegetation
740987	WS5	None Supplied	0.7	Brown clay and sand
740988	WS11	None Supplied	0.1	Brown loam and clay with vegetation and stones
740989	WS14	None Supplied	0.25	Brown loam and clay with gravel and vegetation

Analytical Report Number : 25-060066

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

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 SO ₄ 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 in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
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
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	MCERTS

Analytical Report Number : 25-060066

Project / Site name: Land at Stevenage Road, Hitchin, SG4 7JY

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
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 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution



**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	280	550	1,100	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	4,300	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: 82414

Client Ref: **25-268.02**

Client PO: **25-268.02**

Date Received: **10-11-2025**

Date Completed: **24-11-2025**

Report Date: **24-11-2025**

Client: **Aviron Associates LTD**

This report has been checked and approved by:

Contract Title: **Land at Stevenage Road, Hitchin, SG4 7JY**

For the attention of: **Orlando**



Shaun Jones

Laboratory manager

Description	Qty
Determination of water content BS EN ISO 17892-1:2014 - * UKAS	14
1 point Liquid & Plastic Limit.. BS EN ISO 17892-12 - * UKAS	14
Particle Size Distribution BS EN ISO 17892-4 : 5.1 - * UKAS	6

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

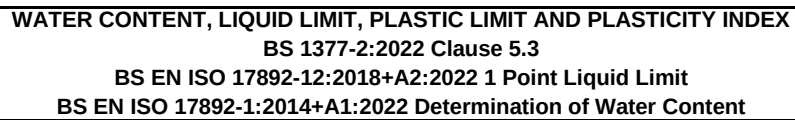
This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO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

Approved Signatories:

Brendan Evans (Business Support Co-ordinator) - Darren Bourne (Quality Senior Technician) - Jason Jenkins (Business Development Manager)

Luke Williams (Senior Laboratory Technician) - Paul Evans (Director) - Richard John (Quality/Technical Manager)

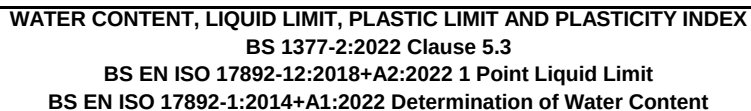
Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (HR & HSE Manager)



Contract Number	82414	
Project Name	Land at Stevenage Road, Hitchin, SG4 7JY	
Date Tested	18/11/2025	
	DESCRIPTIONS	

[illegible]

Operator
Clayton Jenkins



PARTICLE SIZE DISTRIBUTION
BS 1377-2:2022 Clause 10 &
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

82414

Borehole/Pit No.

WS4

Project Name

Land at Stevenage Road, Hitchin, SG4 7JY

Sample No.

4

Sample Description

Orange/brown silty/clayey fine to coarse SAND

Depth Top

1.00

Depth Base

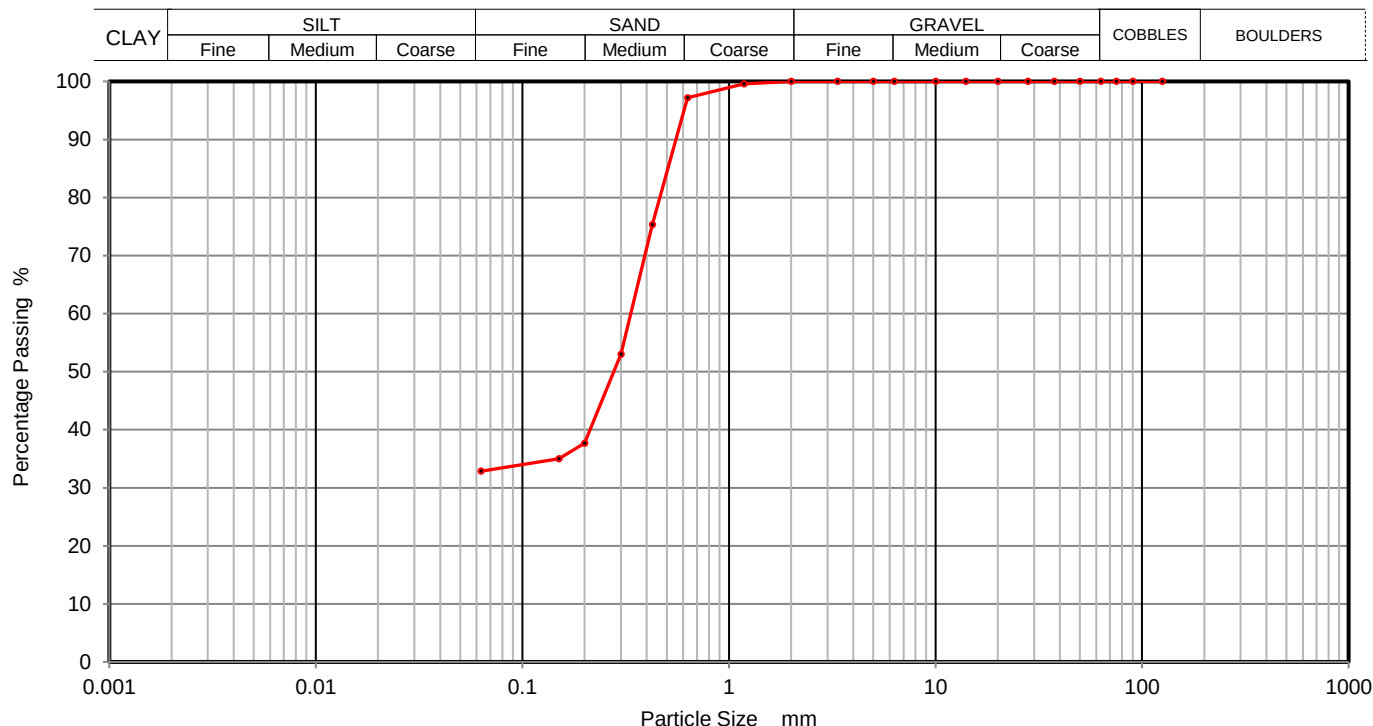
2.00

Date Tested

20/11/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	97		
0.425	75		
0.30	53		
0.20	38		
0.15	35		
0.063	33		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	67
Silt and Clay	33

Grading Analysis	
Uniformity Coefficient	N/A

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Jordan Williams

PARTICLE SIZE DISTRIBUTION
BS 1377-2:2022 Clause 10 &
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

82414

Borehole/Pit No.

WS8

Project Name

Land at Stevenage Road, Hitchin, SG4 7JY

Sample No.

6

Sample Description

Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL

Depth Top

2.00

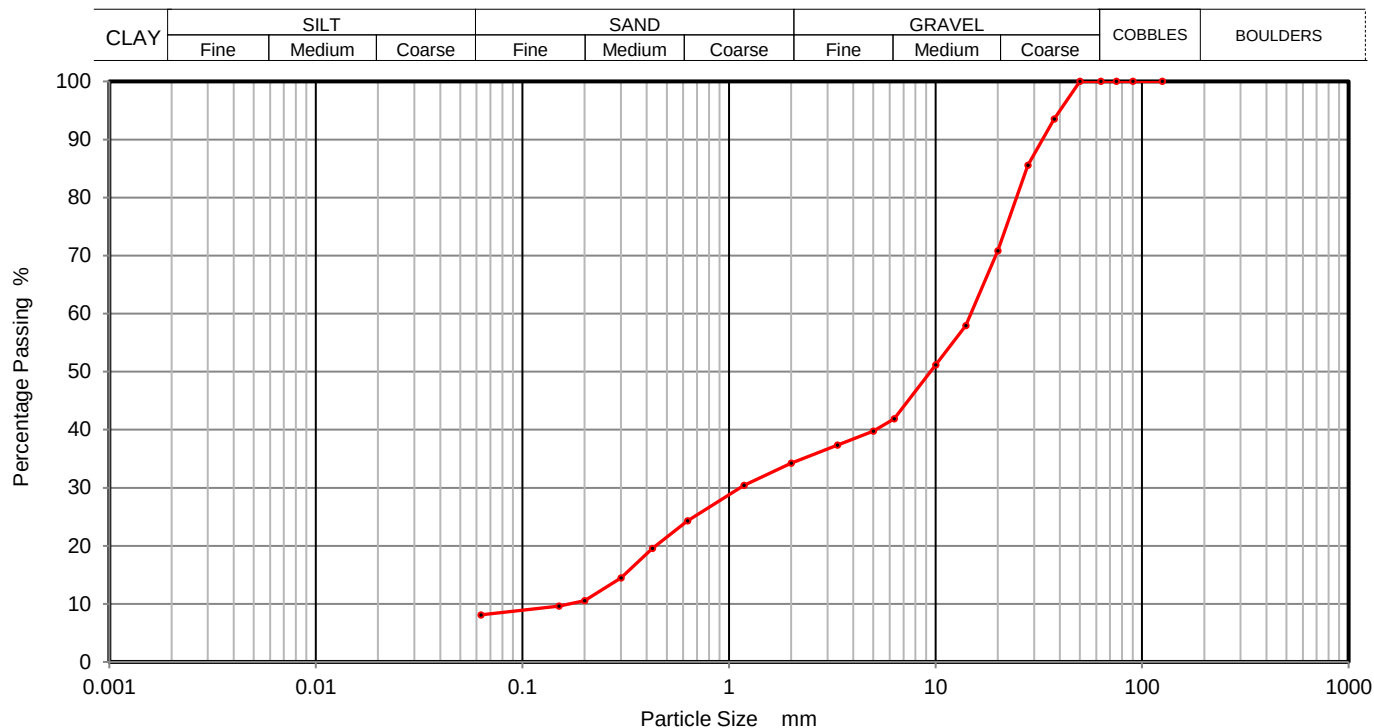
Depth Base

Date Tested

20/11/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	94		
28	86		
20	71		
14	58		
10	51		
6.3	42		
5	40		
3.35	37		
2	34		
1.18	30		
0.63	24		
0.425	20		
0.30	14		
0.20	11		
0.15	10		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	66
Sand	26
Silt and Clay	8

Grading Analysis	
Uniformity Coefficient	N/A

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Jordan Williams

PARTICLE SIZE DISTRIBUTION
BS 1377-2:2022 Clause 10 &
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

82414

Borehole/Pit No.

SP1

Project Name

Land at Stevenage Road, Hitchin, SG4 7JY

Sample No.

15

Sample Description

Brown slightly fine to coarse gravelly silty/clayey fine to coarse SAND

Depth Top

1.10

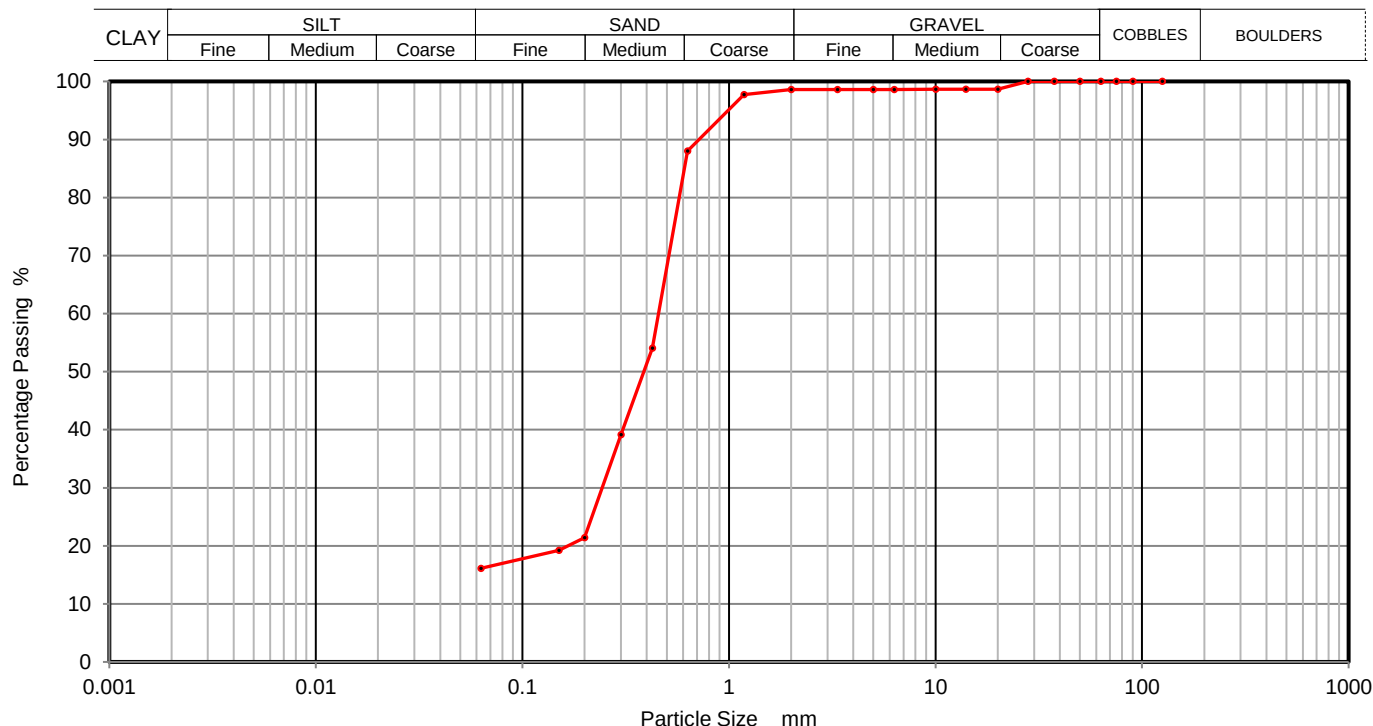
Depth Base

Date Tested

20/11/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	99		
10	99		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	98		
0.63	88		
0.425	54		
0.30	39		
0.20	21		
0.15	19		
0.063	16		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	83
Silt and Clay	16

Grading Analysis	
Uniformity Coefficient	N/A

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Jordan Williams

PARTICLE SIZE DISTRIBUTION
BS 1377-2:2022 Clause 10 &
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

82414

Borehole/Pit No.

