



GEOTECHNICAL
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Phase II Geo-Environmental Assessment

Jelson Homes

Sapcote Road, Burbage

October 2024

PJS24-0117-DOC-0001

Executive Summary

Environmental Risk Assessment Summary	
Human Health Risk Assessment	Based on the contamination testing that has been carried out on soils from the site, the risk assessment has indicated that the site poses a negligible risk to Human Health.
Controlled Waters Risk Assessment	The risk assessment has indicated that the site poses a very low risk to controlled waters.
Ground Gas	Based on the general lack of credible ground gas sources, gas protection measures are not considered to be necessary in the construction of new properties at the site.
Vapour Risk	No evidence of vapours has been identified on site; no further assessment or mitigation is therefore necessary.
Ecological Risk	Potential impacts from contamination sources are considered to be negligible. However, the impact to ecological receptors from proposed construction activities should always be considered.

Geotechnical Summary	
Foundations	<u>Field 1</u> Strip / trenchfill foundations are not considered suitable for this area of the site due to the high variability in ground conditions identified. At this stage, alternative foundations are recommended for the proposed residential development in Field 1.
	<u>Fields 2 to 4</u> Strip / trenchfill foundations are generally considered appropriate for the majority of the proposed development in Fields 2 to 4 bearing within firm to stiff Bosworth Clay Member cohesive deposits placed at a minimum depth of 0.90m. An allowance for localised deepening of foundations coinciding with WS06, WS08, WS09, WS11 and WS12 should be included due to encountering soft clay at potential founding depth. Alternatively, vibro ground improvement may be more economical in areas of the site coinciding with the low strength variable Bosworth Clay Member deposits encountered.
	Piled foundations are recommended for any residential plots where foundations depths would exceed 2.5m due to tree influence or in areas where ground levels are raised significantly.
Floor Slabs	At this stage it is anticipated that suspended floor slabs may be suitable for the site, subject to developer preference and further assessment of proposed ground levels / tree influence.
Drainage	The cohesive geology encountered across the majority of the site, alongside the shallow groundwater observed would suggest that soakaway drainage is not considered feasible; an alternative drainage solution is therefore likely to be required. However, the local authority may request that in-situ infiltration testing is carried out prior to construction to confirm this preliminary assessment.
Concrete	Design Sulphate Class DS-1 and Aggressive Chemical Environment for Concrete Class AC-1s should be used for design purposes
Roads & Hardstanding	CBR testing has not been carried out as part of this assessment. In-situ CBR testing is recommended at formation level once development proposals have been established to confirm in-situ CBR values of the near-surface deposits.

Recommendations

In-situ CBR testing is recommended at formation level once development proposals have been established.

Detailed Foundation Design.

Undertake further investigation on a tighter grid across the site, particularly in areas where variable and low strength deposits have been encountered to confirm foundation requirements.

Further site investigation (deeper boreholes) may be required to determine pile depths should this foundation option be utilised.

Document Issue Record

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PJS24-0117-DR-0002 – Site Location Plan
PJS24-0117-DR-0003-B – Exploratory Hole Location Plan
Proposed Illustrative Masterplan (7162-L-04)

1 Introduction

1.1 Instruction

PJS Geotechnical Engineers Limited (PJSG) was instructed by Jelson Homes (the client) to undertake a Geo-environmental Assessment at land off Sapcote Road, Burbage, Leicestershire, LE10 3AA (the site).

A site location plan (PJS24-0117-DR-0002) is included within the drawings section of this report.

1.2 Proposed Development

The site currently comprises two separate development parcels located north and south of Aston Flamville Road which runs centrally separating both parcels of land. Development proposals for both parcels are understood to comprise a residential development with gardens and areas of soft landscaping used as Public Open Space (POS).

A Proposed Illustrative Masterplan (7162-L-04) is included within the drawing section of this report.

1.3 Objectives

The objectives of this assessment are detailed below:

Table 1-1 Objectives

Objectives
Confirm the suitability of the site for the proposed residential development, taking into account the ground conditions and contaminative status of the site.
Undertake a Generic Quantitative Risk Assessment (GQRA) to confirm the findings of the Initial Conceptual Site Model (ICSM).
Update the ICSM based on the findings of the site investigation.
Identify suitable foundation depths and sub-structure design solutions.
Identify any potential geo-environmental constraints that may cause abnormal development costs.
Make recommendations for any further investigation / remediation deemed necessary.

1.4 Previous Reports

The table below provides details of the relevant information sources which have been made available to PJSG for review in preparation of this report. This report should be read in conjunction with the below referenced report and contains content to inform the design of the site investigation reported within.

Table 1-2 Information Sources

Report Reference	Produced By	Report Name	Date	Comments
01C000315	Avison-Young	Desk Study	May 2021	The report comprised a combined a Phase 1 Desk Study which identified a low Environmental Risk for future redevelopment for a residential end use. A Phase 2 investigation was recommended to confirm ground conditions and to facilitate foundation design.

Some of the information and data presented within the Phase 1 Desk Study report detailed above has been used within this report where necessary to provide a detailed summary of the site, expected ground conditions and potential constraints.

2 The Site

A brief overview of the site in its present condition, including the site's existing layout, general location, and near surrounding land use is presented below. The full details of the site are presented in the Phase 1 Desk Study Report referenced in Table 1-2.

Table 2-1 Summary of Site Information

Specifics	Details
Site Location	Sapcote Road, Burbage, Leicestershire, LE10 3AA.
Ordnance Survey National Grid Reference	445090E, 293300N.
Approximate Site Area	~16 Hectares (Ha)
Current Land Use	The site currently comprises two separate parcels of agricultural land comprising a total of four agricultural fields used for animal grazing. A road (Aston Flamville Road) separates both parcels of land running centrally. For the purpose of this report, and in accordance with the Phase 1 Desk Study, the fields have been designated as Fields 1 to 4 detailed as follows: • Field 1 - located north of Aston Flamville Road. • Fields 2, 3 & 4 - located south of Aston Flamville Road. - Field 2 is located adjacent south of Aston Flamville Road. - Field 3 is located south of Field 2 in the central-southern area of the site - Field 4 is located in the south-west corner of the site.
Surrounding Land Use	• South and east - Agricultural fields. • North - B4669 Sapcote Road with Aston Firs, Burbage Wood and agricultural land beyond • West - Residential homes and a sewage pumping station. • East - A motor vehicle garage and van rental company (Woodside Garage) and isolated residential development with agricultural land beyond.
Topography	• Field 1 is relatively flat with a very minor fall to the north and south noted along the eastern site boundary. • Fields 2, 3 and 4 are also relatively flat
Existing Buildings / Retaining Structures	None present.
Fuel Tanks / Fuel Storage	On-Site: None present. Off-site: The Phase 1 Desk Study indicates that Woodside Garage is located adjacent east of Field 1 and is registered to D Tallis Hire Limited and the Petroleum Officer confirmed that the vehicle-hire operations did originally continue with some fuel sales but these have now ceased. The fuel station has not been fully decommissioned and further works to fully decommission the site were required. The Petroleum Officer was not aware of any major recorded incidents that would have led to ground contamination.

Specifics	Details
Site Services.	Overhead electricity powerlines trend north east to south west and from north west to south east across Field 1, with a further powerline trending in a northerly direction to an off-site property at the corner of Sapcote Road and Smithy Lane. A Severn Trent Water Sewage Pumping Station is located off site centrally long the northern boundary of Field 2, which serves the local residential properties. A public foul sewer trending from Dorchester Road in a north easterly direction across Field 4. It then continues around the north west perimeter of Field 2 until it enters the pumping station. Manhole covers associated with the public foul sewer are located in both Fields 4 and 2. A pressurised foul sewer exits the Pumping Station and trends in a southerly direction across Fields 2 and 3. An abandoned pipe also runs parallel with the pressurised foul sewer. It is understood that there has been some surcharging of the foul sewers in the past leading to odour issues. A second, but smaller, Severn Trent Water Pumping Station is located to the north of Field 1 adjacent to Sapcote Road. This serves Woodside Garage, the Van Rental company to the east and residential properties along Sapcote Road. A pressurised public combined sewer runs within the north western site boundary of Field 1 before cutting across the western corner to join the larger pumping station. A further pressurised combined sewer is also laid within the carriageway of Aston Flamville Road which serves the residential properties to the south east of Field 1. This pressurised combined sewer also connects to the larger pumping station north of Field 2 and may encroach within the north of Field 2. Surface water from the site is currently captured by a series of field ditches located at the field boundaries, which then feed into the main land drain as described above.
Energy Features	Distribution transformers were noted in the northern and western corners of Field 1 associated with the overhead electricity cables. However, no electricity substations were noted on site.
Asbestos Containing Materials (ACMs)	No structures or materials with the potential for ACMs have been encountered on site.
Identified Potential Contamination Sources from Reconnaissance	• Potential for localised leaks and spills of fuels / oils / chemicals from vehicles using the site and adjacent roads. • Potential contamination from sewage pumping station adjacent north. • Possible localised contamination associated with the motor vehicle garage located adjacent east of Field 1.
Surface Water Features (Site & Vicinity)	Surface water from the site is currently captured by a series of field ditches located at the field boundaries.

3 Site Setting

The desk study report (referenced in Table 1-2) has been reviewed to provide a summary of the sites setting as detailed in the following sections.

Table 3-1 Site Setting Summary

Specifics	Details
Historical Summary	
Site	The site has remained undeveloped agricultural land since the earliest historical records dated 1886. A watercourse was however present in the south of the site by this period flowing in a south easterly direction. By 1904, a footpath crosses the southwest corner of the site but was no longer indicated on the 1999 mapping. The surface water feature in the south is denoted as a drain by 1999.
Surrounding Area	Historical maps presented in the Phase 1 Desk Study indicate the following: • 1886 to 1955 The wider area surrounding the site has predominantly comprised agricultural land or woodland with sporadic isolated residential properties noted. • By 1955, residential properties were located adjacent to the north of the site associated with expansion of the village of Burbage >500m to the south-west. Some localised residential development was also present adjacent east. • By 1968, a garage (Woodside Garage) was constructed adjacent north-east. Further residential development is noted to the west and north-west. Threeway's Farm is located within 50m north. • By 1977, residential development has been constructed adjacent west. • Between 1999 and 2006 – no significant change in land use was noted. • By 2020, a sewage pumping station is located adjacent north. Further development is noted adjacent north-east in the area of the garage.
Geological Summary	
Made Ground	Localised areas of Made Ground to include brick and concrete is anticipated at field entrances, where rubble has been imported.
Superficial Geology	Bosworth Clay Member comprising clay and silt.
Bedrock Geology	Mercia Mudstone Group comprising mudstone.
Faults	None identified.
Hydrogeology	
Aquifers	• Superficial Deposits – Bosworth Clay Member – Unproductive. • Superficial Deposits – Wolston Formation – Secondary A Aquifer. • Bedrock – Mercia Mudstone Group – Secondary A Aquifer.
Source Protection Zones (SPZ)	The site is not located within a Groundwater SPZ.