SP2

Project Name

Land at Stevenage Road, Hitchin, SG4 7JY

Sample No.

16

Sample Description

Brown silty/clayey fine to coarse gravelly fine to coarse SAND

Depth Top

1.40

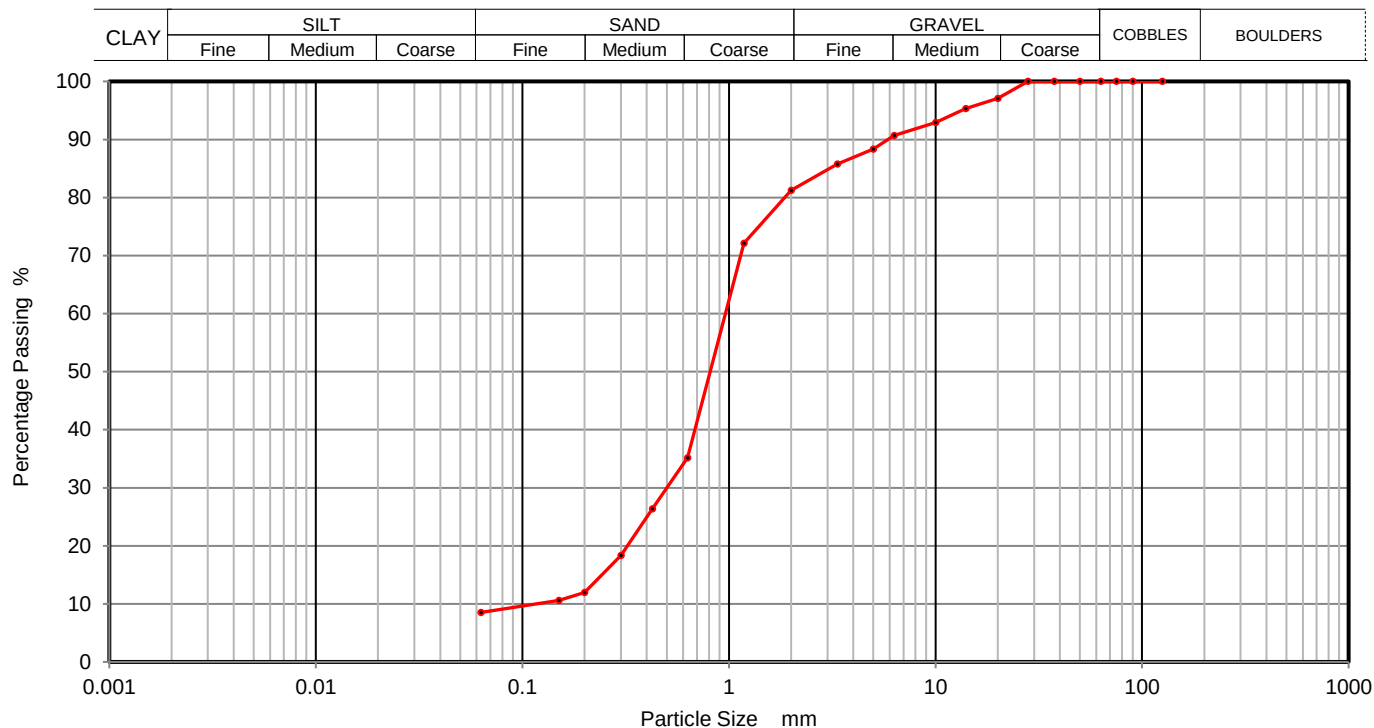
Depth Base

Date Tested

20/11/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	95		
10	93		
6.3	91		
5	88		
3.35	86		
2	81		
1.18	72		
0.63	35		
0.425	26		
0.30	18		
0.20	12		
0.15	11		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	19
Sand	72
Silt and Clay	9

Grading Analysis	
Uniformity Coefficient	N/A

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Jordan Williams

PARTICLE SIZE DISTRIBUTION
BS 1377-2:2022 Clause 10 &
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

82414

Borehole/Pit No.

SP3

Project Name

Land at Stevenage Road, Hitchin, SG4 7JY

Sample No.

17

Sample Description

Brown fine to coarse gravelly fine to coarse sandy SILT/CLAY

Depth Top

1.10

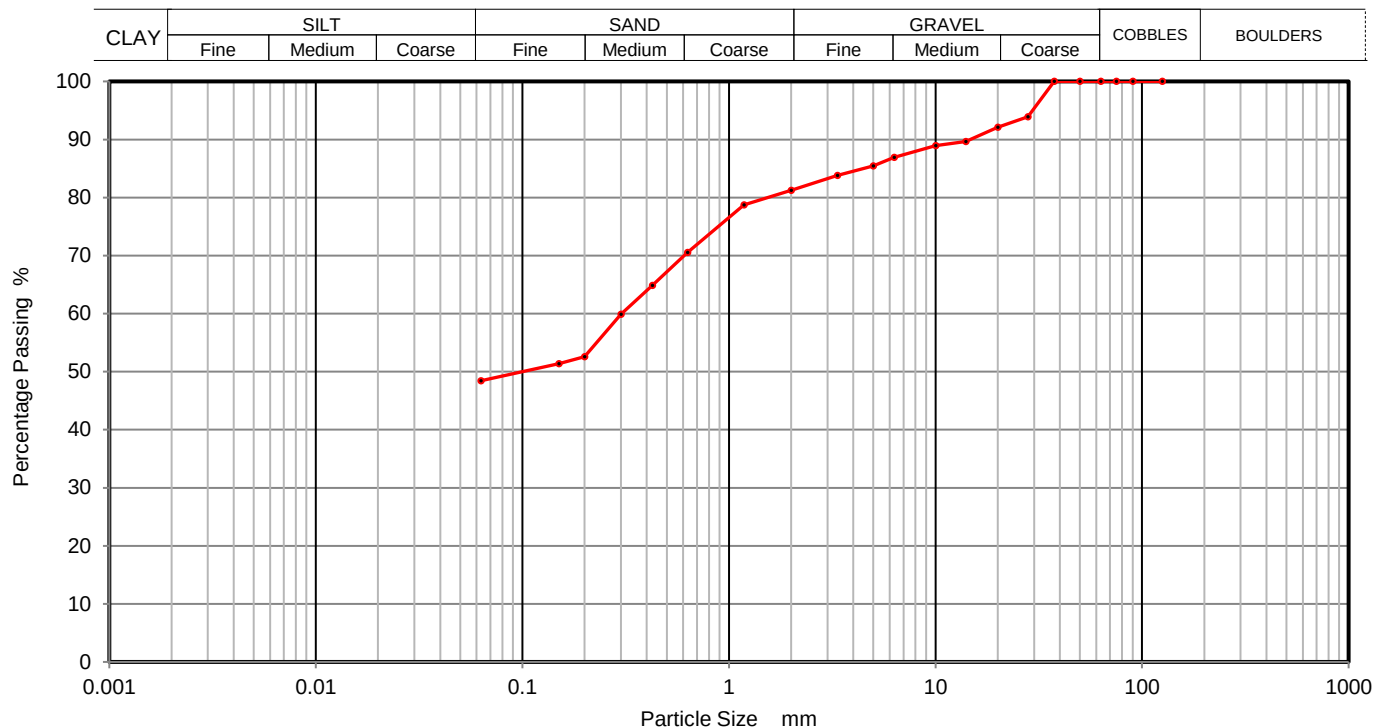
Depth Base

Date Tested

20/11/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	94		
20	92		
14	90		
10	89		
6.3	87		
5	85		
3.35	84		
2	81		
1.18	79		
0.63	71		
0.425	65		
0.30	60		
0.20	53		
0.15	51		
0.063	48		

Sample Proportions	% dry mass
Cobbles	0
Gravel	19
Sand	33
Silt and Clay	48

Grading Analysis	
Uniformity Coefficient	N/A

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Jordan Williams

PARTICLE SIZE DISTRIBUTION
BS 1377-2:2022 Clause 10 &
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

82414

Borehole/Pit No.

SP4

Project Name

Land at Stevenage Road, Hitchin, SG4 7JY

Sample No.

18

Sample Description

Brown fine to coarse sandy silty/clayey fine to coarse GRAVEL

Depth Top

1.00

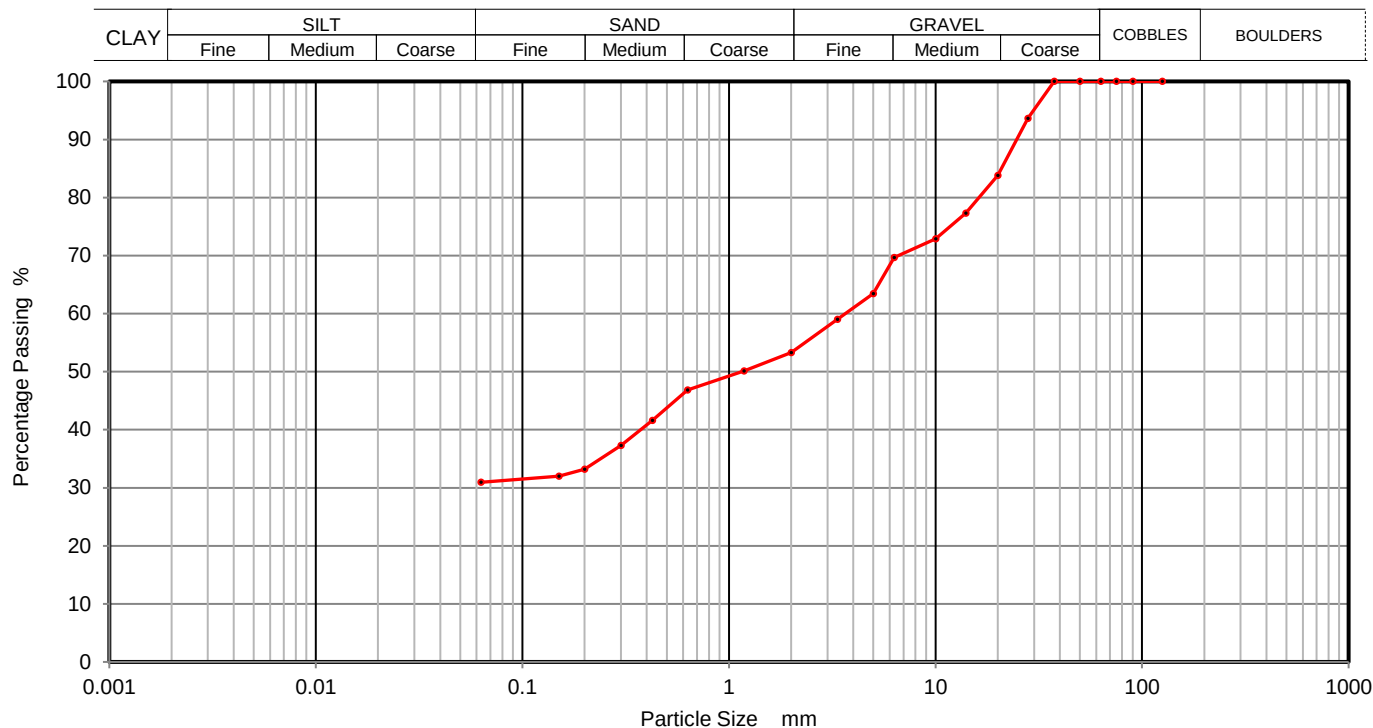
Depth Base

Date Tested

20/11/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	94		
20	84		
14	77		
10	73		
6.3	70		
5	63		
3.35	59		
2	53		
1.18	50		
0.63	47		
0.425	42		
0.30	37		
0.20	33		
0.15	32		
0.063	31		

Sample Proportions	% dry mass
Cobbles	0
Gravel	47
Sand	22
Silt and Clay	31

Grading Analysis	
Uniformity Coefficient	N/A

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Jordan Williams



Laboratory Report



Contract Number: 82595

Client Ref: **25-268.02**

Client PO: **25-268.02**

Date Received: **14-11-2025**

Date Completed: **25-11-2025**

Report Date: **25-11-2025**

Client: **Aviron Associates LTD**

This report has been checked and approved by:

Contract Title: **Land at Stevenage Road, Hitchin, SG4 7JY**

For the attention of: **Orlando**



Shaun Jones
Laboratory manager

Description	Qty
Determination of water content BS EN ISO 17892-1:2014 - * UKAS	2
1 point Liquid & Plastic Limit.. BS EN ISO 17892-12 - * UKAS	2

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

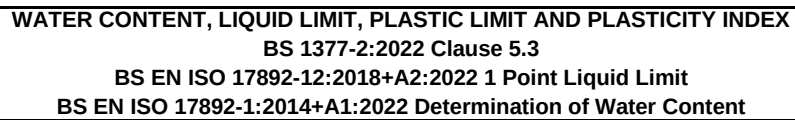
This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO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

Approved Signatories:

Brendan Evans (Business Support Co-ordinator) - Darren Bourne (Quality Senior Technician) - Jason Jenkins (Business Development Manager)

Luke Williams (Senior Laboratory Technician) - Paul Evans (Director) - Richard John (Quality/Technical Manager)

Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (HR & HSE Manager)



Contract Number	82595	
Project Name	Land at Stevenage Road, Hitchin, SG4 7JY	
Date Tested	24.11.25	
	DESCRIPTIONS	

[illegible]

Operator
Aaron. H



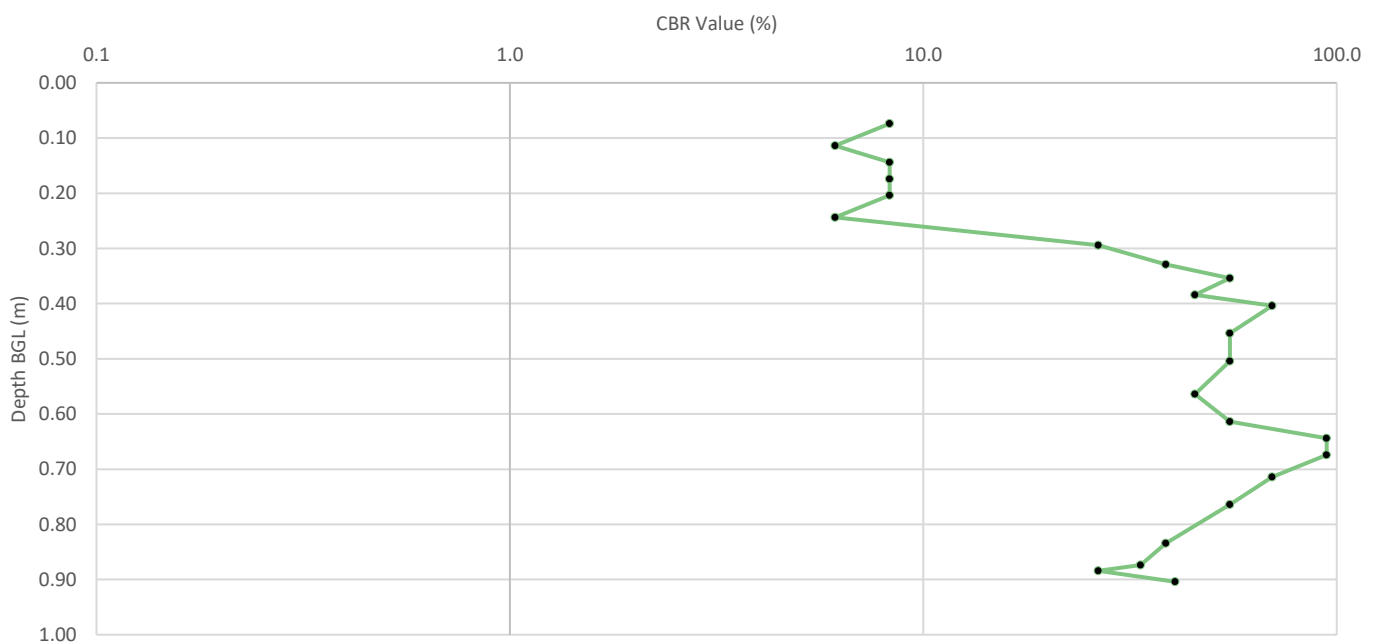
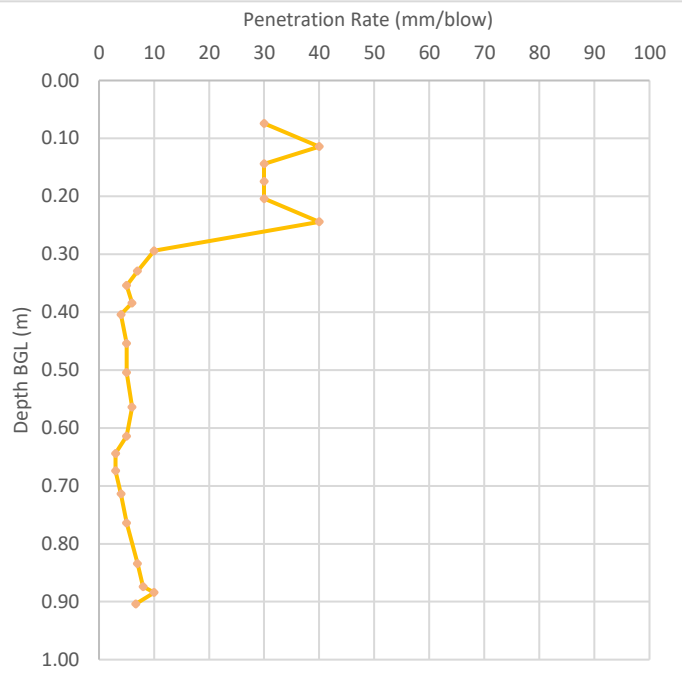
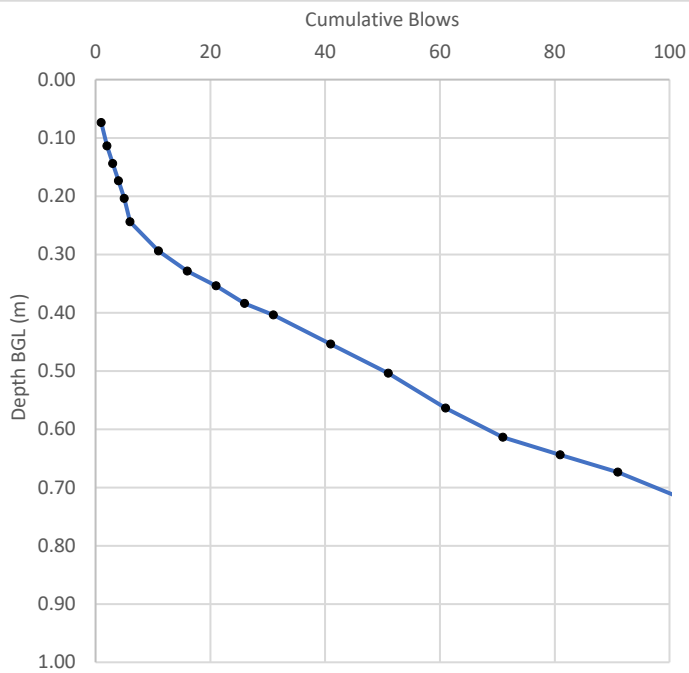
Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP1
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):

[illegible]



Dynamic Cone Penetrometer

Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP1
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):





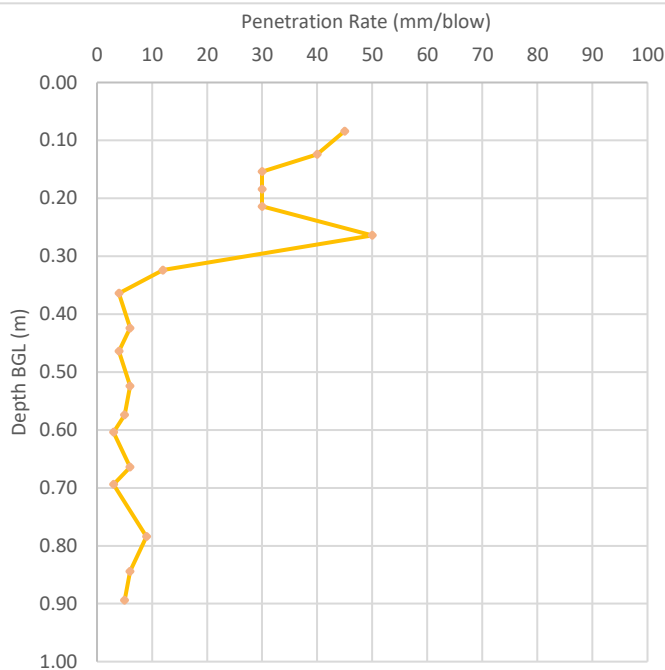
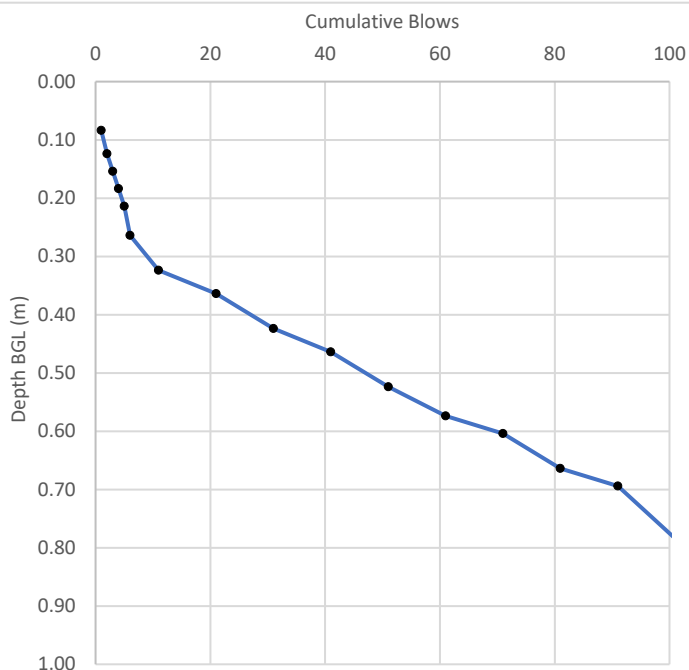
Project:	Land at Stevenage Road, Hitchin, SG4 7JY	Project No:	25-268.02	DCP Location:	DCP2
Client:	Bugler Homes Limited	Operator:	OC	Date:	03/11/2025
Surface Conditions & Observations:		Zero Error (mm):	Approx AOD (m):		
Dry		16			

[illegible]



Dynamic Cone Penetrometer

Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP2
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):





Dynamic Cone Penetrometer

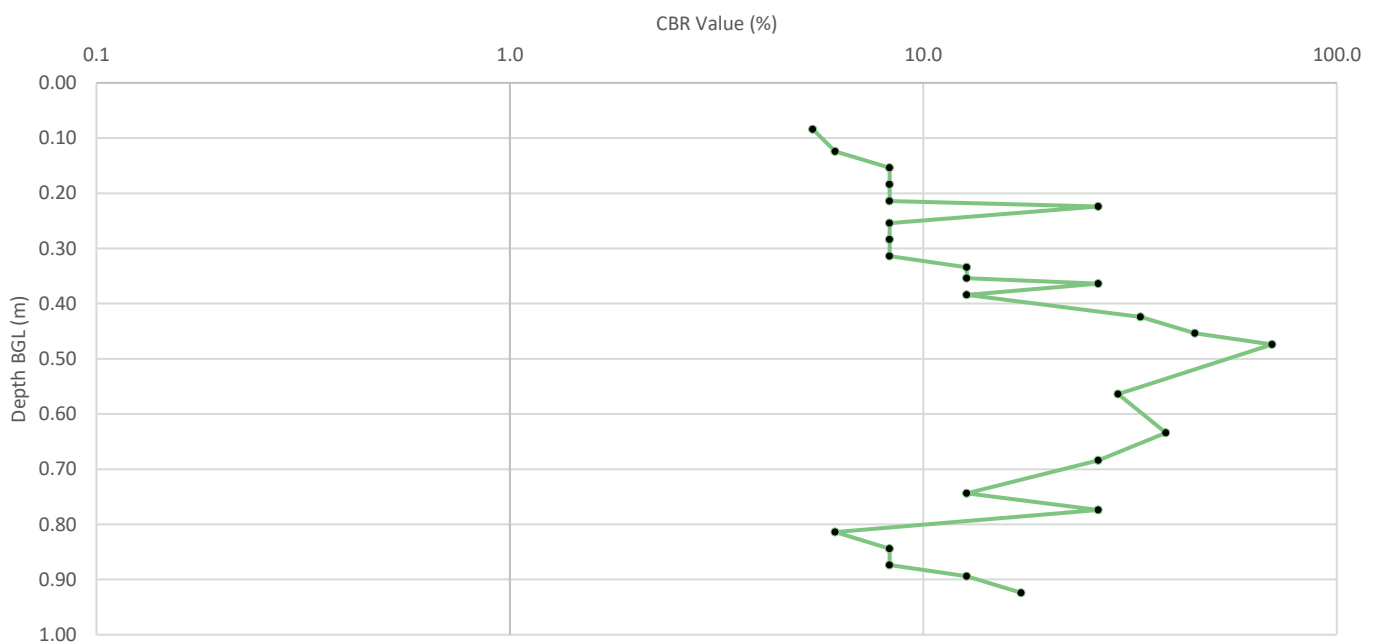
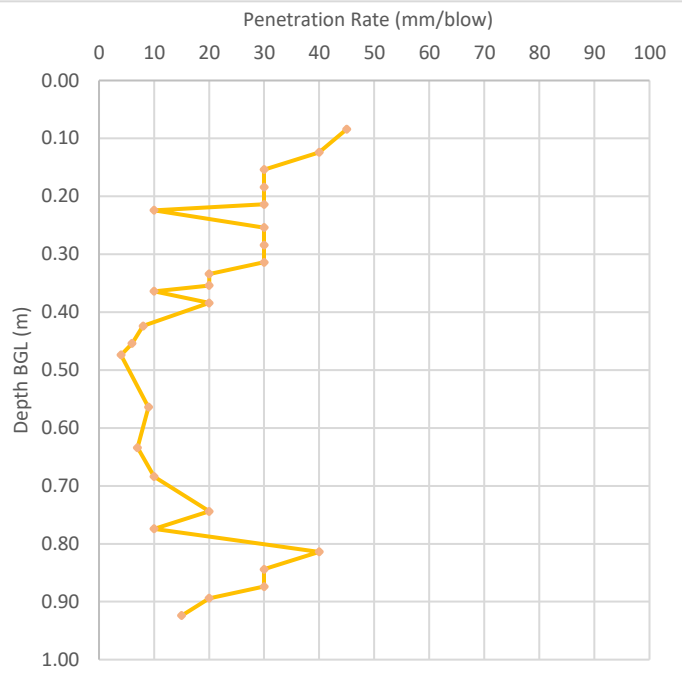
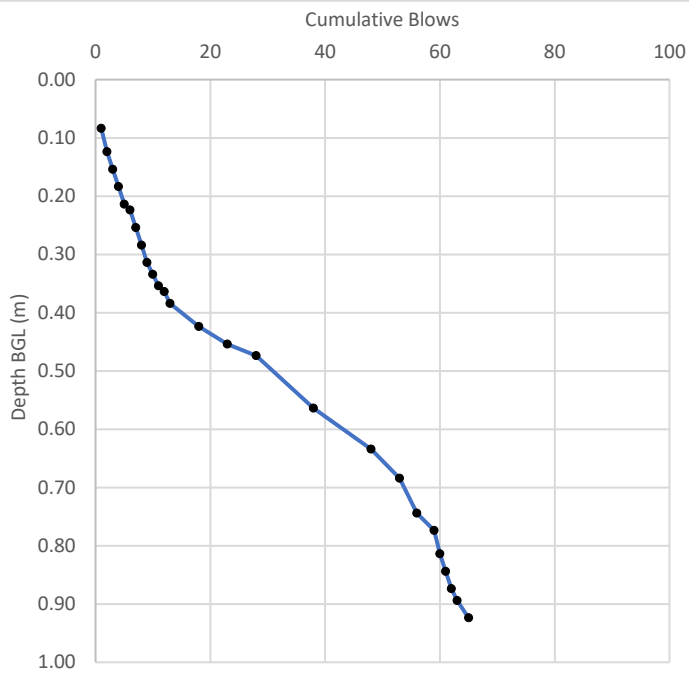
Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP3
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):