Specifics	Details
Potable Abstractions	No records within 250m.
Groundwater Flow	Based on the local topography, groundwater is likely to flow to the south-east.
Hydrology	
Surface Water Features	A land drain trends in south easterly direction along the southern site boundary, which feeds into the catchment of the Soar Brook. The Soar Brook is located approximately 1.4km to the south of the site. The land drain on site is not classified as a Main River by the Environment Agency, however, the downstream section of the Soar Brook and River Soar are designated as Main Rivers. There are short culverted sections across the on-site land drain to allow farm vehicles to cross. The upstream section of the land drain has also been culverted and incorporated into the Severn Trent Water public surface water sewer network.
Surface water flow	Surface water flows generally towards the south-east.
Ground Constraints / Geotechnical Hazards / Radon	
Potential for Natural Ground Subsidence	The site has a moderate risk of compressible ground which relates to the clay and silt superficial Bosworth Clay Member deposits.
Radon	No radon protective measures are required within new dwellings.
UXO	From a review of the Zetica Risk Maps, the site is located in an area where there is a low risk of unexploded ordnance (UXO).
Environmental Records	
Regulatory Records	Environmental records indicate that there may be potential risks to the site related to the sewage pumping station located north of the site. Woodland north of site is listed as a Site of Special Scientific Interest (SSSI).
Landfills / waste sites	There are no current / historical landfills within 250m of the site. No further permits and consents of significant concern to the site have been recorded.

4 Preliminary Contamination Risk Assessment

The legislative framework for Land Contamination Risk Management (LCRM) guidance was published by the EA on 8th October 2020 (updated July 23). In accordance with the guidance, a Preliminary Risk Assessment (PRA) was completed for the site as detailed in the Phase 1 Desk Study report referenced in Table 1-2. The PRA is the first tier of risk assessment that develops the initial conceptual site model (ICSM) to establish potential contaminant linkages and whether there are any potential unacceptable risks associated with the site.

The ICSM was developed based on the commonly adopted source-pathway-receptor (S-P-R) model as detailed within LCRM 2020. This was carried out in the context of the proposed development and potential contaminant linkages which may represent a risk to identified receptors.

4.1 Potential Sources of Contamination

Sources (S); These are potential or identified sources of contamination that may relate to a former land use or present site feature or process (e.g., fuel storage tanks).

The Phase 1 Desk Study report identified the following potential on-site and off-site sources (S) of contamination as detailed in table 4-1 below. The table below has also been updated to include any additional potential contamination sources identified on-site and in the vicinity based on recent reconnaissance.

Table 4-1 Potential & Identified Sources of Contamination

Location	Potential Sources (S)	Inorganic Contaminants	Organic Contaminants
On-Site	Agricultural land - Potential for localised spills of fuels / oils from farm machinery and contamination present in existing agricultural Topsoil.	Naturally occurring metals and asbestos.	Poly-Aromatic Hydrocarbons (PAH), Petroleum Hydrocarbons (TPH) and Volatile Organic Compounds (VOCs), Pesticides.
On-Site	Foul sewage runs (surcharging of manholes). potential for sewage leading to odours and localised contamination.	Heavy metals comprising cadmium, chromium, copper, lead, mercury, nickel, zinc, sulphate, sulphide, sulphur, pH, free cyanide.	Pathogens.
Off-Site	Adjacent road running between the site. Leaks and spills of fuels, oils, chemicals from vehicles.	-	PAHs, TPH and VOCs including solvents in boundary soils and underlying groundwater.
Off-Site	Adjacent former fuel station and current vehicle hire facility – Potential for fuel storage, paints, solvents and lubricants.	Dissolved metals in groundwater and asbestos.	PAHs, TPH and VOCs including solvents in groundwater.
Off-Site	Sewage pumping station - potential for sewage overflow leading to odours and localised elevated contamination.	Dissolved metals in groundwater and asbestos.	As above including pathogens, cyanide and ammonium.

Location	Potential Sources (S)	Inorganic Contaminants	Organic Contaminants
Off-Site	Farm located to the north.	Dissolved metals	PAHs, TPH and VOCs including solvents, and chemicals in groundwater.

The potential exists for dissolved metals and organic contaminants to be present within any soils on site boundaries and / or any groundwater below the site (albeit unlikely) associated with the current / historical industrial land uses near to the site. However, it is expected that any associated contaminants would be fairly localised to the source and would be considered unlikely to impact groundwater (if present) under the majority of the site.

4.2 Potential Sources of Ground Gas and Vapours

The following potential sources of ground gas / vapours were identified on site and in the surrounding area as detailed in the table below.

Table 4-2 Potential Sources of Ground Gas / Vapours

Location	Potential Sources (S)	Details	Source Generation Potential (CIRIA C665)
On-site & Off-site	Vapours: Spills / leaks of fuels / oils / chemicals from the various sources identified in Table 4-1.	The potential exists for localised VOCs to be present within any soils / groundwater below the site associated with leaks or spills from farm vehicles historically using the site, fuel storage at the adjacent garage, vehicles using nearby roads and a farm in the vicinity.	Generally low and localised.

No significant sources of ground gas have been identified on site.

4.3 ICSM & Potential Contaminant Linkages

For the purpose of this assessment, the ICSM has been reproduced based on the information contained within the Phase 1 Desk Study and has been amended / updated accordingly, where deemed necessary. The potential contaminant linkages considered applicable to the site are detailed in Table 4-3 overleaf.

The risk classification has been qualitatively derived in accordance with the legislative framework for LCRM and in accordance with CIRIA C552 (2001). The methodology is presented in Appendix A.

The PRA determined has determined that there is a low risk for potential localised contamination at the site resulting from past / present on-site & off-site land uses which may have potentially impacted the site. Plausible contaminant linkages have been identified and therefore further assessment is required.

A site investigation was recommended to establish current levels of contamination and to confirm the risk.

Table 4-3 ICSM and Potential Contaminant Linkages

Contaminant Linkage			Risk Assessment		
Source (S)	Pathway (P)	Receptor (R)	Probability	Consequence	Current Risk
Human Health					
Potential contaminants as detailed in Table 4-1.	Ingestion of contaminated particulates. Dermal contact. Inhalation of contaminated dust / particles.	Site end users.	Unlikely	Medium	Low
		Construction workers / maintenance workers.	Unlikely	Medium	Low
Potential contaminants as detailed in Table 4-1.	Inhalation of contaminated dust / particles.	Members of the public / properties adjacent to the site during construction	Low	Mild	Low
Potential sources of vapours as detailed in Table 4-2.	Inhalation of vapours in indoor and outdoor air.	Site end users.	Unlikely	Medium	Low
		Construction workers / maintenance workers in trenches.	Unlikely	Medium	Low

Contaminant Linkage			Risk Assessment		
Source (S)	Pathway (P)	Receptor (R)	Probability	Consequence	Current Risk
Controlled Waters					
Potential contaminants as detailed in Table 4-1.	Leaching of contamination into groundwater.	Secondary A Aquifers.	Unlikely	Medium	Low
	Surface water run-off and / or migration of contaminated groundwater.	Field ditches and land drain on site feeding into the Soar Brook catchment	Unlikely	Medium	Low
Property and Infrastructure					
Potential contaminants as detailed in Table 4-1 & natural subsoils.	Leaching of contaminants & direct contact	Buried concrete & structures	Unlikely	Mild	Low
Potential contaminants as detailed in Table 4-1.	Leaching of contaminants & direct contact	Buried services / water pipes.	Unlikely	Mild	Low
Ecology					
Potential contaminants as detailed in Table 4-1.	Uptake of available phytotoxic contaminants via direct contact with contaminants.	Ecological receptors Flora & Fauna on and off-site.	Unlikely	Mild	Very Low

5 Site Investigation

5.1 Summary of Site Works

An intrusive ground investigation was undertaken on 28th and 29th August 2024 by PJSG to establish the ground conditions beneath the site.

The location of the exploratory holes was positioned taking into consideration the proposed development and the various potential contamination sources identified on site. However, this involved working within the constraints of the site, which included sub-surface and over-head utilities which also run through the site.

The ground investigation works were designed in general accordance with BS10175:2011+A2:2017 'Investigation of Potentially Contaminated Sites' and BS 8576: 2013 'Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds'. The exploratory holes were logged in accordance with BS 5930:2015 + A1:2020 'Code of Practice for Site Investigations'.

Further details of the ground investigation work undertaken, including the rationale for the location of the exploratory holes are detailed below.

An Exploratory Hole Location Plan (PJS24-0117-DR-0003-) is provided within the Drawings Section of this report.

Table 5-1 Summary of Site Investigation Works

Method / Activity	No.	Hole Reference	Depth Range (m)	In-situ Testing	Rationale
Window Sample Borehole (WS)	13	WS01 – WS13	4.00 – 6.00	*SPT's	To determine general ground conditions across the site.
Machine Excavated Trial Pits (TP)	23	TP01 – TP23	2.60 – 3.40	Hand Shear Vanes (HSVs)	WS01 was targeted in the vicinity of the former garage / current vehicle rental facility located adjacent east of Field 1.

**Standard Penetration Tests (SPTs) undertaken in accordance with the guidance set out within BS EN 22476-3 2005 +A1:2011;*

The exploratory logs are presented within Appendix B and the results of the SPT testing and HSVs are shown on the individual exploratory hole logs. The SPT hammer calibration certificate for the WS drilling rig is included in Appendix C. Photographs of the boreholes and trial pits are presented in Appendix D.

5.2 Laboratory Testing and Sampling

Representative soil samples of the various strata types present were collected during the site investigation works by a suitably qualified engineer. Samples were recovered using a stainless-steel trowel and disposable gloves.

Samples were stored in cooler boxes prior to being transported to an MCERTS accredited laboratory. A selection of these samples was tested for the presence of contaminants and for classification purposes. Chemical testing was undertaken by i2 Analytical Ltd and geotechnical testing was undertaken by The Testing Laboratory Ltd.

A summary of the laboratory testing carried out is presented in Table 5-2 below.

Table 5-2 Summary of Laboratory Testing

Quantity	Analysis
Chemical Testing - Soils	
14	PJS Contamination Suite comprising: Moisture content, pH, Organic matter, Speciated USEPA 16 PAHs, Metals: As, Cd, Cr III & VI, Cu, Pb, Hg, Ni, Se, Zn, Water soluble sulphate (SO ₄).
15	Asbestos Identification (ID).
8	BRE Suite B
1	GCMS Pesticide Screen
Chemical Testing – Soil Leachate	
4	Leachable metals.
Geotechnical Testing	
13	Moisture Content
13	Liquid and Plastic Limits
1	Particle Size Distribution

Geotechnical laboratory testing was generally carried out in accordance with BS1377-2: 2022, Methods of Test for Soils for Civil Engineering Purposes, or, where superseded, by the relevant part of BS EN ISO 17892:2014+ Geotechnical investigation and testing – Laboratory Testing of Soil.

The chemical laboratory testing results are included within Appendix E and the geotechnical testing results are presented within Appendix F.

6 Ground Conditions

6.1 Summary of Ground Conditions

The geology encountered during the intrusive investigation was generally consistent with that anticipated from the desk study and generally comprised cohesive deposits of the Bosworth Clay Member deposits.

A summary of the general strata encountered across the site is provided in the table below, with more detailed descriptions given in the following sections and on the exploratory hole logs presented within Appendix B.

For the purpose of the below summary, a summary of ground conditions has been provided for the separate parcel of land (Field 1) located north of Aston Flamville Road and for the parcel of land (Fields 2 to 4) located south of Aston Flamville Road.

6.1.1 Summary of Ground Conditions – Field 1.

Table 6-1 Summary of Ground Condition – Field 1.

Stratum Description	Typical Description	Depth to base (Range, m bgl)	Strata Thickness (Range, m)	Comments
Topsoil	Grass overlying firm brown sandy gravelly CLAY with roots and rootlets.	0.30 - 0.50	0.30 - 0.50	Encountered in all of the exploratory hole locations in this area of the site.
Bosworth Clay Member	Very soft to soft becoming firm and stiff orangish brown very sandy CLAY with occasional sub-layers of sands and silts at depth.	2.60 - 6.00	2.30 - 5.60	Sub-layers of granular deposits were encountered in 3 No. exploratory hole locations at TP01 (1.7m to 2.7m), TP07 (0.35m to 0.8m) & WS04 (1.0m to 1.4m). Sub-layers of silt deposits were encountered in 8 No. exploratory hole locations at TP02, TP05, TP07, WS01, WS02, WS05, WS13 at various depths between 1.5m and 5m deep.

6.1.2 Summary of Ground Conditions – Fields 2 to 4.

Table 6-2 Summary of Ground Condition – Fields 2 to 4.

Stratum Description	Typical Description	Depth to base (Range, m bgl)	Strata Thickness	Comments
			(Range, m)	
Topsoil	Grass overlying firm brown sandy gravelly CLAY with roots and rootlets.	0.20 - 0.40	0.20 - 0.40	Encountered in all of the exploratory hole locations in this area of the site.
Bosworth Clay Member	Firm to stiff and very stiff brown and grey and reddish brown very gravelly CLAY.	2.60 - 5.00	2.20 - 4.80	Encountered in all of the exploratory hole locations in this area of the site. A layer of granular sand deposits was encountered in Field 2 at exploratory hole location TP23 between 0.35m to 1.4m. Soft clay and silt were also encountered in this location between 1.4m and 3.4m deep. Soft clay / silt layers were also identified at the northern end of Field 2 at WS06 between 0.6m and 5m. Sub-layers of silt deposits were also encountered in 4 No. exploratory hole locations at TP09, TP10, TP17, and TP23 various at depths between 2.4m and 3.4m deep also within Field 2.

6.2 Summary of Field Observations

A summary of field observations has been provided Field 1 located north of Aston Flamville Road and for Fields 2 to 4 located south of Aston Flamville Road.

The following field observations were made during the intrusive investigation works.

Table 6-3 Field Observations

Site Area	Location	Observation	Depth Range (m)
	Groundwater		
Field 1	TP01	Slow groundwater seepage within side of excavation at 2.40m with a layer of silty sand. Fast groundwater ingress noted at 1.80m after excavation left open for 10 minutes.	1.80

Site Area	Location	Observation	Depth Range (m)
	TP07	No groundwater noted during excavation. Excavation left open for 5 minutes with slow seepage noted in base in a layer of silt.	3.40
	TP08	Groundwater encountered in a layer of clay. Groundwater ingress noted after leaving excavation exposed for 5 – 10 minutes.	3.00
	WS02	Groundwater encountered in a layer of silt	1.60
	WS04	Groundwater encountered in a layer of silt/clay	3.00
	WS05	Groundwater encountered in a layer of clay	1.50
	WS13	Groundwater encountered in a layer of silt/clay	2.00
Fields 2 to 4	TP23 – Field 2	Fast groundwater ingress encountered in a layer of clay.	2.10
	WS06 – Field 2	Groundwater encountered in a layer of silt/clay	2.80
	WS11 – Field 3	Groundwater encountered in a layer of clay	2.00
Instability / Trench Collapse			
Field 1	TP01	Major instability and collapse of side walls noted from 1.80m after excavation left open for 5 minutes.	1.80
	TP08	No instability noted during excavation. Major instability and collapse noted from 2.20m after excavation left open for 10 minutes.	2.20

Aside from the above, no evidence of contamination was identified in any areas of the site.

7 Geotechnical Assessment

7.1 Introduction

Development proposals for the site are understood to comprise the construction of residential buildings with areas of hardstand and soft landscaping.

7.2 Material Properties

To assist with foundation design, geotechnical classification testing has been undertaken on a selection of the soil samples recovered from site. The geotechnical properties of the soil types encountered across the site are summarised in the sections below.

Geotechnical analysis of the samples was carried out by TTL Ltd. The laboratory results are contained within the Appendix F.

7.3 Plasticity Index & Volume Change Potential

Plasticity Index (I_p) tests were undertaken on the various materials types recovered from below the site in accordance with BS1377-2: 2022 Clause 3.2, to determine the modified PI and Volume Change Potential (VCP) of the material in accordance with NHBC Standards (Chapter 4.2).

A summary of the modified I_p tests and the related VCP of the materials types is presented in the table below.

Table 7-1 Plasticity Testing and VCP

Strata	No. of Tests	Depth Range (m)	Modified Plasticity Index Range (%)	VCP Range	Comments & Recommendations
Bosworth Clay Member (Cohesive)	13	1.00 – 2.40	7 - 33	Non-shrinkable to Medium	Medium VCP should be assumed for foundation design purposes for both the northern and southern parcels.

In accordance with NHBC standards and medium VCP clays, foundation depths should be a minimum of 0.90m below existing or reduced levels (where foundations are located outside the zone of influence of trees).

7.4 Particle Size Distribution (PSD) Analysis

A total of 1 No. PSD analyses was undertaken on a sample of Bosworth Clay Member material recovered from the southern parcel to aid in the classification of soils. Classification was undertaken in accordance with BS1377-2: 2022 Part 2: Clause 9.2 and the results of the tests are summarised in the table below:

Table 7-2 Summary of PSD Analysis

Sample Location	Depth (m)	Field Description	Laboratory Description	Very Coarse Soils (>63mm)	Gravel (63mm – 2mm)	Sand (2mm – 0.063mm)	Fines (<0.063mm)
TP14	1.90	Orangish-brown silty sandy CLAY.	Orangish-brown silty sandy CLAY.	0	0	46	54

The laboratory results of the PSD tests generally indicate that the sample above comprises cohesive deposits comprising Bosworth Clay Member deposits which coincides with the field log.

7.5 In-situ Standard Penetration Testing

To assist with foundation design, Standard Penetration Tests (SPTs) have been undertaken at regular intervals during drilling of the window sample boreholes in accordance with the methodology outlined in British Standard BS EN 22476-3 2005.

7.5.1 In-situ SPT 'N' Value Summary

A summary of the uncorrected SPT 'N' Values recorded in the boreholes advanced across both the northern and southern parcels of the site are presented in the table below. The recorded SPT 'N' values are detailed on the exploratory hole logs presented within Appendix B.

Table 7-3 Summary of SPT 'N' Values

Borehole Ref:	SPT 'N' Value with Depth (m bgl).						Comments
	1m	2m	3m	4m	5m	6m	
WS01	4	6	12	20	19	-	Very soft silty sandy clay encountered between 1.0m and 3.0m in Field 1
WS02	15	12	11	17	22	-	-
WS03	10	12	20	22	17	-	-
WS04	9	8	11	12	22	-	Loose sands encountered between 1.0m and 1.4m in Field 1.
WS05	5	7	8	14	20	-	Soft clay encountered between 0.5m and 2.3m in Field 1.

Borehole Ref:	SPT 'N' Value with Depth (m bgl).						Comments
	1m	2m	3m	4m	5m	6m	
WS06	6	4	22	12	20	-	Soft clay encountered between 0.6m and 3.0m in Field 2.
WS07	13	9	17	26	-	-	-
WS08	4	15	11	17	29	-	Soft clay encountered between 1.0m and 2.1m in Field 2.
WS09	4	8	13	23	21	-	Soft pocket of clay encountered at 1.0m in Field 4.
WS10	8	9	15	20	27	-	-
WS11	6	10	16	21	25	-	Soft clay encountered between 0.7m and 1.2m in Field 3.
WS12	4	8	12	15	22	-	Soft clay encountered between 1.0m and 2.1m in Field 4.
WS13	7	12	18	21	20	20	Soft clay encountered between 1.0m and 2.0m in Field 1.

Loose granular deposits encountered.

Soft Cohesive Deposits Encountered.

The SPT test results summarised above are discussed further in Section 7.0.

7.5.2 Plot of Corrected SPT N60 Values V Depth

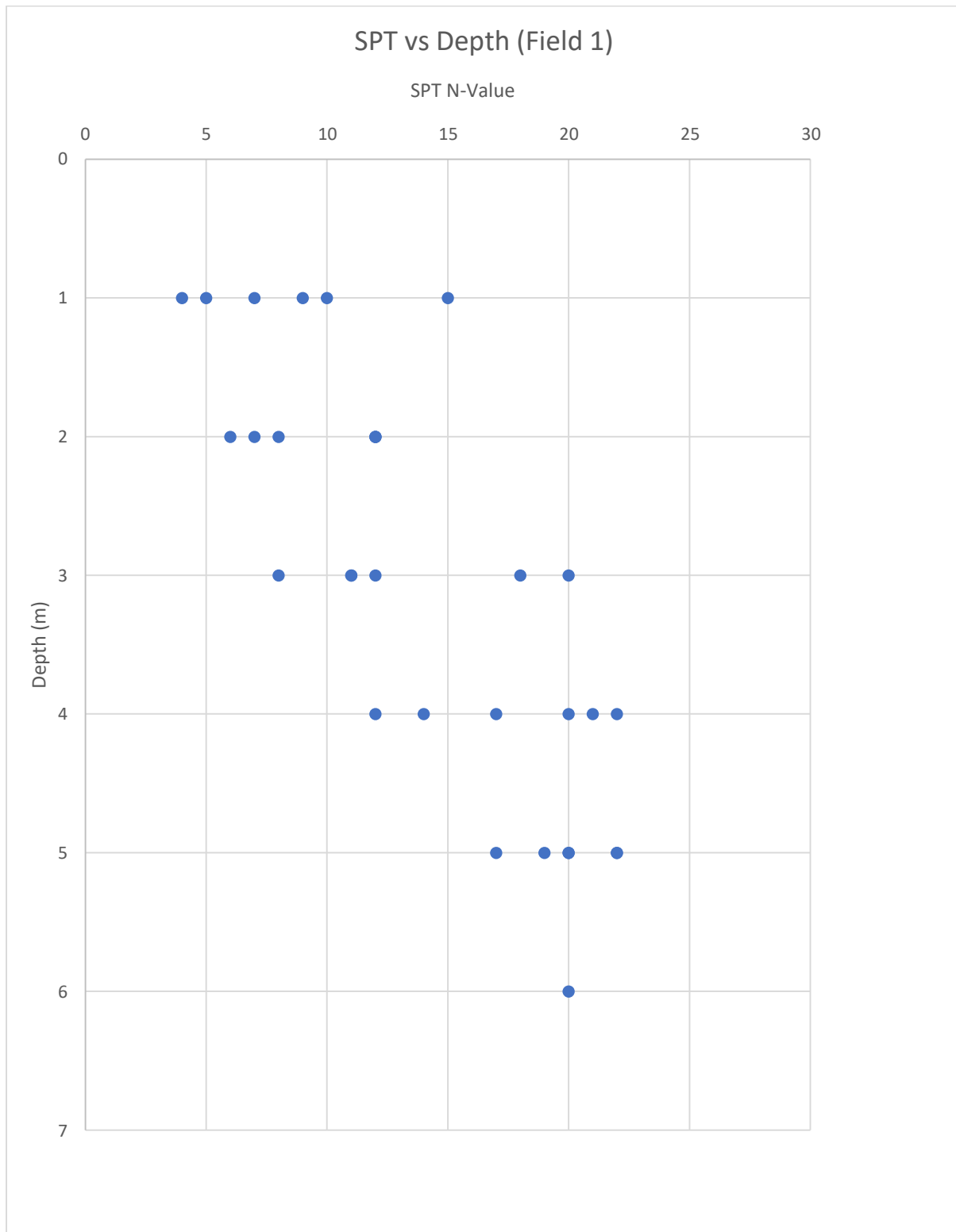
The recorded SPT 'N' values have been used to provide a plot of the corrected SPT N60 value vs depth in relation to the various types of material encountered below each development parcel is presented as Figures 1 and 2. A copy of the SPT calibration certificates for the window sample drilling rig is presented within Appendix C.