Blows	Cumulative Blows	Cumulative Penetration Depth (mm)	Depth Bgl (m)	AOD (m)	Penetration Rate (mm/blow)	CBR Value (%)
0		55	0.039	-0.039		
1	1	100	0.084	-0.084	45.0	5.4
1	2	140	0.124	-0.124	40.0	6.1
1	3	170	0.154	-0.154	30.0	8.3
1	4	200	0.184	-0.184	30.0	8.3
1	5	230	0.214	-0.214	30.0	8.3
1	6	240	0.224	-0.224	10.0	26.5
1	7	270	0.254	-0.254	30.0	8.3
1	8	300	0.284	-0.284	30.0	8.3
1	9	330	0.314	-0.314	30.0	8.3
1	10	350	0.334	-0.334	20.0	12.7
1	11	370	0.354	-0.354	20.0	12.7
1	12	380	0.364	-0.364	10.0	26.5
1	13	400	0.384	-0.384	20.0	12.7
5	18	440	0.424	-0.424	8.0	33.5
5	23	470	0.454	-0.454	6.0	45.4
5	28	490	0.474	-0.474	4.0	69.8
10	38	580	0.564	-0.564	9.0	29.6
10	48	650	0.634	-0.634	7.0	38.6
5	53	700	0.684	-0.684	10.0	26.5
3	56	760	0.744	-0.744	20.0	12.7
3	59	790	0.774	-0.774	10.0	26.5
1	60	830	0.814	-0.814	40.0	6.1
1	61	860	0.844	-0.844	30.0	8.3
1	62	890	0.874	-0.874	30.0	8.3
1	63	910	0.894	-0.894	20.0	12.7
2	65	940	0.924	-0.924	15.0	17.3



Dynamic Cone Penetrometer

Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP3
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):





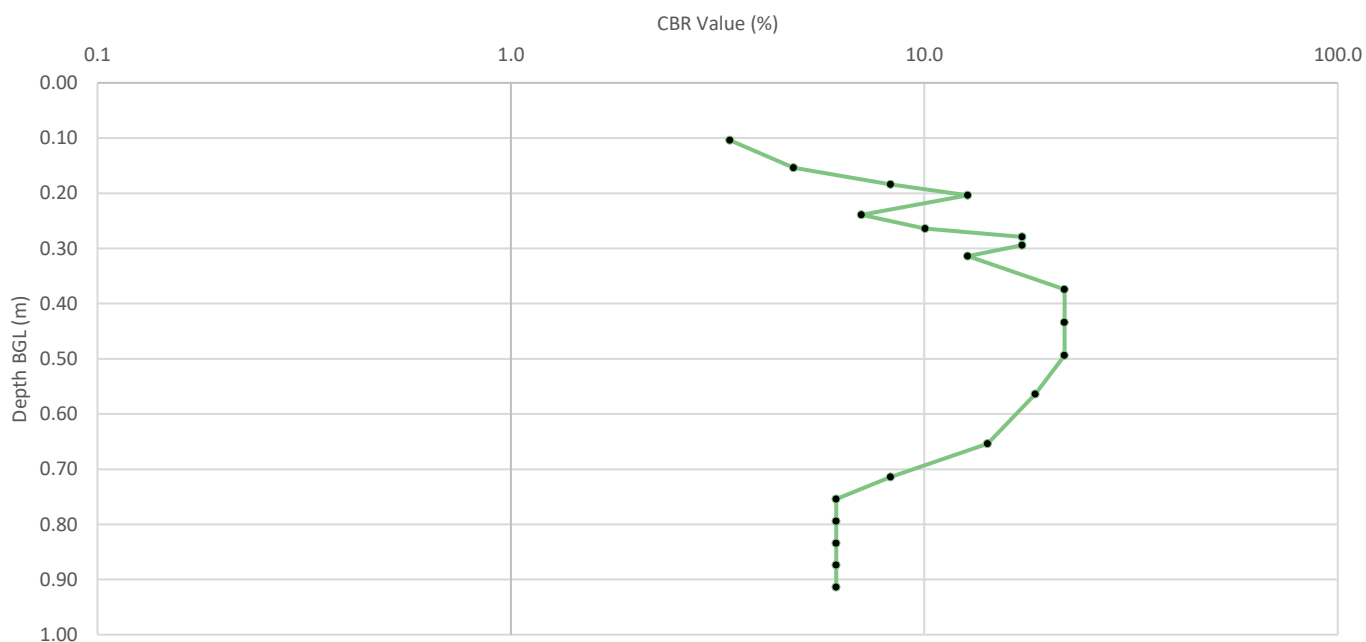
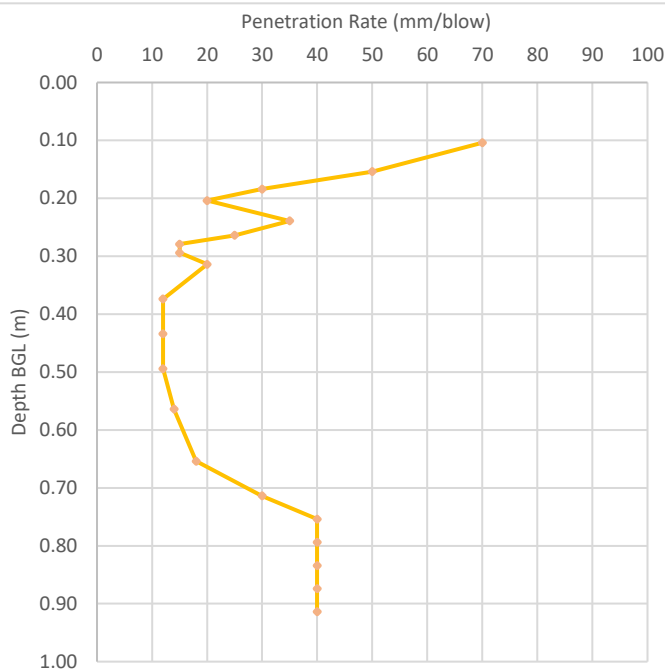
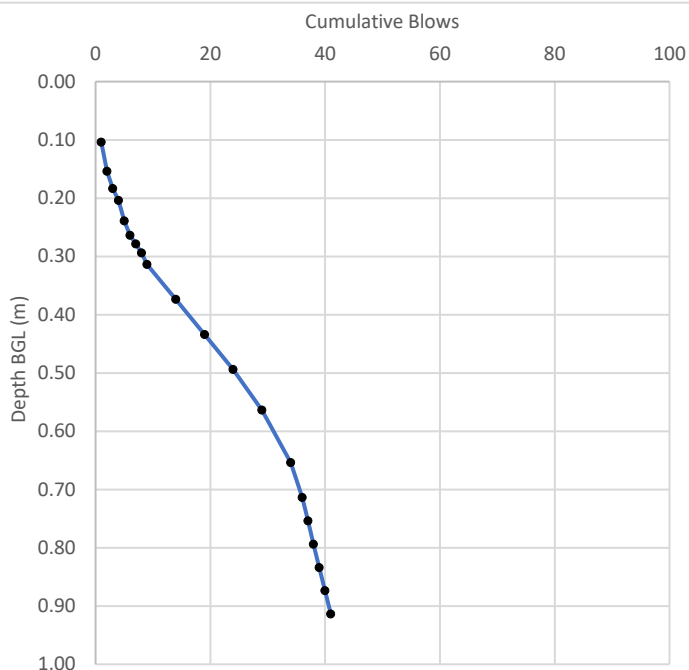
Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP4
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):

[illegible]



Dynamic Cone Penetrometer

Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP4
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):





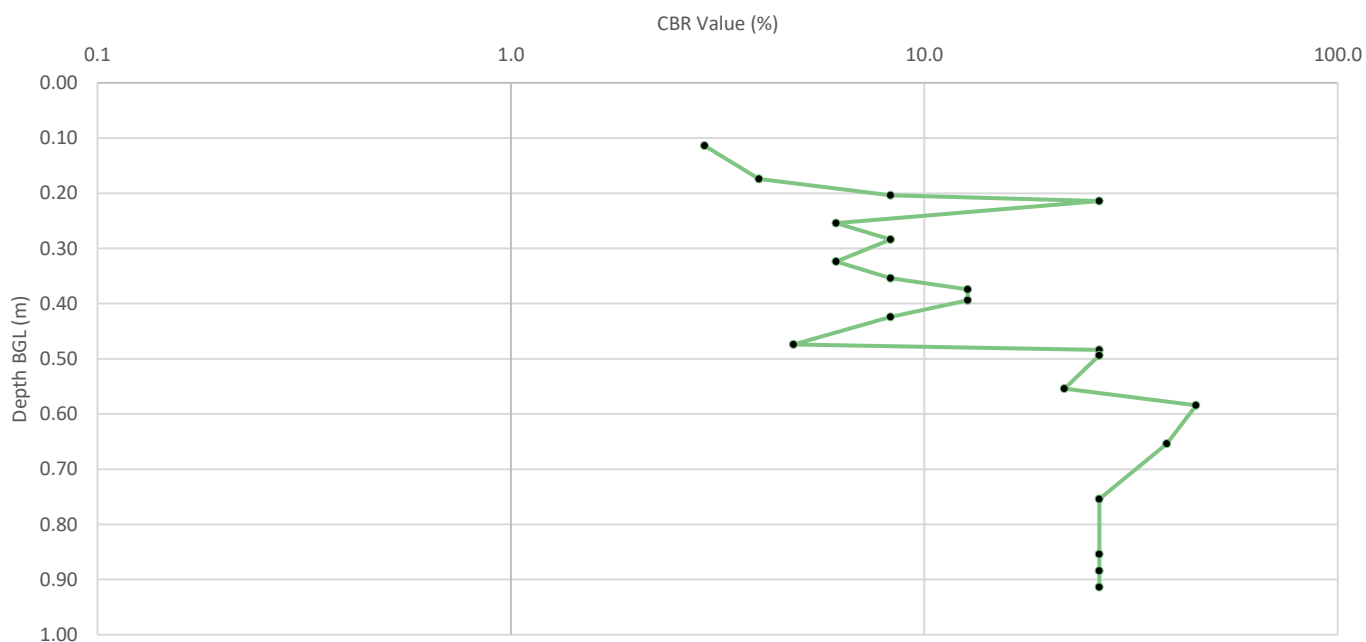
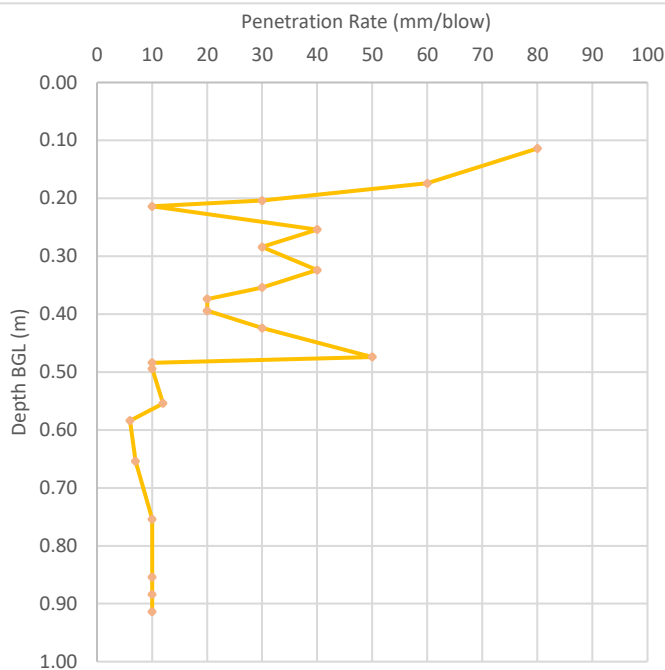
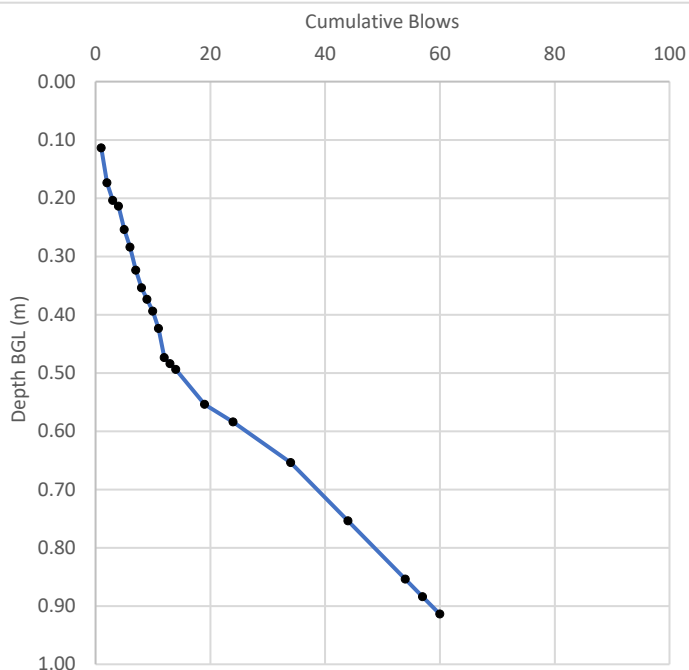
Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP5
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):