7.5.2.1 Field 1 – Cohesive Bosworth Clay Member

A plot of the corrected SPT N60 value vs depth in relation to the Bosworth Clay Member deposits encountered below Field 1 is presented as Figures 1 below.

The results of the in-situ testing generally show an increase in strength with depth of the Bosworth Clay Member deposits with some soft deposits encountered between 1m and 3m depth.

Figure 1 - Corrected SPT N60 Value with Depth – Field 1

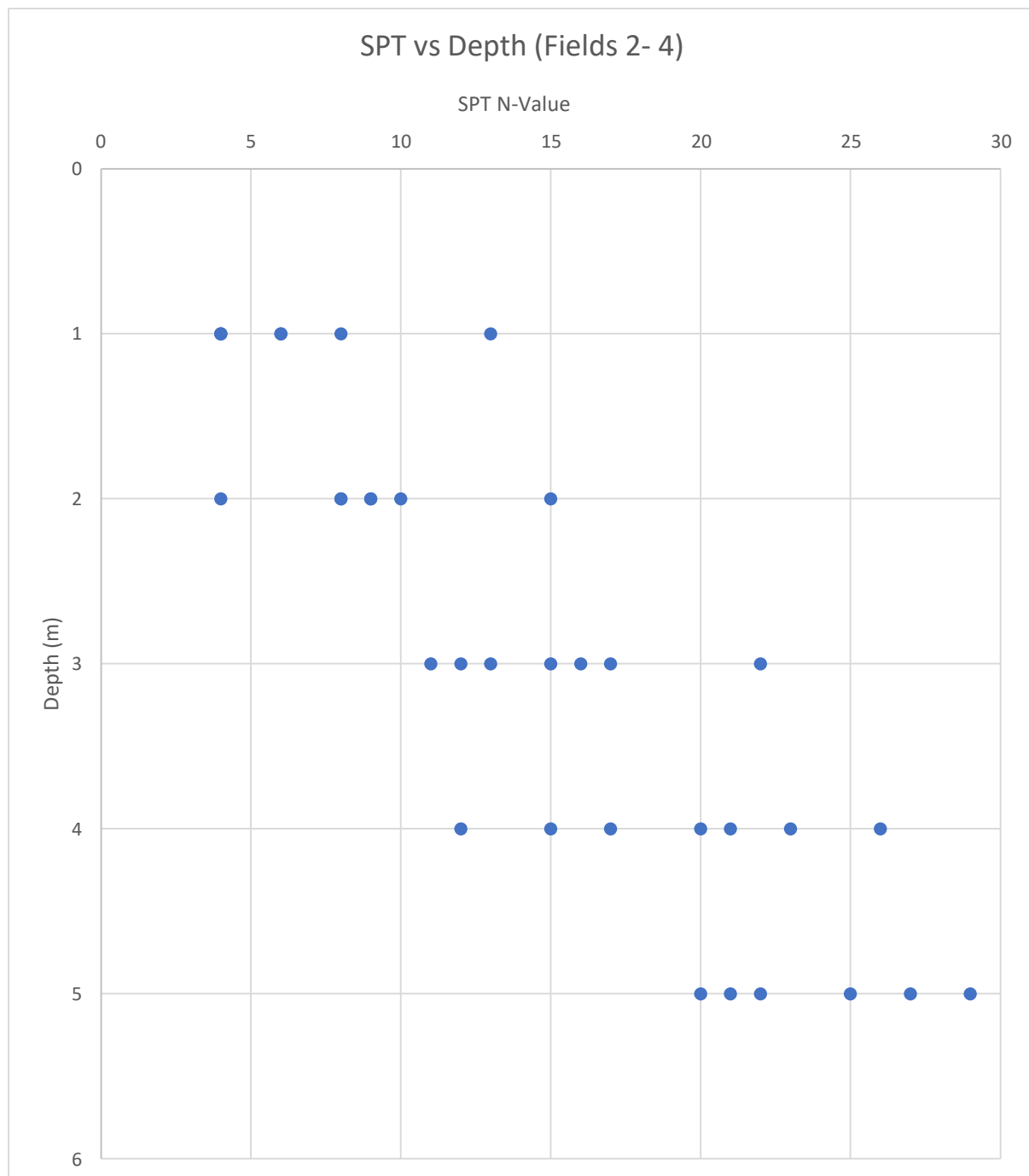


7.5.2.2 Fields 2 to 4 – Cohesive Bosworth Clay Member

A plot of the corrected SPT N60 value vs depth in relation to the Bosworth Clay Member deposits encountered below Fields 2 to 4 is presented as Figures 2 below.

The results of the in-situ testing generally show an increase in strength with depth of the Bosworth Clay Member deposits with some soft deposits encountered between 1m and 2m depth most notably at the northern end of Field 1.

Figure 2 - Corrected SPT N60 Value with Depth – Field 2 to 4.



7.6 Undrained Shear Strength

The undrained shear strength of the materials encountered below both development parcels has been estimated from the SPT 'N' Values by empirical correlation as described in CIRIA Report C143 (after Stroud and Butler, 1975).

$$c_u \approx N f_1 \text{ (kN/m}^2\text{)} \quad [1]$$

Where c_u is the undrained shear strength, 'N' is the SPT 'N' value and f_1 is an empirical correlation factor based on the modified soil plasticity index (I'_p). The soil plasticity data obtained from soil samples recovered below the site during the investigation has been used for calculation purpose.

Based on the I_p testing carried out, the f_1 values in the table below have been assumed for the purpose of the calculation.

Table 7-4 Calculated F1 Values

Strata	Average I_p	f_1 Value
Bosworth Clay Member (Cohesive)	26	4.8

Note: 2 No. samples of non-shrinkable strata were removed from the data set to calculate the above values.

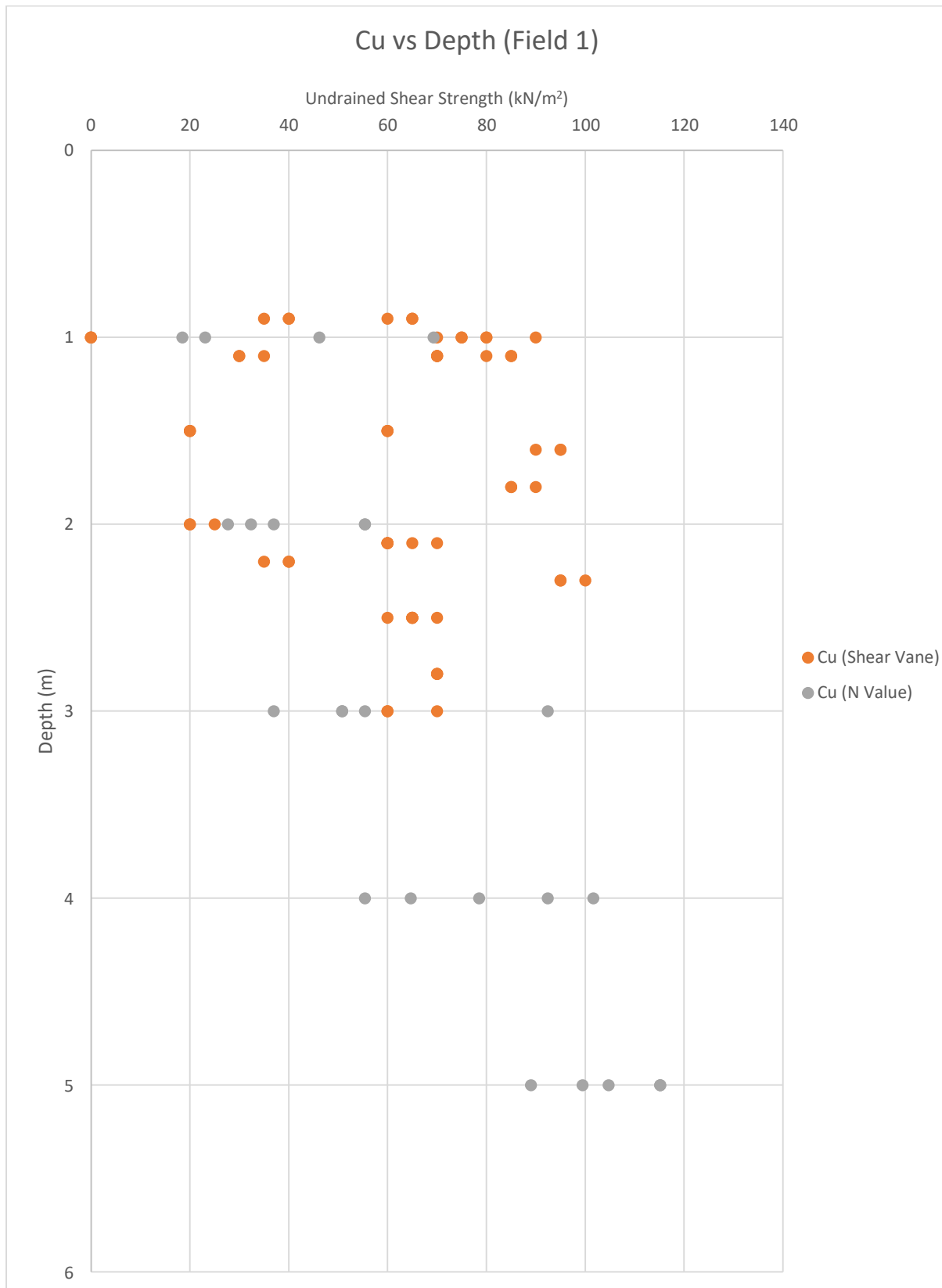
7.6.1 Shear Strength vs Depth

7.6.1.1 Field 1 – Cohesive Bosworth Clay Member

Figure 3 presents plots of the estimated undrained shear strength with depth beneath Field 1 (Northern Parcel) of the natural Bosworth Clay Member deposits based on the soil plasticity testing, F1 values, SPT N values and in-situ shear strength of the deposits recorded using an HSV.

The results show a clear trend of increasing shear strength with depth but with variable very soft and soft low strength deposits noted between 1m and 3m depth.

Figure 3 - Estimated Shear Strength with Depth – Field 1

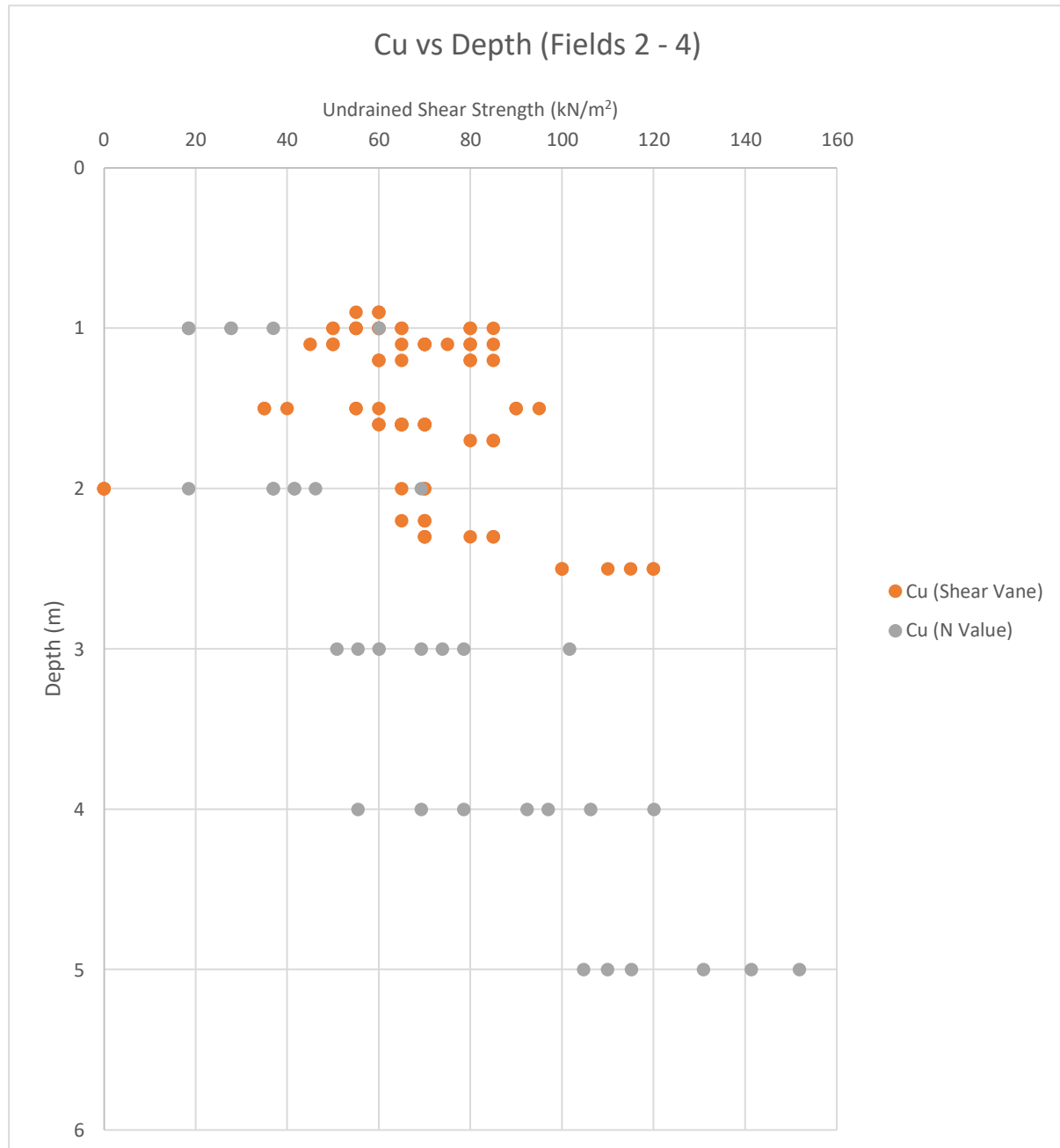


7.6.1.2 Fields 2 to 4 – Cohesive Bosworth Clay Member

Figure 4 presents plots of the estimated undrained shear strength with depth beneath Fields 2 to 4 of the natural deposits based on the soil plasticity testing, F1 values, SPT N values and in-situ shear strength of the deposits recorded using an HSV.

The results show a clear trend of increasing shear strength with depth but with some variable very soft and soft low strength deposits noted between 1m and 2m depth encountered in a few locations.

Figure 4 - Estimated Shear Strength with Depth – Fields 2 to 4



7.7 Summary of Geotechnical Parameters

A summary of the material properties / strength characteristics of each development parcel is presented in the table below based on the ground investigation and geotechnical testing carried out.

Table 7-5 Material Properties Summary

Development Parcel	Strata	Depth to base (range m bgl)	SPT 'N' Value Range	*Estimated Shear Strength (Range kPa)	Recommended Shear Strength (Design kPa)	**Undrained Strength Classification	VCP for Foundation Design	Recommended Allowable Bearing Pressure (kPa)
Field 1	Bosworth Clay Member	Proven to 6m	4 – 22	0 - 115	40	Extremely low to high strength	Medium	Highly variable – not recommended for traditional foundations.
Fields 2 to 4	Bosworth Clay Member	Proven to 5m.	4 - 34	0 - 152	50	Extremely low to high strength	Medium	100 at 1m for the majority of the site.

**Estimated shear strength obtained from SPT N values and in-situ Hand Shear Vane (HSV) tests undertaken in cohesive deposits.*

***BS EN ISO 14688-2:2018, Table 6*

7.8 Ground Constraints

Based on the ground conditions encountered on site and the in-situ testing carried out, the following ground constraints have been identified that could potentially impact on future development. An engineering solution has been given to mitigate any potential impact to the proposed development.

7.8.1 Field 1 – Summary of Ground Constraints

Table 7-6 Summary of Ground Constraints – Field 1.

Exploratory Hole Reference	Constraint	Engineering Solution/s
TP01, TP02, TP05, TP07, TP08, WS01, WS02, WS05 & WS13	Variable strata encountered in Field 1 comprising very soft and soft clays, silts and loose sand deposits coinciding with localised groundwater encountered up to depths >2.5m deep.	Alternative foundations are recommended for Field 1 due to the high variability in ground conditions encountered.

7.8.2 Fields 2 to 4 – Summary of Ground Constraints

Table 7-7 Summary of Ground Constraints – Fields 2 to 4.

Exploratory Hole Reference	Constraint	Engineering Solution/s
WS06 & TP23	Low SPT N Value at 1.00m and 2.00m in cohesive deposits comprising soft clays to 3.0m in WS06. Variable strata, low strength clays and groundwater encountered in TP23 to 3.4m.	Possible localised deepening or consider alternative foundations in this area of Field 2.
WS08.	Soft clay encountered to 2.1m	Localised deepening of foundations to competent strata at circa. 2.3m subject to confirmation of extent and depth in vicinity.
WS09	Soft pockets of clay encountered between 0.9m and 2.1m.	Localised deepening of foundations to competent strata at circa. 2.3m.
WS11	Soft clay encountered to 1.2m.	Localised deepening of foundations to firm clay at circa 1.4m.
WS12	Soft clay encountered to 2.1m	Localised deepening of foundations to competent strata at circa. 2.3m.

7.9 Foundation Assessment

The following section presents recommendations for foundations for the proposed residential development taking into consideration the ground conditions encountered and the material properties.

7.9.1 Strip / Trenchfill Foundations

7.9.2 Field 1

Strip / trenchfill foundations are not considered suitable for this area of the site due to the high variability in ground conditions identified. At this stage, alternative foundations are recommended for Field 1.

7.9.3 Fields 2 to 4.

Strip / trenchfill foundations are generally considered appropriate for the majority of the proposed development in Fields 2 to 4. An allowable design bearing pressure of 100kN/m² is recommended for trenchfill foundations (up to 1m wide), bearing uniformly in the firm to stiff Bosworth Clay Member cohesive deposits placed at a minimum depth of 0.90m, based on a medium VCP clays. This value includes a factor of safety of 3.0 against general shear failure and should result in total settlements not exceeding 25mm for foundations up to 1m wide, keeping differential settlements within acceptable limits.

Foundations depths should take into consideration the ground constraints identified in Section 7.8.2 and an allowance for localised deepening of foundations coinciding with WS08, WS11 and WS12 should be included alongside alternative foundations coinciding with WS06 and TP23 at the northern end of Field 2.

Care should be taken to avoid softening of the base of the foundation on excavation during construction. Where necessary, a 100mm blinding of concrete should be constructed to protect the foundation level during bad weather. The excavation should not be left open for any extended period.

Contrasting strata has been encountered at founding level across areas of the site. It is recommended that steel mesh reinforcement (B785 or similar) may be required in the base of foundations to span the different strata types and counter any potential differential settlement for a number of plots. Should steel be required, RC35 concrete should be used.

Foundation widths should be designed as part of detailed design by a structural Engineer, appropriate to the loads being imposed, however 0.6m wide foundations are likely to be appropriate for external walls and 0.75m wide for party walls and gable ends.

It is recommended that foundation trenches should be inspected by an Engineer prior to pouring concrete to confirm that foundations are placed uniformly within firm to stiff cohesive Bosworth Clay Member deposits.

Based on the variability of the ground encountered it is possible that there are more widespread soft spots across the site. It is therefore recommended that further investigation is undertaken on a closer grid to the determine extents of localised soft spots and inform the foundation design. Detailed foundation design should be undertaken prior to construction to confirm compliance with appropriate guidance and the most cost-effective foundation solution. A tree survey shall be required in order to facilitate detailed foundation design.

7.9.4 Alternative Foundations

The choice of any alternative foundation solution/s will be based on a number of factors including the developer's preference along with economic, social and environmental factors. At this stage the following options are considered to be most appropriate:

7.9.4.1 Piled Foundations

Piled foundations may be appropriate for Field 1 coinciding with the low strength variable Bosworth Clay Member deposits encountered across the majority of this parcel.

Piled foundations may also be appropriate for some areas of Field 2 to 4 coinciding with the low strength variable Bosworth Clay Member deposits encountered.

Piled foundations may also be required in areas of the site where foundations depths exceed 2.5m due to tree influence.

For piled plots reinforced ground beams will be required, which can be either pre-cast or cast in-situ depending on developer preference, and should be designed by a specialist contractor or Structural Engineer.

A specialist piling contractor should be consulted for site specific pile type and design.

Further site investigation (deeper boreholes) may be required to determine pile depths should this foundation option be desired.

An allowance should be made for a working platform to support a specialist piling rig should this foundation solution be adopted.

It is recommended that advice is obtained from specialist piling contractors to ascertain the most economical solution for the ground conditions encountered.

7.9.4.2 Ground Improvement

Ground improvement techniques (such as vibro stone column ground improvement) with reinforced concrete strip foundations may provide a suitable foundation solution for plots where either poor bearing strata (areas where low SPT N values have been encountered). Typically, allowable bearing capacities in the region of 125kN/m² can be achieved following ground improvement works. The ground logs should be forwarded to a specialist contractor to confirm that ground improvement techniques will be viable.

The potential use of a ground improvement solution shall require careful design, control and validation of the proposed filling operation. Such works will need to be controlled by an Earthworks Strategy & Validation Report.

Ground improvement foundations shall require design by a specialist Contractor, and in particular should involve early engagement regarding any proposed filling operations.

Ground improvement foundations may not be suitable where ground conditions are inconsistent beneath the footprint of the plot, as differential settlement may be a potential issue. Further plot specific investigation may be required to confirm uniform ground conditions beneath plot footprints.

An allowance should be made for a working platform to support a specialist rig should this foundation solution be adopted.

7.10 Building Near Trees

Where plots are underlain by cohesive strata and within the influence of existing trees / hedges, foundations will require deepening in accordance with the NHBC Chapter 4.2: Building near trees guidance.

All foundations should be extended 0.3m beneath the deepest roots observed when excavating foundation trenches. Where foundations are deepened due to tree influence, they should be stepped accordingly in line with NHBC standards.

Where strip / trenchfill foundations are adopted and plots are affected by tree influence and within cohesive deposits, heave precautions to include for the provision of a 250mm void beneath beam and block floor slabs will be required. Further heave precautions include a requirement for a 25mm void on the inside face of all external foundations should foundation depths exceed 1.5m due to tree influence.

Where plots to be piled are within the influence of existing or removed trees heave precautions shall be required comprising compressible material on the inside face (25mm) and underside of ground-beams (100mm). The piling contractor should consider the risk of heave on the actual pile shaft or column.

7.11 Floor Slab Construction

Suspended floor slabs and beam and block floor construction is likely to be the most viable floor slab construction types.