[illegible]



Dynamic Cone Penetrometer

Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP5
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):





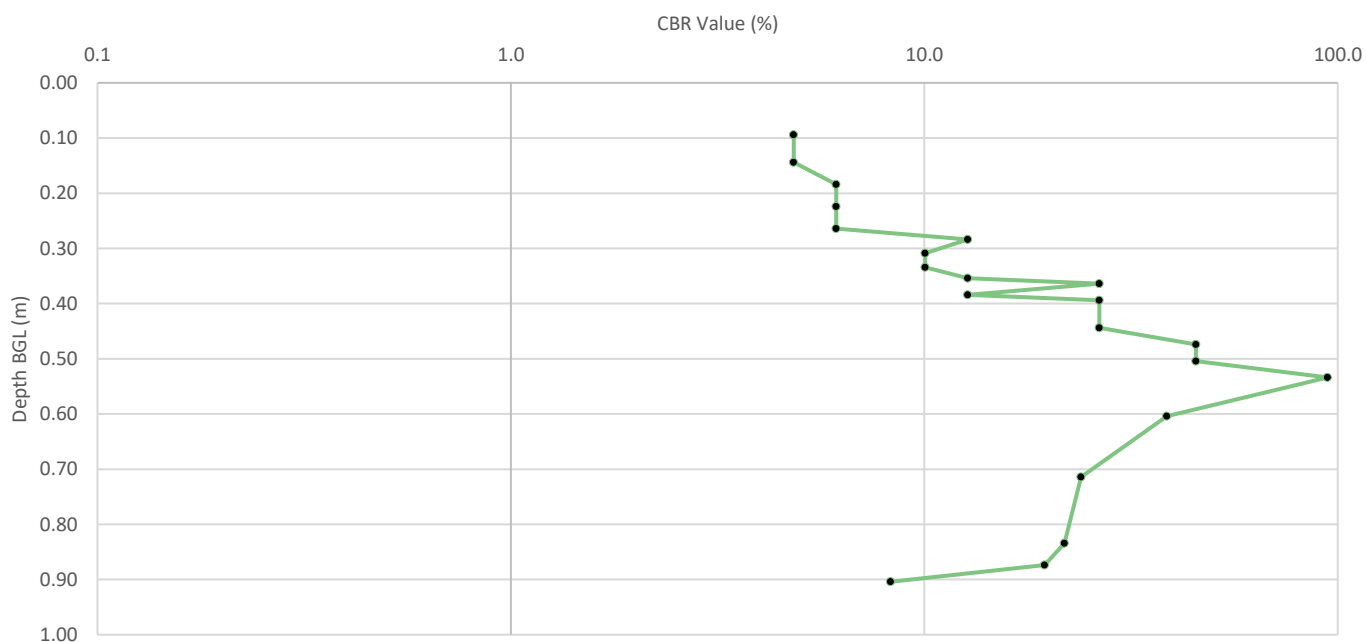
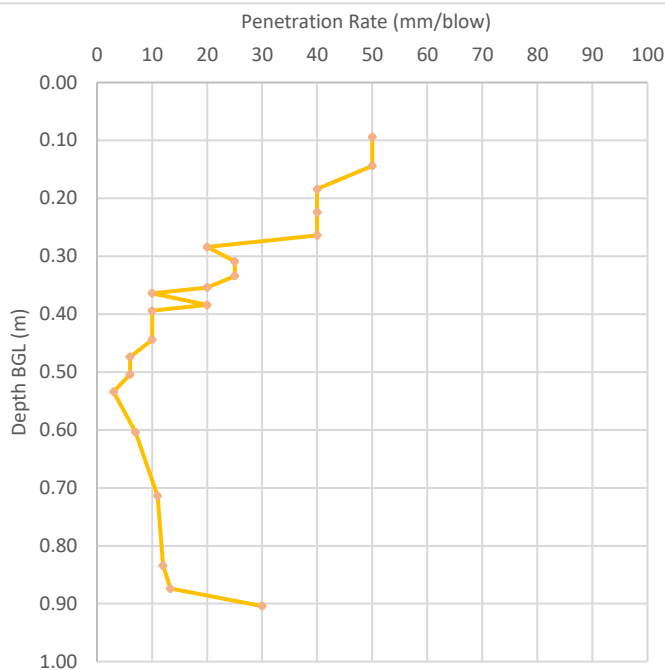
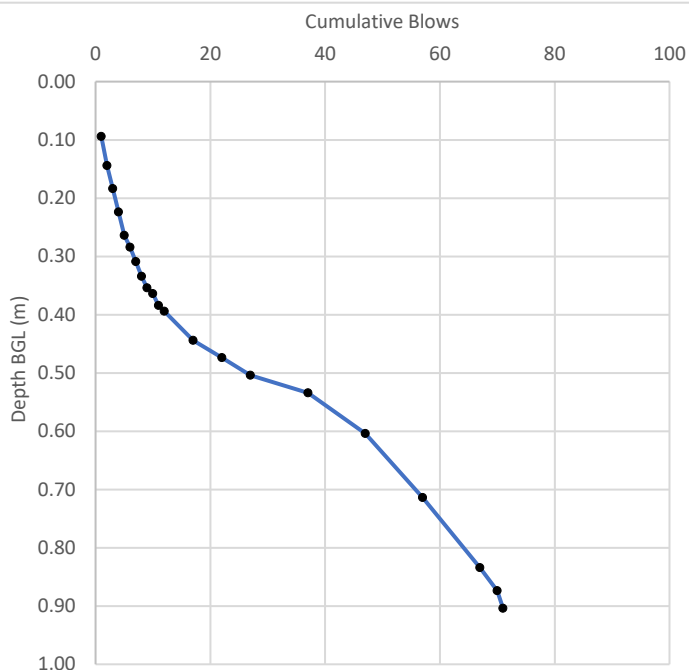
Project:	Land at Stevenage Road, Hitchin, SG4 7JY	Project No:	25-268.02	DCP Location:	DCP6
Client:	Bugler Homes Limited	Operator:	OC	Date:	03/11/2025
Surface Conditions & Observations:		Zero Error (mm):	Approx AOD (m):		
Dry		16			

[illegible]



Dynamic Cone Penetrometer

Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP6
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):





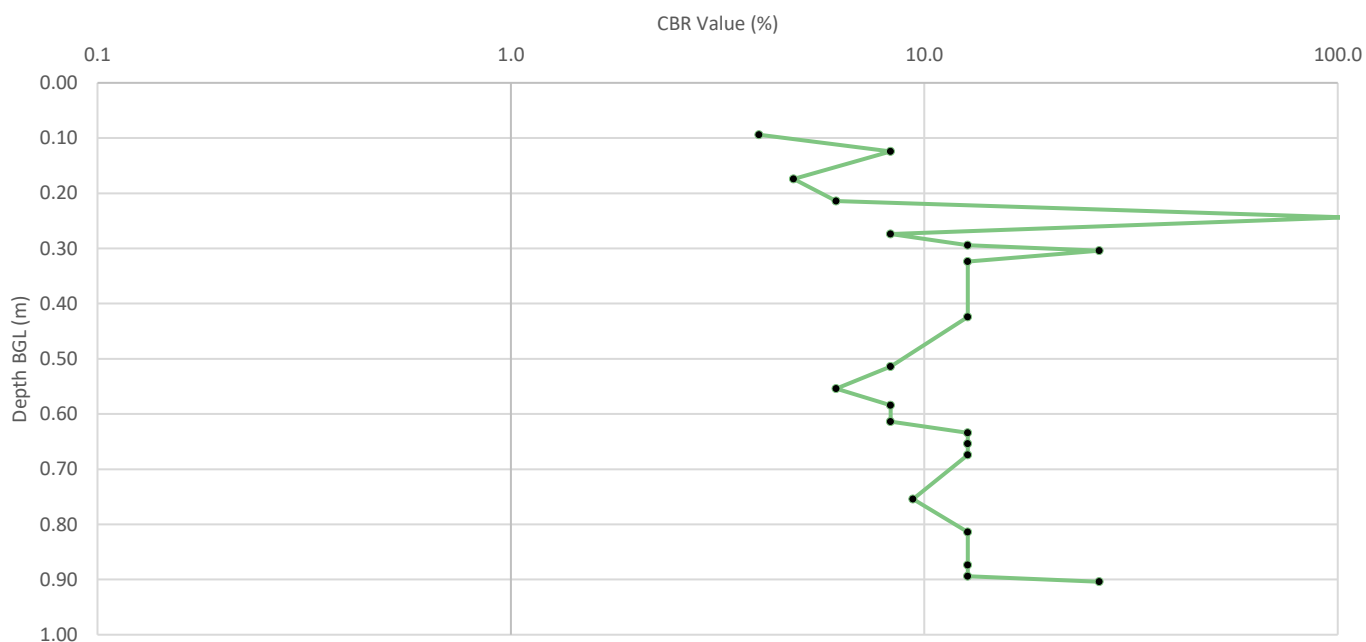
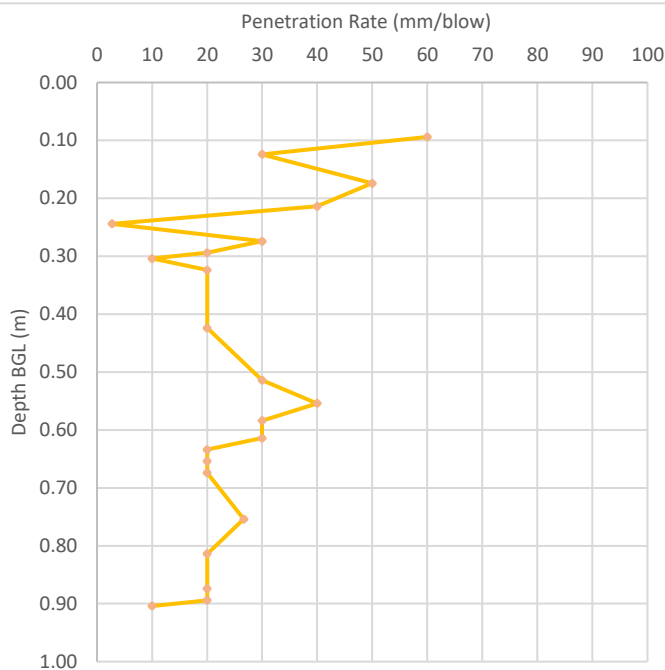
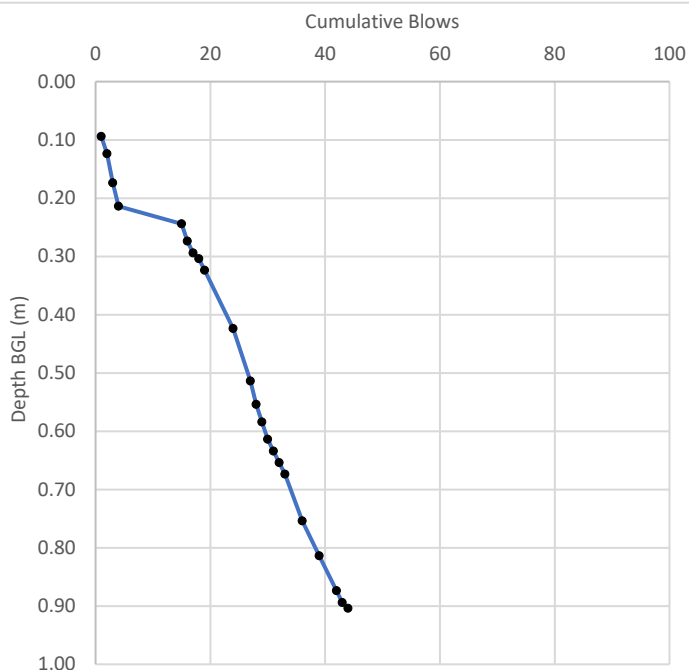
Project:	Land at Stevenage Road, Hitchin, SG4 7JY	Project No:	25-268.02	DCP Location:	DCP7
Client:	Bugler Homes Limited	Operator:	OC	Date:	03/11/2025
Surface Conditions & Observations:		Zero Error (mm):		Approx AOD (m):	
Dry		16			

[illegible]



Dynamic Cone Penetrometer

Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP7
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):