The final specification of ground floor slabs will be subject to detailed design, taking into account existing and proposed levels and the impact of trees/vegetation.

7.12 Excavations

Excavations using backhoe excavators are expected to be suitable in the natural strata across the site. Mechanical breaking equipment is unlikely be required given the type of material encountered below the site and observations made during the investigation works.

The requirement for shoring is considered unlikely for the majority of excavations in the short term based on no widespread instability being noted. However, an allowance for localised shoring may be required for Field 1 coinciding with variable ground identified, particularly in the vicinity of TP01 and TP08 where localised instability was noted.

Perched groundwater is also likely to be encountered within granular horizons during winter working / inclement weather which may cause instability in excavations and the need for localised dewatering. Excavations that also remain open for long periods, particularly during inclement weather are expected to be prone to instability.

Where personnel entry is required for inspection, excavations should be sufficiently enlarged and an assessment of safe temporary angles should be assessed; alternatively, temporary shoring should be provided.

No excavations should be entered until a full risk assessment is completed to assess the stability requirements and safety issues.

7.13 Obstructions

No significant obstructions are anticipated based observations undertaken during the ground investigation works.

7.14 Drainage

The cohesive geology encountered across the majority of the site, alongside the shallow groundwater observed would suggest that soakaway drainage is not considered feasible; an alternative drainage solution is therefore likely to be required. However, the local authority may request that in-situ infiltration testing is carried out prior to construction to confirm this preliminary assessment.

7.15 Concrete Classification

The laboratory results have been assessed against the BRE Special Digest 1 2005: 3rd Edition Aggressive Chemical Environment for Concrete (ACEC) Site classification. The site has been designated as Greenfield with mobile groundwater.

Water soluble sulphate concentrations in the natural soils varied from 17 mg/l to 470 mg/l with soil pH values ranging from 7.6 to 8.7. Total sulphur concentrations were <0.01% to 0.06%. Pyrite is also not indicated to be present in the soils.

Design Sulphate Class DS-1 and Aggressive Chemical Environment for Concrete Class AC-1s should be used for design purposes

The results are summarised in the table below and the full laboratory results are available within Appendix E.

7.16 Roads and Hardstanding

CBR testing has not been carried out as part of this assessment. In-situ CBR testing is recommended at formation level once development proposals have been established to confirm in-situ CBR values of the near-surface deposits.

8 Generic Quantitative Risk Assessment

A Generic Quantitative Risk Assessment (GQRA) has been undertaken in accordance with LCRM, 2020, to determine the significance of the measured concentrations of contaminants identified during the ground investigation.

This involves undertaking an assessment of each potential contaminant linkage identified within the ICSM by comparing the contaminant concentrations against appropriate Generic Assessment Criteria (GAC).

GACs are screening criteria which are derived using a standard set of generic assumptions. They are designed to be broadly applicable to a wide range of site conditions and exposure scenarios. They must be appropriate and suitable for your site. The GACs used in this assessment represent “trigger values” that, if exceeded, could indicate a possibility of significant harm. However, these criteria do not represent the threshold at which there is a significant possibility of significant harm; this determination will normally require further investigation and / or Detailed Quantitative Risk Assessment (DQRA) to evaluate the risk to human health and controlled waters.

8.1 Human Health Risk Assessment

8.1.1 Assessment Criteria

Contaminant data has been compared to the Land Quality Management (LQM) / Chartered Institute of Environmental Health (CIEH) values published within ‘The LQM / CIEH Suitable for Use Levels (S4ULs) for Human Health Risk Assessment’ 2015. In brief, the document provides assessment criteria which have been derived in accordance with UK legislation, national as well as EA policy and using a modified version of the CLEA software and available guidance.

The S4ULs are considered appropriate for use in this assessment for organic contaminants and the Soil Organic Matter (SOM) content has been taken into consideration where appropriate.

Criteria for a limited number of contaminants have been derived by the Department for Environment, Food and Rural Affairs (DEFRA; UK government) in their document entitled SP1010: Development of Category 4 Screening Levels (C4SL) for Assessment of Land Affected by Contamination, April 2014. The National Planning Policy Framework states that ‘after development, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990’. Therefore, by inference, the C4SLs are appropriate for use in the planning context. It is generally accepted that assessment criteria for metals are not sensitive to changes in soil organic content (SOM). The C4SLs have therefore been adopted as assessment criteria in this report for arsenic and lead.

For the purposes of the contamination risk assessment, the proposed development is classified as ‘Residential with plant uptake’.

8.1.2 Soil Chemical Data in Comparison to GACs

The soil samples recovered from the site have been compared to appropriate GACs for a residential end use with plant uptake. None of the samples of natural topsoil / subsoils tested on site contained chemical concentrations in excess of Cc’s with respect to a residential end use. As such, the topsoil and subsoils across the site are considered suitable for re-use where required.

8.1.3 Asbestos

Due to the nature of risk associated with asbestos, a GAC cannot be derived. Therefore, for the purposes of this GQRA, the presence of asbestos in soil has been identified from field observations and laboratory analysis and is considered to be an appropriate initial screening criterion.

A total of 14 No. samples recovered from the topsoil on site were screened for the presence of asbestos. Laboratory testing has indicated that no trace of asbestos was identified in any samples tested and will therefore not be considered further.

8.2 Controlled Waters Risk Assessment

The controlled waters risk assessment considers the potential impact of on-site contamination to the relevant controlled water receptors identified within the ICSM summarised as follows:

- Secondary A / Unproductive Aquifer – Superficial Geology
- Secondary A – Bedrock Geology
- Surface water feature on the southern boundary of the site – land drain / field ditches feeding into the Soar Brook catchment.
- No potable groundwater abstractions recorded within 250m.

8.2.1 Assessment Criteria

The approach adopted to assess risks to Controlled Waters is based principally on considering the concentrations of contaminants identified within the groundwater / soil leachate in comparison to relevant GAC.

Several Water Quality Standards (WQS) have been applied as Generic Assessment Criteria (GAC), these include Water Framework Directive standards and thresholds (WFD). Freshwater Environmental Quality Standards (EQS), the UK Drinking Water Quality Standards (DWQS) and WHO Guidelines for Drinking Water Quality values which have been used as initial conservative GAC to assess whether further assessment or discussion in terms of the risks to controlled waters is required.

Contaminant concentrations that exceed the applied GAC are then considered in the context of the site's environmental setting as to whether further qualitative or quantitative assessment is required.

In the absence of a sensitive potable groundwater supply, it was considered appropriate to adopt EQS for freshwater when assessing the risk to groundwater and surface water. Where EQS are not available, WHO and UK DWS have been adopted as the relevant screening criteria.

8.2.2 Soil Leachability Analysis

To assess the potential risk to Controlled Waters from the recorded concentrations in soils, the use of leachability is generally used to determine contaminant mobility within the ground with the results of these tests compared to the determinants respective of the environmental quality standards (EQS).

Following a direct comparison of leachate laboratory results to the respective EQS, the following exceedances were identified in samples of natural strata recovered from the site (taking into consideration the maximum allowable concentration).

Table 8-1 Summary of Laboratory Leachate Exceedances

Contaminant	No. of Exceedances of GAC.	EQS Annual Average (µg/l)	Concentration of exceedances (µg/l)		No. of tests exceeding MAC	Location, Depth (m) & Strata.
			(Min)	(Max)		
Chromium III (dissolved)	1	4.7	8.9	8.9	0	TP13 - 0.20m TS
Copper (dissolved)	4	1 (bioavailable)	5.8	76	N/A	TP01 - 0.20 TS TP09 - 0.20 TS TP13 - 0.20 TS TP11 - 0.50 BC
Lead (dissolved)	3	1.2 (bioavailable)	1.8	4.3	0	TP01 - 0.20 TS TP09 - 0.20 TS TP13 - 0.20 TS
Nickel (dissolved)	2	4 (bioavailable)	7.5	8.5	0	TP09 - 0.20 TS TP13 - 0.20 TS
Zinc (dissolved)	2	10.9 (bioavailable)	27	31	N/A	TP09 - 0.20 TS TP13 - 0.20 TS

As noted above, slightly elevated levels of leachable chromium III, nickel and zinc were recorded in excess of the EQS value in samples of natural topsoil and sub-soil soils located on site. However, none of the concentrations exceeded the Maximum Allowable Concentration (MAC) when in comparison and will therefore not be considered further.

8.2.3 Groundwater Analysis

The site is considered to be located in an area of low sensitivity in regard to the risk to groundwater due to the absence of a sensitive potable groundwater supply.

The ground investigation has identified predominantly cohesive deposits across the majority of the site considered to be practically impervious to infiltration. A general lack of groundwater was also noted in the deposits at shallow depth during the investigation. Aside from this, no evidence of contamination has been identified in the soils. Based on this, no specific groundwater analysis has been included as part of this assessment.

8.2.4 Evaluation of Risk to Controlled Waters

Slightly elevated leachable copper and zinc concentrations have been recorded in both the natural topsoil and subsoil on site considered to be attributable to naturally occurring background concentrations present in the material. We, therefore, consider that marginally elevated leachable zinc and copper arising from natural soils is unlikely to pose an unacceptable risk to Controlled Waters receptors in the context of the CSM.

Nevertheless, as a measure of good practice, to prevent any risk from run-off of leachate from excavated stockpiles of materials during construction, any materials excavated and stockpiled on site should be positioned to take into consideration the potential for surface water / leachate run-off to impact surface water receptors. Control measures should comprise keeping the sides of stockpiles at a low gradient to minimise surface water run-off and appropriate measures to prevent the ingress of suspended solids into surface waters.

8.3 Risk to Property and Infrastructure

8.3.1 Building Materials / Buried Concretes

Risks to building materials associated with aggressive ground conditions is addressed in Section 7.15 and should be designed accordingly.

8.3.2 Potable Water Supply Pipes

The investigation requirements for the selection of potable water pipe material are set out in UKWIR Report 10/WM/03/21 "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites (UKWIR, 2010)".

This report has specific investigation requirements and as such detailed investigation of proposed utility routes was not within the scope of this investigation. However, based on current information conventional plastic water supply pipes are likely to be suitable for the majority of the site.

It is recommended that the contamination test results are made available to the relevant water company to allow design of any required potable water supply pipe work to be undertaken and to confirm requirements for any further assessment.

8.4 Risk to Ecological Receptors

Soil results were compared to phytotoxic guideline values as outlined in Table 1 within BS3882:2007. No elevated contaminants were identified in the natural soils and therefore the probability of phytotoxic contaminants affecting vegetation is considered unlikely.

The risk to ecological receptors is anticipated to be negligible given the concentrations encountered in the soils. However, the impact to ecological receptors from proposed construction activities should always be considered.

9 Hazardous Ground Gas & Vapour Risk Assessment

9.1 Ground Gas Protection Recommendations

No tangible sources of ground gas were identified during the Phase 1 Desk Study or intrusive site investigation works; therefore, no ground gas monitoring was undertaken. On the basis of this, ground gas protection measures are therefore not required.

9.2 Radon Protection Measures

Radon protection measures are not required.

9.3 Vapour Risk and Membranes

No evidence of vapours has been noted during the intrusive investigation, as such the risk associated with vapours arising from the site is considered negligible.

10 Revised Environmental Risk Assessment

The potential contaminant linkages identified by the intrusive investigation are discussed below.

10.1 Identified Sources

Based on the GQRA that has been carried out within Section 8.0, the identified sources of contamination, ground gas and vapours that could impact on the identified receptors are summarised below.

Table 10-1 Identified Sources

Soil Contamination	Controlled Waters	Ground Gas / Vapours
No elevated concentrations of soil contamination encountered.	<u>Leachate:</u> Slightly elevated leachable copper and zinc identified in the Topsoil and natural strata.	No elevated concentrations of ground gas / vapours identified.

10.2 Revised CSM and Potential Contaminant Linkages

Based on the above, the identified pathways and receptors at potential risk are detailed in the revised CSM presented in Table 10-2 below designed in general accordance with BS EN ISO 21365:2020.

Appropriate remedial / mitigation measures to break the potential contaminant linkages are discussed where required.

Table 10-2 Revised CSM

Contaminant Linkage			Plausible Linkage of Concern?	Comments / Proposed Mitigation
Source (S)	Pathway (P)	Receptor (R)		
Controlled Waters				
Slightly elevated levels of leachable copper and zinc within natural topsoil and subsoil. .	Surface water run-off.	Field ditches and land drain on site feeding into the Soar Brook catchment	Yes (but limited very low risk)	To prevent any risk from run-off of leachate from excavated stockpiles of topsoil / natural sub-soils, during construction as a measure of good practice, any materials excavated and stockpiled on site should be positioned to take into consideration the potential for surface water / leachate run-off to impact surface water receptors. Stockpiles should be positioned away from water bodies, drainage systems, and other sensitive receptors to minimize the risk of contamination.

11 Conclusions & Recommendations

This Geo-Environmental Assessment is based upon the findings of an intrusive site investigation undertaken in August 2024.

It is understood that the site is proposed to be developed for a residential land use.

11.1 Conclusions

The Geo-environmental assessment has produced the following key conclusions which should be implemented as part of the future redevelopment of the site to ensure suitability for the proposed end-use and to meet the requirements of planning.

Table 11-1 Environmental Risk Assessment Summary

Environmental Risk Assessment Summary	
Human Health Risk Assessment	Based on the contamination testing that has been carried out on soils from the site, the risk assessment has indicated that the site poses a negligible risk to Human Health.
Controlled Waters Risk Assessment	The risk assessment has indicated that the site poses a very low risk to controlled waters.
Ground Gas	Based on the general lack of credible ground gas sources, gas protection measures are not considered to be necessary in the construction of new properties at the site.
Vapour Risk	No evidence of vapours has been identified on site; no further assessment or mitigation is therefore necessary.
Ecological Risk	Potential impacts from contamination sources are considered to be negligible. However, the impact to ecological receptors from proposed construction activities should always be considered.

Table 11-2 Geotechnical Assessment Summary

Geotechnical Assessment Summary	
Foundations	<u>Field 1</u> Strip / trenchfill foundations are not considered suitable for this area of the site due to the high variability in ground conditions identified. At this stage, alternative foundations are recommended for the proposed residential development in Field 1.
	<u>Fields 2 to 4</u> Strip / trenchfill foundations are generally considered appropriate for the majority of the proposed development in Fields 2 to 4 bearing within firm to stiff Bosworth Clay Member cohesive deposits placed at a minimum depth of 0.90m. An allowance for localised deepening of foundations coinciding with WS06, WS08, WS09, WS11 and WS12 should be included due to encountering soft clay at potential founding depth. Alternatively, vibro ground improvement may be more economical

Geotechnical Assessment Summary

	in areas of the site coinciding with the low strength variable Bosworth Clay Member deposits encountered. Piled foundations are recommended for any residential plots where foundations depths would exceed 2.5m due to tree influence or in areas where ground levels are raised significantly.
Floor Slabs	At this stage it is anticipated that suspended floor slabs may be suitable for the site, subject to developer preference and further assessment of proposed ground levels / tree influence.
Drainage	The cohesive geology encountered across the majority of the site, alongside the shallow groundwater observed would suggest that soakaway drainage is not considered feasible; an alternative drainage solution is therefore likely to be required. However, the local authority may request that in-situ infiltration testing is carried out prior to construction to confirm this preliminary assessment.
Concrete	Design Sulphate Class DS-1 and Aggressive Chemical Environment for Concrete Class AC-1s should be used for design purposes
Roads & Hardstanding	CBR testing has not been carried out as part of this assessment. In-situ CBR testing is recommended at formation level once development proposals have been established to confirm in-situ CBR values of the near-surface deposits.

11.2 Recommendations

The following recommendations should be implemented/undertook to ensure suitability of the site for the proposed end-use and to meet the requirements of planning.

Table 11-3 Recommendations

Recommendations
In-situ CBR testing is recommended at formation level once development proposals have been established.
Detailed Foundation Design.
Undertake further investigation on a tighter grid across the site, particularly in areas where variable and low strength deposits have been encountered to confirm foundation requirements.
Further site investigation (deeper boreholes) may be required to determine pile depths should this foundation option be utilised.

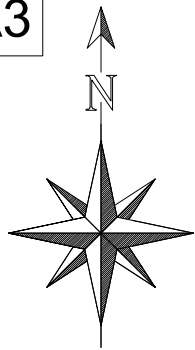
12 References

The following documents are referenced in the report;

1. Desk Study Report, (Avison Young) dated May 2021 – Ref: 01C000315
2. Land Contamination Risk Management (LCRM) 2020 (Updated 20/07/23)
<https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>
3. CIRIA C552, Contaminated land risk assessment - A guide to good practice, dated 2001.
4. British Standards Institution (BSI) BS10175:2011+A2:2017 'Investigation of Potentially Contaminated Sites'
5. BS 5930 2015+A1:2020 'Code of Practice for Site Investigations'
6. BS EN ISO 22476-3:2005+A1:2011; Geotechnical investigation and testing. Field testing. Standard penetration test.
7. BS1377-2: 2022, Methods of Test for Soils for Civil Engineering Purposes.
8. BS EN ISO 17892:2014+ Geotechnical investigation and testing – Laboratory Testing of Soil.
9. BS EN ISO 14688-2 Geotechnical investigation and testing "Identification and classification of soil. Principles for a classification" Published 16/03/2018
10. BS 8582:2013: Code of practice for surface water management for development sites.
11. CIRIA-R143-the-Standard-Penetration-Test-SPT-Methods-and-Use-1995.
12. BRE Special Digest 1 'Concrete in Aggressive Ground 2005'
13. BS3882:2015 Specification for Topsoil.
14. CL:AIRE SP1010 Development of Category 4 Screening Levels for Land Affected by Contamination (Rev 2) dated 24th September 2014.
15. LQM/CIEH Suitable 4 Use Levels published 2015.
16. UKWIR Report 10/WM/03/21 "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites (UKWIR, 2010)".
17. BS8576:2013 – Guidance on investigations for ground gas – permanent gases and Volatile Organic Compounds (VOCs).
18. BS8485:2015+A1:2019 – Code of practise for the design of protective measures for methane and carbon dioxide ground gases for new buildings.
19. Construction Industry Research and Information Association (CIRIA). 2008. Assessing the risk posed by hazardous gases to buildings. C665.
20. BS EN ISO 21365:2020 – Soil Quality. Conceptual Site Models for Potentially Contaminated Sites.

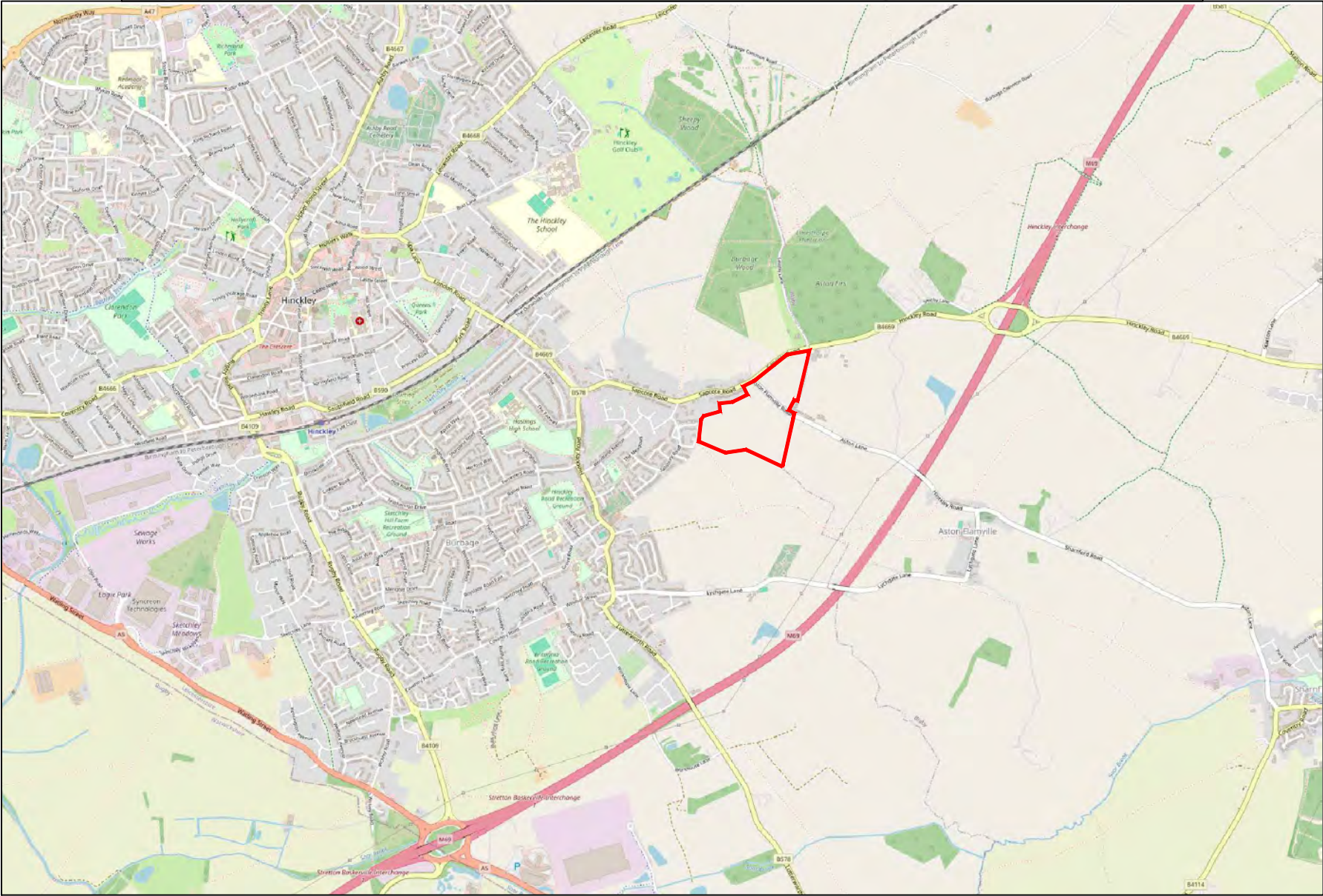
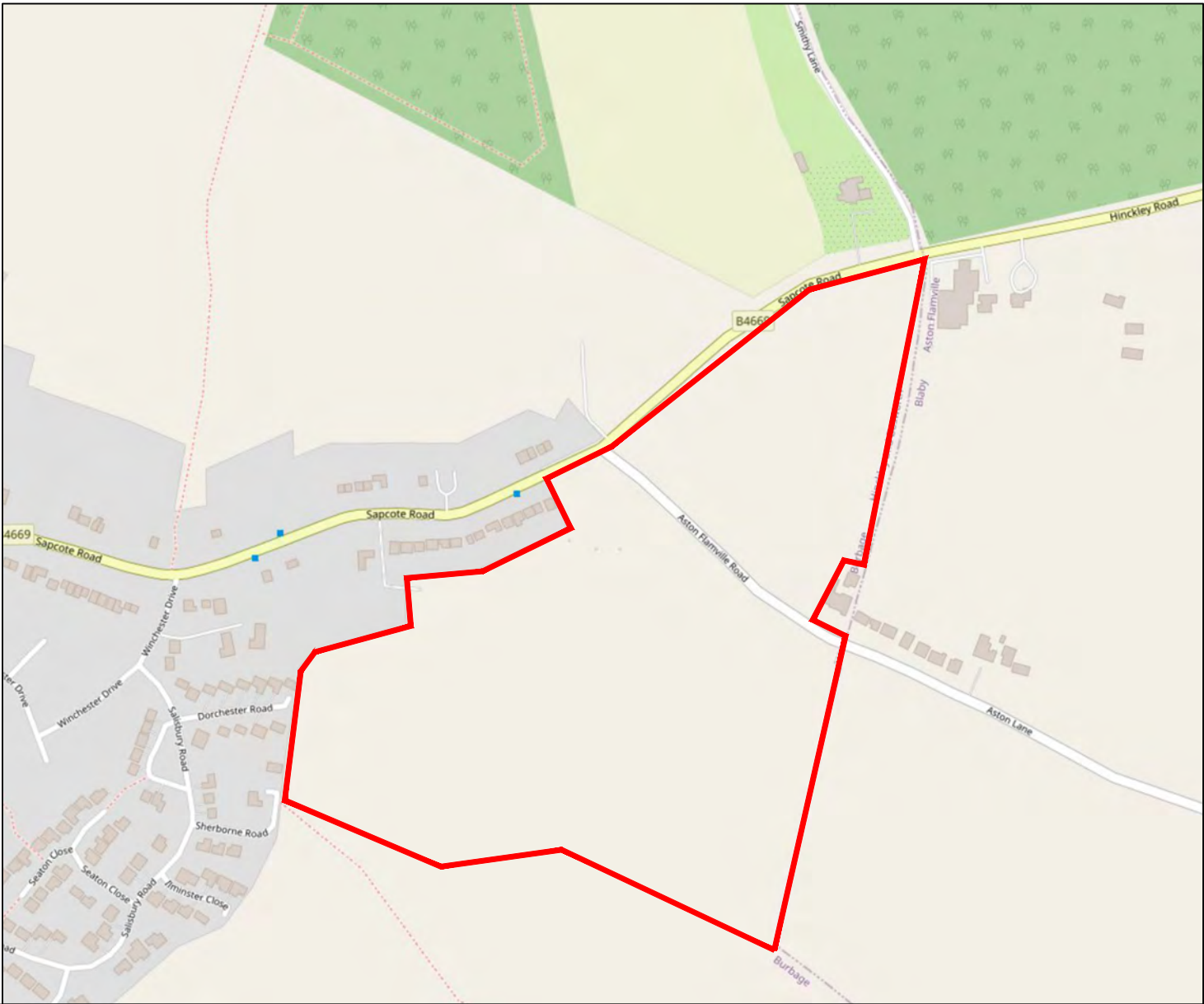
Drawings