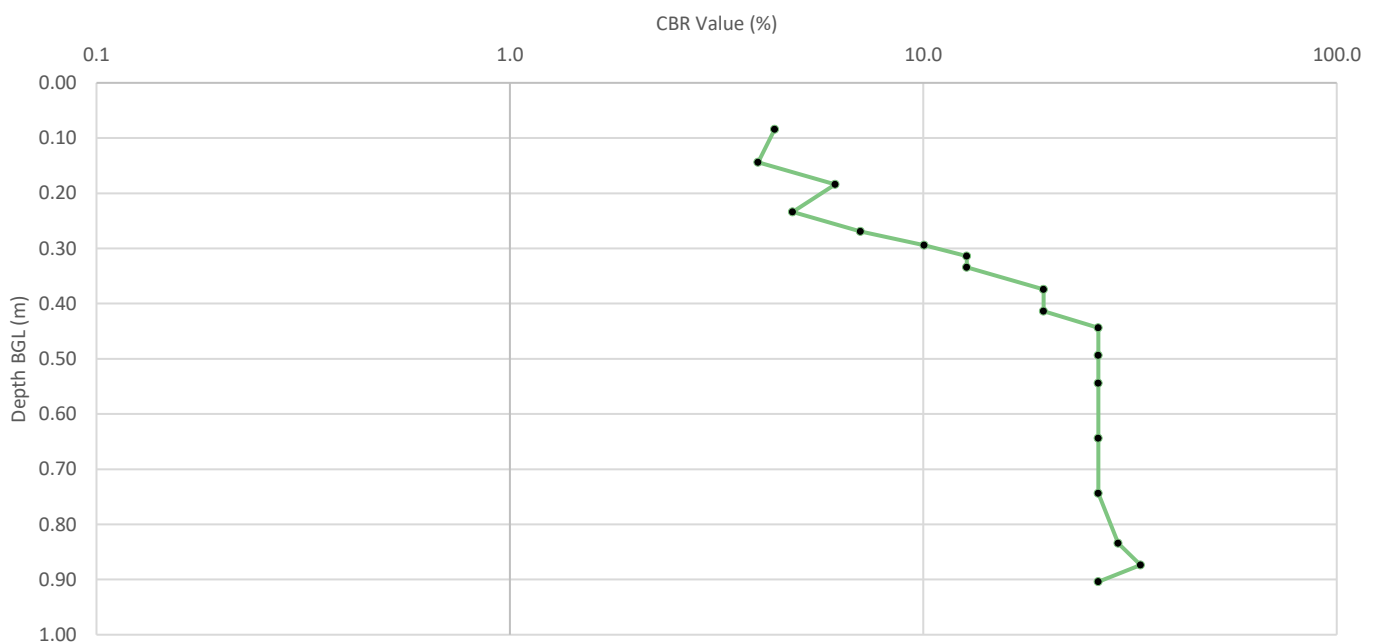
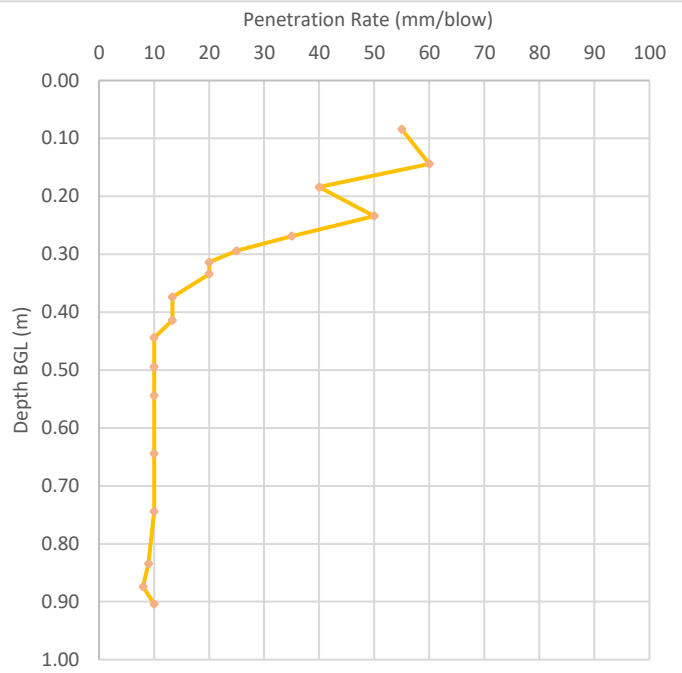
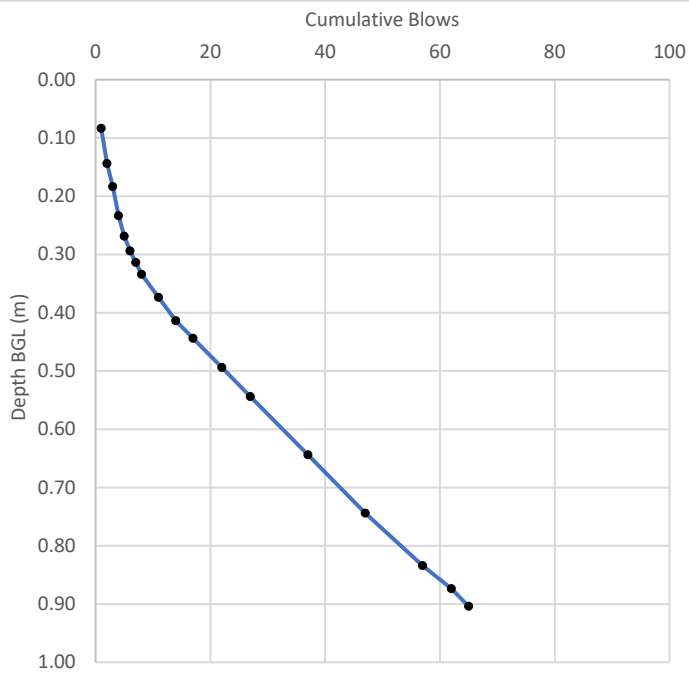
Project:	Land at Stevenage Road, Hitchin, SG4 7JY	Project No:	25-268.02	DCP Location:	DCP8
Client:	Bugler Homes Limited	Operator:	OC	Date:	03/11/2025
Surface Conditions & Observations:		Zero Error (mm):	Approx AOD (m):		
Dry		16			

[illegible]



Dynamic Cone Penetrometer

Project: Land at Stevenage Road, Hitchin, SG4 7JY	Project No: 25-268.02	DCP Location: DCP8
Client: Bugler Homes Limited	Operator: OC	Date: 03/11/2025
Surface Conditions & Observations: Dry	Zero Error (mm): 16	Approx AOD (m):



Appendix

V Soil Infiltration Test Results

Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP1 - F1

Date: 03/11/2025

Readings Recorded By: AC

Pit Dimensions: 2.4m(l) x 0.35m(w) x 1.1m(d)
Start Water Level: 0.6m

Actual Storage Volume: 0.92 m³
Effective Depth: 0.50 m

Time (mins)	Depth BGL (m)
0	0.600
1	0.610
2	0.620
3	0.630
4	0.640
5	0.645
10	0.670
20	0.695
30	0.710
40	0.720
50	0.740
60	0.760
100	0.820
140	0.870
180	0.910
220	0.930
260	0.950
300	0.965
340	0.980

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

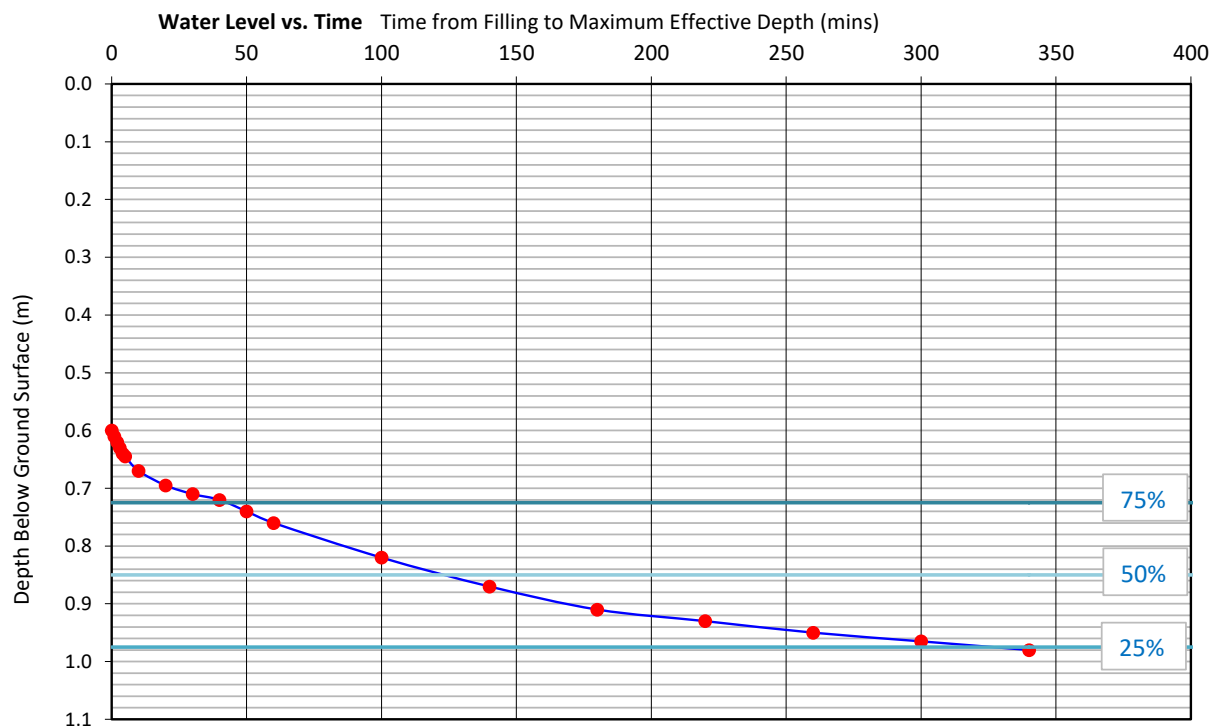
Effective Storage Volume, V : 2.4m x 0.35m x 0.5m
 V : 0.42 m³

V_{p75-25} : 0.210 m³

Effective Internal Surface Area, a_{p50} : 1.2m² + 0.175m² + 0.84m²
 a_{p50} : 2.215 m²

Time of water level fall, t_{p75-25} : 330 - 45 mins
 t_{p75-25} : 285 mins
 t_{p75-25} : 17100 secs

Soil infiltration rate, f : 0.21/(2.215 x 17100)
 f : 5.54E-06 ms⁻¹



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP1 - F2

Date: 03/11/2025

Readings Recorded By: AC

Pit Dimensions: 2.4m(l) x 0.35m(w) x 1.1m(d)
Start Water Level: 0.48m

Actual Storage Volume: 0.92 m³
Effective Depth: 0.62 m

Time (mins)	Depth BGL (m)
0	0.480
1	0.480
2	0.485
3	0.485
4	0.490
5	0.495
10	0.515
20	0.530
30	0.540
40	0.550
50	0.570
60	0.580
80	0.590
860	0.960

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

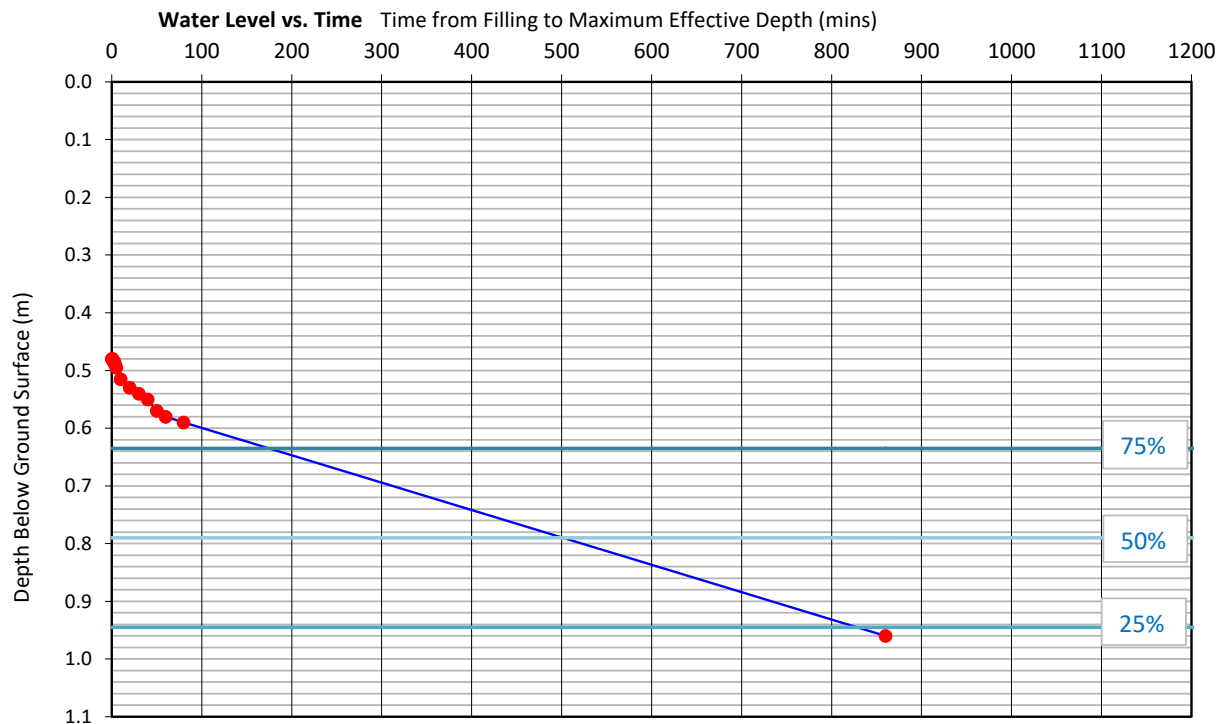
Effective Storage Volume, V : 2.4m x 0.35m x 0.62m
 V : 0.5208 m³

V_{p75-25} : 0.260 m³

Effective Internal Surface Area, a_{p50} : 1.488m² + 0.217m² + 0.84m²
 a_{p50} : 2.545 m²

Time of water level fall, t_{p75-25} : 830 - 170 mins
 t_{p75-25} : 660 mins
 t_{p75-25} : 39600 secs

Soil infiltration rate, f : 0.2604/(2.545 x 39600)
 f : 2.58E-06 ms⁻¹



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP1 - F3

Date: 04/11/2025

Readings Recorded By: AC

Pit Dimensions: 2.4m(l) x 0.35m(w) x 1.1m(d)
Start Water Level: 0.46m

Actual Storage Volume: 0.92 m³
Effective Depth: 0.64 m

Time (mins)	Depth BGL (m)
0	0.460
1	0.470
2	0.475
3	0.480
4	0.485
5	0.490
10	0.520
20	0.560
30	0.595
40	0.620
50	0.650
60	0.670
80	0.695
120	0.745
160	0.770
200	0.790
310	0.840
520	0.900

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

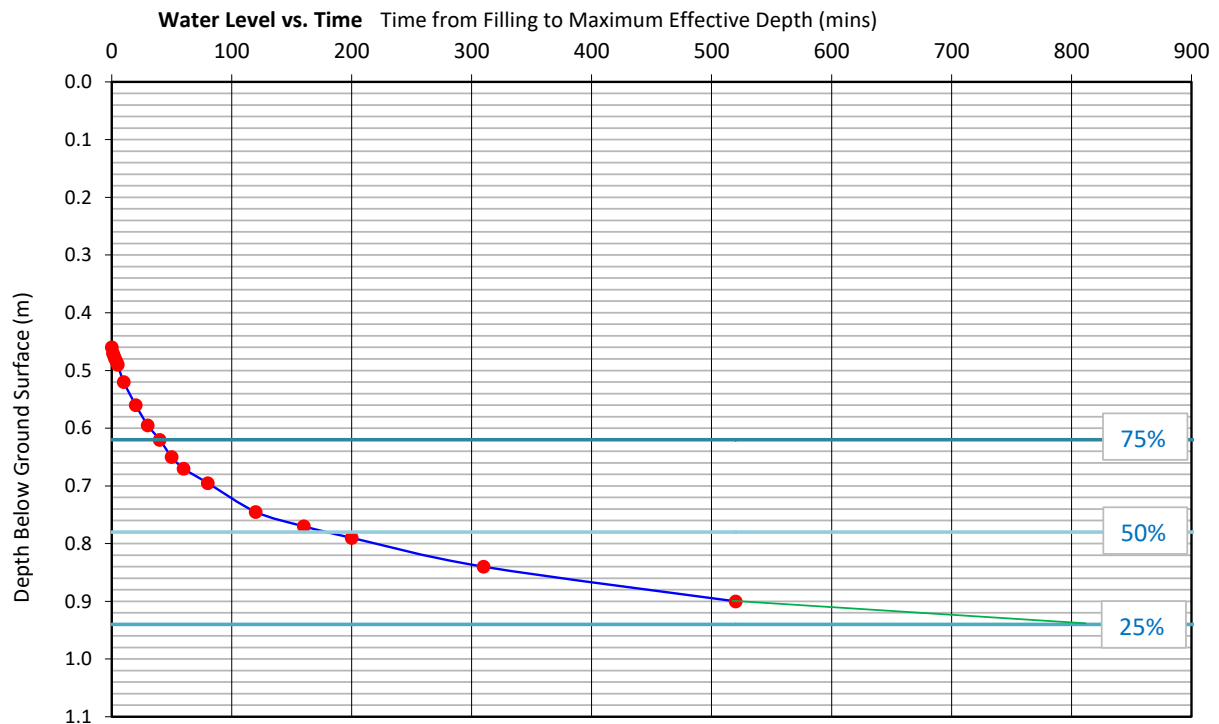
Effective Storage Volume, V : 2.4m x 0.35m x 0.64m
 V : 0.5376 m³

V_{p75-25} : 0.269 m³

Effective Internal Surface Area, a_{p50} : 1.536m² + 0.224m² + 0.84m²
 a_{p50} : 2.600 m²

Time of water level fall, t_{p75-25} : 820 - 40 mins
 t_{p75-25} : 780 mins
 t_{p75-25} : 46800 secs

Soil infiltration rate, f : 0.2688/(2.6 x 46800)
 f : 2.21E-06 ms⁻¹



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP2 - F1

Date: 03/11/2025

Readings Recorded By: AC

Pit Dimensions: 1.85m(l) x 0.35m(w) x 1.4m(d)
Start Water Level: 0.79m

Actual Storage Volume: 0.91 m³
Effective Depth: 0.61 m

Time (mins)	Depth BGL (m)
0	0.790
1	0.840
2	0.890
3	0.930
4	0.970
5	1.010
10	1.110
15	1.190
20	1.240
30	1.310

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

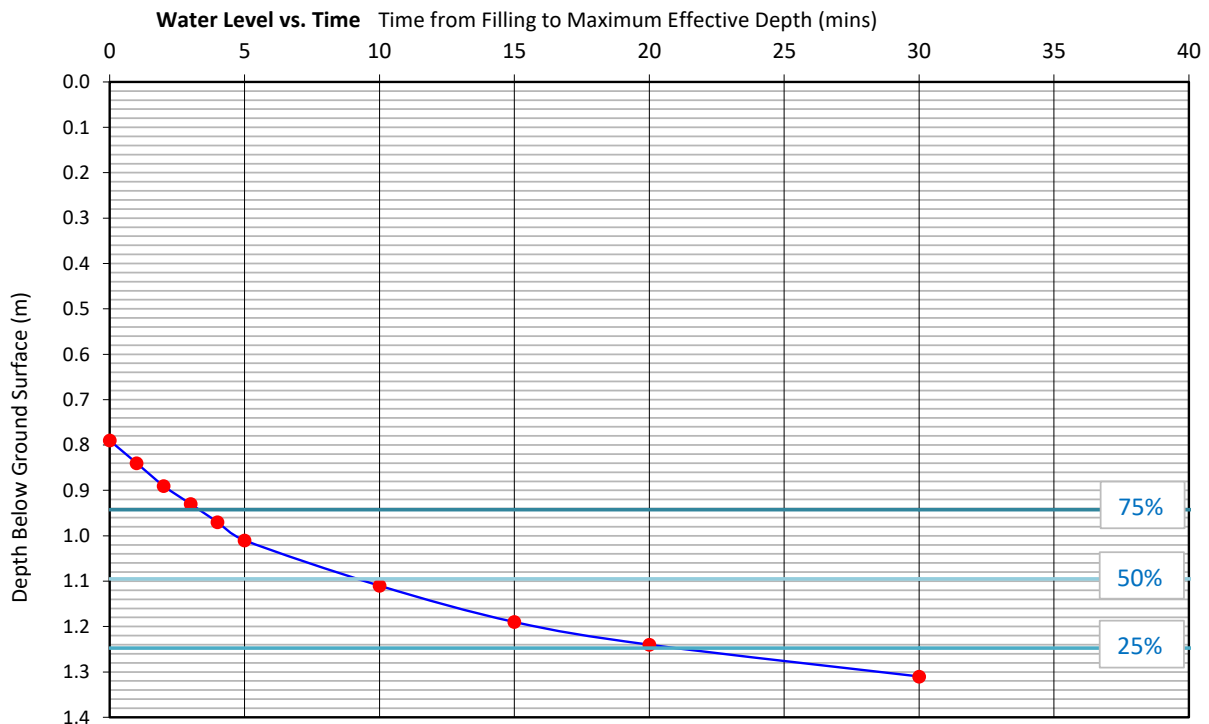
Effective Storage Volume, V : 1.85m x 0.35m x 0.61m
 V : 0.394975 m³

V_{p75-25} : 0.197 m³

Effective Internal Surface Area, a_{p50} : 1.1285m² + 0.2135m² + 0.6475m²
 a_{p50} : 1.990 m²

Time of water level fall, t_{p75-25} : 21 - 3.5 mins
 t_{p75-25} : 17.5 mins
 t_{p75-25} : 1050 secs

Soil infiltration rate, f : 0.1974875/(1.9895 x 1050)
 f : 9.45E-05 ms⁻¹



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP2 - F2

Date: 03/11/2025

Readings Recorded By: AC

Pit Dimensions: 1.85m(l) x 0.35m(w) x 1.4m(d)
Start Water Level: 0.73m

Actual Storage Volume: 0.91 m³
Effective Depth: 0.67 m

Time (mins)	Depth BGL (m)
0	0.730
1	0.770
2	0.800
3	0.820
4	0.840
5	0.850
10	0.920
20	1.010
30	1.080
40	1.130
50	1.170
60	1.200
80	1.245

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

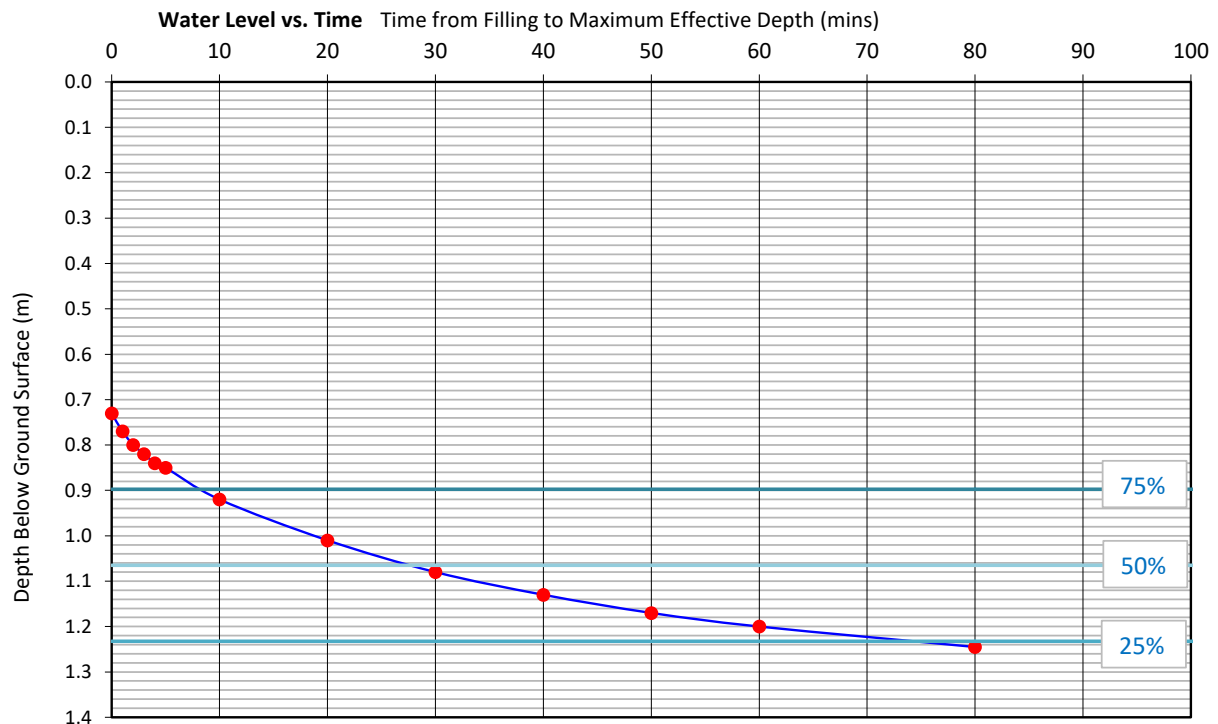
Effective Storage Volume, V : 1.85m x 0.35m x 0.67m
 V : 0.433825 m³

V_{p75-25} : 0.217 m³

Effective Internal Surface Area, a_{p50} : 1.2395m² + 0.2345m² + 0.6475m²
 a_{p50} : 2.122 m²

Time of water level fall, t_{p75-25} : 74 - 8 mins
 t_{p75-25} : 66 mins
 t_{p75-25} : 3960 secs

Soil infiltration rate, f : 0.2169125/(2.1215 x 3960)
 f : 2.58E-05 ms⁻¹



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP2 - F3

Date: 03/11/2025

Readings Recorded By: AC

Pit Dimensions: 1.85m(l) x 0.35m(w) x 1.4m(d)
Start Water Level: 0.63m

Actual Storage Volume: 0.91 m³
Effective Depth: 0.77 m

Time (mins)	Depth BGL (m)
0	0.630
1	0.670
2	0.690
3	0.705
4	0.725
5	0.745
10	0.830
20	0.970
30	1.050
40	1.100
50	1.130
60	1.150
70	1.180
80	1.190
90	1.210

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

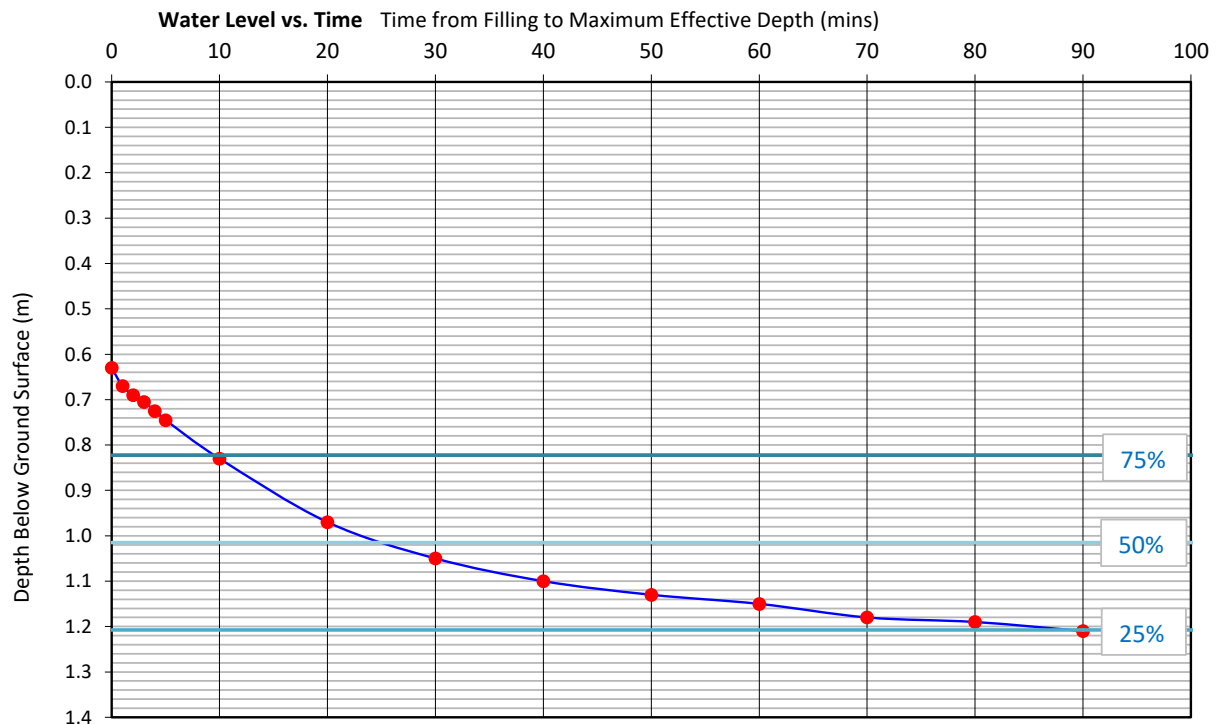
Effective Storage Volume, V : 1.85m x 0.35m x 0.77m
 V : 0.498575 m³

V_{p75-25} : 0.249 m³

Effective Internal Surface Area, a_{p50} : 1.4245m² + 0.2695m² + 0.6475m²
 a_{p50} : 2.342 m²

Time of water level fall, t_{p75-25} : 90 - 9 mins
 t_{p75-25} : 81 mins
 t_{p75-25} : 4860 secs

Soil infiltration rate, f : 0.2492875/(2.3415 x 4860)
 f : 2.19E-05 ms⁻¹



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP3 - F1

Date: 03/11/1025 - 04/11/2025

Readings Recorded By: AC

Pit Dimensions: 1.9m(l) x 0.35m(w) x 1.1m(d)
Start Water Level: 0.46m

Actual Storage Volume: 0.73 m³
Effective Depth: 0.64 m

Time (mins)	Depth BGL (m)
0	0.460
1	0.460
2	0.460
3	0.465
4	0.465
5	0.470
10	0.480
20	0.485
30	0.490
60	0.500
100	0.520
140	0.540
180	0.550
220	0.560
260	0.570
300	0.580
1300	0.650
1440	0.660

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

Effective Storage Volume, V : 1.9m x 0.35m x 0.64m
 V : 0.4256 m³

V_{p75-25} : 0.213 m³

Effective Internal Surface Area, a_{p50} : 1.216m² + 0.224m² + 0.665m²
 a_{p50} : 2.105 m²

Time of water level fall, t_{p75-25} : - mins
 t_{p75-25} : 0 mins
 t_{p75-25} : 0 secs

Soil infiltration rate, f : 0.2128/(2.105 x 0)
 f : #DIV/0! ms⁻¹



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP4 - F1

Date: 03/11/2025

Readings Recorded By: AC

Pit Dimensions: 1.5m(l) x 0.35m(w) x 0.8m(d)
Start Water Level: 0.5m

Actual Storage Volume: **0.42 m³**
Effective Depth: **0.30 m**

Time (mins)	Depth BGL (m)
0	0.500
1	0.510
2	0.520
3	0.530
4	0.540
5	0.545
10	0.575
15	0.595
20	0.620
30	0.650
40	0.670
50	0.690
60	0.710
80	0.725
100	0.740

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

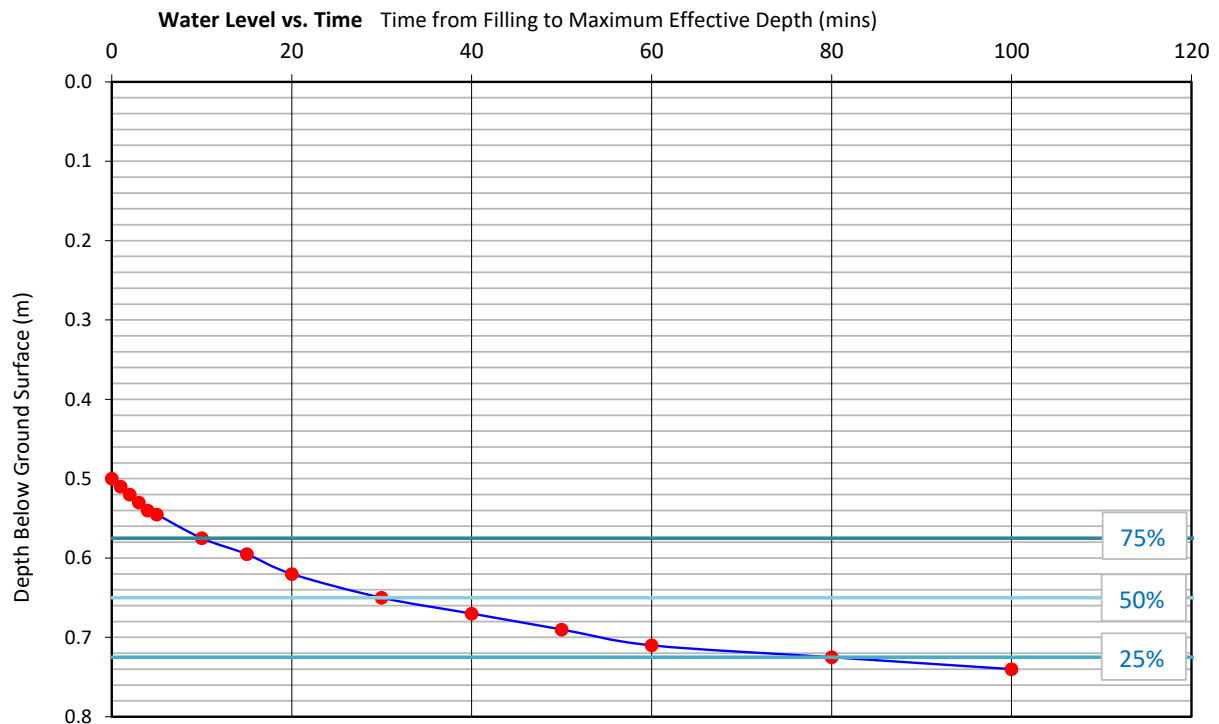
Effective Storage Volume, V : **1.5m x 0.35m x 0.3m**
 V : **0.1575 m³**

V_{p75-25} : **0.079 m³**

Effective Internal Surface Area, a_{p50} : **0.45m² + 0.105m² + 0.525m²**
 a_{p50} : **1.080 m²**

Time of water level fall, t_{p75-25} : **82 - 10.5 mins**
 t_{p75-25} : **71.5 mins**
 t_{p75-25} : **4290 secs**

Soil infiltration rate, f : **0.07875/(1.08 x 4290)**
 f : **1.70E-05 ms⁻¹**



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP4 - F2

Date: 03/11/2025

Readings Recorded By: AC

Pit Dimensions: 1.5m(l) x 0.35m(w) x 0.8m(d)
Start Water Level: 0.47m

Actual Storage Volume: 0.42 m³
Effective Depth: 0.33 m

Time (mins)	Depth BGL (m)
0	0.470
1	0.470
2	0.475
3	0.480
4	0.480
5	0.490
10	0.510
15	0.530
20	0.540
30	0.575
40	0.595
50	0.620
60	0.645
80	0.680
100	0.695
120	0.710
140	0.725

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

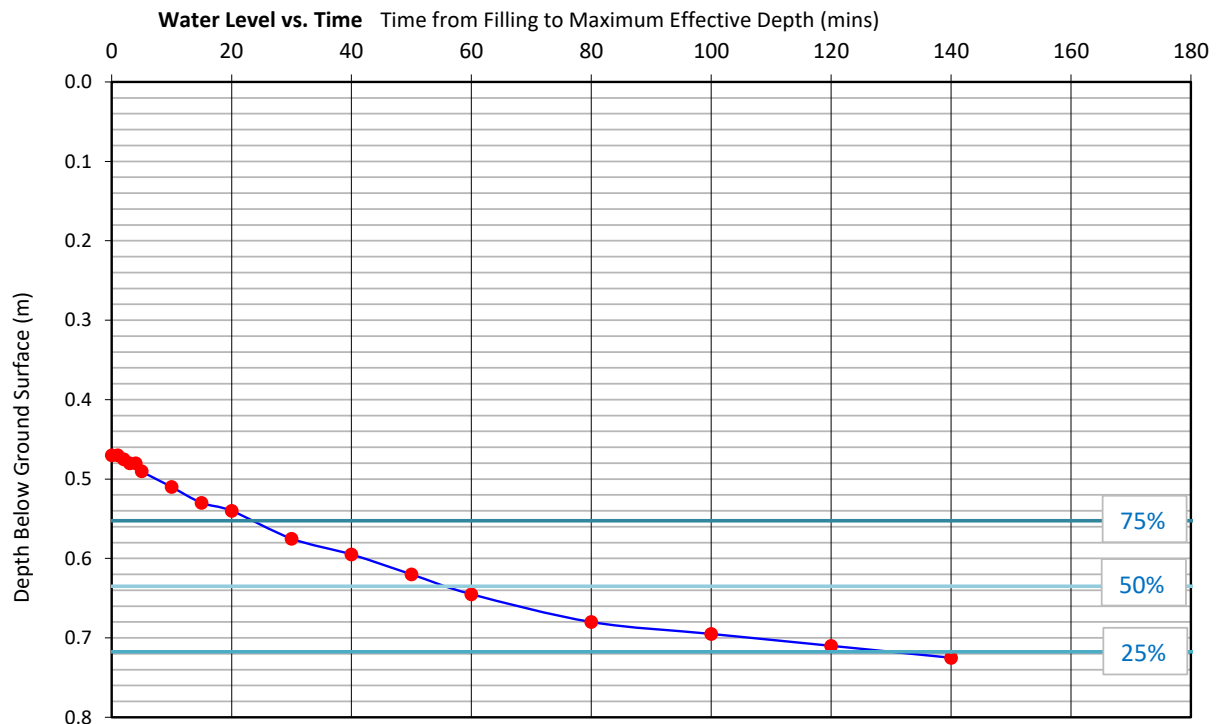
Effective Storage Volume, V : 1.5m x 0.35m x 0.33m
 V : 0.17325 m³

V_{p75-25} : 0.087 m³

Effective Internal Surface Area, a_{p50} : 0.495m² + 0.1155m² + 0.525m²
 a_{p50} : 1.136 m²

Time of water level fall, t_{p75-25} : 130 - 23 mins
 t_{p75-25} : 107 mins
 t_{p75-25} : 6420 secs

Soil infiltration rate, f : 0.086625/(1.1355 x 6420)
 f : 1.19E-05 ms⁻¹



Soil Infiltration Test

25-268.02: Land at Stevenage Road, Hitchin, SG4 7JY



Test Pit SP4 - F3

Date: 04/11/2025

Readings Recorded By: AC

Pit Dimensions: 1.5m(l) x 0.35m(w) x 0.8m(d)
Start Water Level: 0.49m

Actual Storage Volume: 0.42 m³
Effective Depth: 0.31 m

Time (mins)	Depth BGL (m)
0	0.490
1	0.490
2	0.495
3	0.495
4	0.495
5	0.500
10	0.515
15	0.525
20	0.535
30	0.550
40	0.570
50	0.585
60	0.600
80	0.620
100	0.640
120	0.655
160	0.680
220	0.710
270	0.720

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

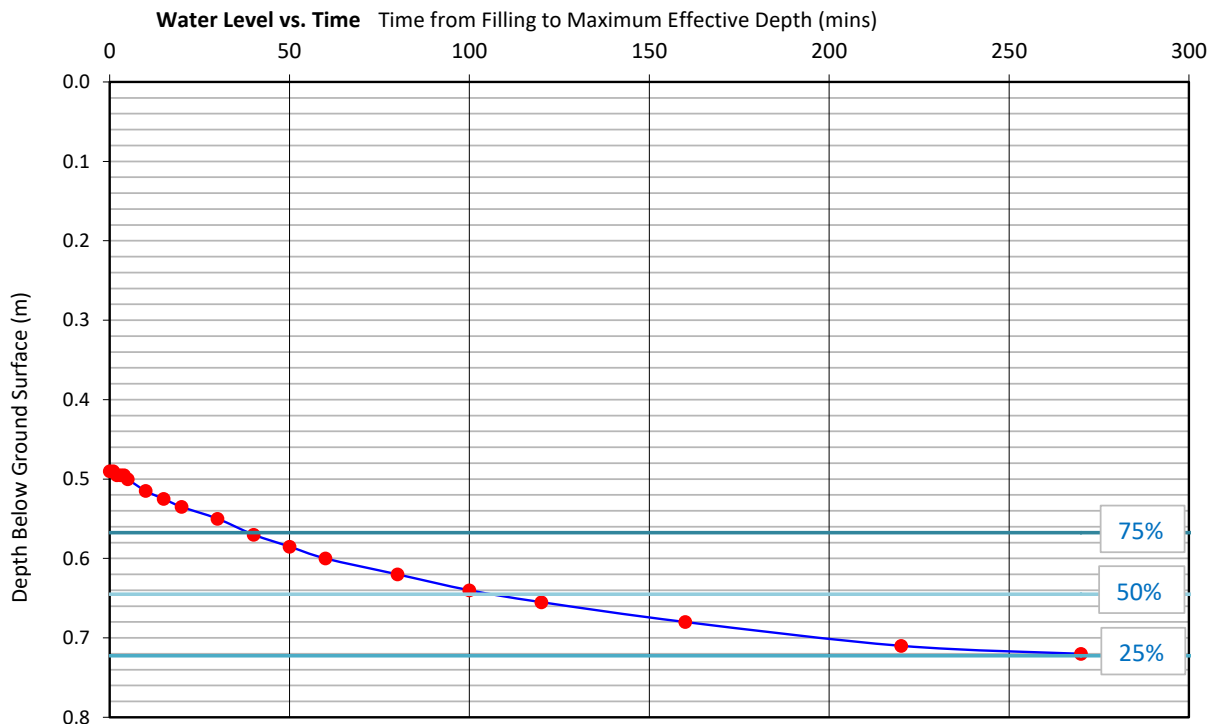
Effective Storage Volume, V : 1.5m x 0.35m x 0.31m
 V : 0.16275 m³

V_{p75-25} : 0.081 m³

Effective Internal Surface Area, a_{p50} : 0.465m² + 0.1085m² + 0.525m²
 a_{p50} : 1.099 m²

Time of water level fall, t_{p75-25} : 270 - 40 mins
 t_{p75-25} : 230 mins
 t_{p75-25} : 13800 secs

Soil infiltration rate, f : 0.081375/(1.0985 x 13800)
 f : 5.37E-06 ms⁻¹



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AVIRON ASSOCIATES LIMITED

Badgemore House
Badgemore Park
Gravel Hill
Henley on Thames
Oxfordshire
RG9 4NR

TELEPHONE: 07787 771 686 / 01491 413 722

FAX : 01491 413 722

ENQUIRIES: james@aviron.co.uk

WEB: www.aviron.co.uk