PJS24-0117-DR-0002 – Site Location Plan
PJS24-0117-DR-0003-B – Exploratory Hole Location Plan
Proposed Illustrative Masterplan (7162-L-04)

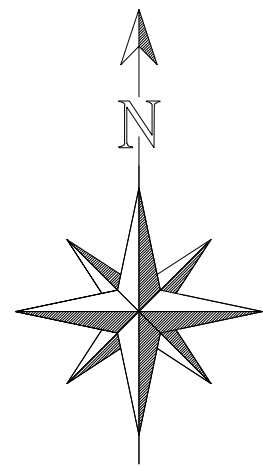


General Notes

- 1. Do not scale this drawing. If in doubt, ask.
- 2. This drawing is to be read in conjunction with all other relevant Engineers, Architects and specialist design drawings and details.
- 3. All dimensions are in metres unless noted otherwise. All levels are in metres unless noted otherwise.
- 4. Any discrepancies noted on site are to be reported to the Engineer immediately.



 GEOTECHNICAL ENGINEERS Delivering Innovative Solutions PJS Geotechnical Engineers Limited, Geneva II, Lakeview, Sherwood Business Park, Nottingham, NG15 0ED. Registered Number: 11882468 Tel: 0115 704 3950 Email: Enquiries@pjs-geo.co.uk	Client		Jelson Homes		Drawing Title				Site Location Plan								
	Project		Sapcote Road, Burbage			Drawn	Checked	Status		Scale							
					Initial	SS	AM	INFORMATION		NTS							
					Date	02.10.24	02.10.24										
					Project		Drawing Number		Revision								
					PJS24-0117		DR-0002				Rev	Date	Amendments			By	Chk



General Notes

1. Do not scale this drawing. If in doubt, ask.
2. This drawing is to be read in conjunction with all other relevant Engineers, Architects and specialist design drawings and details.
3. All dimensions are in metres unless noted otherwise. All levels are in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the Engineer immediately.

Key - Exploratory Investigation

-  WS00 Approximate location and reference of Window Sample Borehole undertaken by PJS in August 2024.
-  ITP00 Approximate location and reference of machine excavated Trial Pit undertaken by PJS in August 2024.

B	02.10.24	Service halting removed.	SS	AM
A	02.09.24	Amended to as-dug locations with field numbers added.	NB	AM
Rev	Date	Amendments	By	CHK



PJS Geotechnical Engineers Limited, Geneva II, Lakeview,
Sherwood Business Park, Nottingham, NG15 0ED.
Registered Number: 11862468 Tel: 0115 704 3950 Email: Enquiries@pjs-geo.co.uk

Client

Jelson Homes

Project

Sapcote Road, Burbage

Drawing Title

Exploratory Hole Location Plan

Drawn	Checked	Status	Scale
Initial	NB	AM	INFORMATION 1:1250
Date	19/08/24	19/08/24	Revision
Project Number	Drawing Number		
PJS24-0117	DR-0003		B



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	Site Boundary	16.00 Ha
Built Development		
	Residential Area Up to 351 Units @ 35 DPH	10.03 Ha
	Feature Squares	
	Primary / Secondary Roads	
	Shared Driveways	
	Vehicular Access Points: 1. Sapcote Road 2. Aston Flamville Road	
	Pedestrian Access Point off Dorchester Road	
	Existing Residential Development	
	Existing Roads	
Green Infrastructure		
	Green Infrastructure	5.97 Ha
	Attenuation Ponds (Location subject to engineers recommendation)	
	Play Area (LEAP)	
	Structural Planting	
	Pedestrian Network	
	Existing Trees & Hedgerows	
	Existing Public Rights of Way	
	Potential Link to Public Right of Way	

J:\7100\7162\LANDS\Plans\7162-L-04 ILLUSTRATIVE MASTERPLAN REV B_NTS.indd

Appendix A: Contamination Risk Assessment Methodology

By considering the sources, pathways and receptors (contaminant linkages), an assessment of the human health/ environmental risks is made regarding the significance and degree of the risk. This assessment is based on consideration of whether the source of contamination can reach a receptor and hence whether it is of major or minor significance.

The risks associated with construction materials are considered outside of this procedure. The risk from ground gas has not been assessed in this report.

The risk assessment has been undertaken in general accordance with the guidance contained within BS10175:2011 + A2:2017 and CIRIA Document C552: Contaminated Land Risk assessment 'A Guide to Good Practice'.

The risk assessment has been carried out by assessing the severity of the potential consequence, considering both the potential severity of the hazard and the sensitivity of the target, based on the categories given in Table 1 below.

Table 1 – Potential Hazard Severity Definitions

Category	Definition
Severe	Acute risks to human health, catastrophic damage to buildings/property, major pollution of controlled waters;
Medium	Chronic risk to human health, pollution of sensitive controlled waters, significant effects on sensitive ecosystems or species, significant damage to buildings or structures;
Mild	Pollution of non-sensitive waters, minor damage to buildings or structures;
Minor	Requirement for protective equipment during site works to mitigate health effects, damage to non-sensitive ecosystems or species.

The likelihood of an event (probability) considers both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given in Table 2 below.

Table 2 – Potential of Risk Definition

Category	Definition
High Likelihood	Contaminant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor;
Likely	Contaminant linkage may be present, and it is probable that the risk will occur over the long term;
Low Likelihood	Contaminant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so;
Unlikely	Contaminant linkage may be present, but the circumstances under which harm would occur are considered improbable.

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the following matrix to give a level of risk for each potential hazard as listed in Table 3 below.

Table 3 – Level of Risk

Probability of Risk	Potential severity			
	Severe	Medium	Mild	Minor
High Likelihood	Very High	High	Moderate	Low/Moderate
Likely	High	Moderate	Low/Moderate	Low
Low Likelihood	Moderate	Low/Moderate	Low	Very Low
Unlikely	Low/Moderate	Low	Very Low	Very Low

The assessment is discussed in terms of plausible contaminant linkages.

A description of the risk classifications and likely action required are given in CIRIA 552. These risk classifications are listed in Table 4 below.

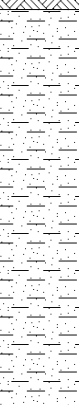
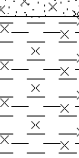
Table 4 – Risk Classification

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

Appendix B: Exploratory Hole Logs

Trial Pit Log

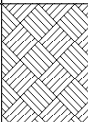
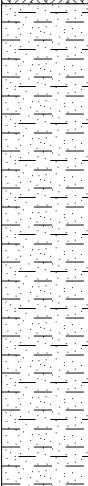
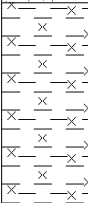
Project Name: Sapcote Road, Burbage	Client: Jelson Homes	29/08/2024		
Project No. : PJS24-0117	Co-ords: E445306 N293583		Equipment: JCB3CX (Meynells Ltd)	
TP01	Ground Level 100.75m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.30	100.45		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Very soft orangish-brown very sandy CLAY with occasional rounded to angular, fine to coarse gravel of quartzite and carboniferous material. Occasional pockets of very clayey sand. [BOSWORTH CLAY MEMBER]	
	1.00	B1						
	1.00	D1						
	1.00		HVP=0					
2	1.00		HVP=0					
	1.00		HVP=0					
	1.00		HVP=0					
				1.70	99.05		Brown and grey silty SAND. [BOSWORTH CLAY MEMBER]	
3	2.00	D2						
	2.80		HVP=70	2.70	98.05		Firm to stiff dark grey silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
	2.80		HVP=70					
	2.80		HVP=70					
	3.00	D3		3.20	97.55		Trial pit terminated at 3.200m bgl	
4								
5								

Dimensions		Groundwater Remarks	Slow groundwater seepage within side of excavation at 2.40m. Fast groundwater ingress noted at 1.80m after excavation left open for 10 minutes.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Major instability and collapse of side walls noted from 1.80m after left open for 5 minutes.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		29/08/2024	
Project No. : PJS24-0117	Co-ords: E445276 N293543		Equipment: JCB3CX (Meynells Ltd)	
TP02	Ground Level	Logged By	Scale	Page Number
	101.34m AoD		NB	
				Sheet 1 of 1

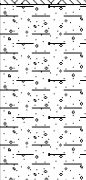
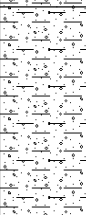
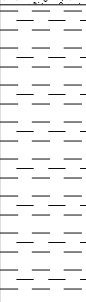
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	
	Depth (m bgl)	Type	Results						
1	0.50	ES1		0.40	100.94		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]		
						Soft orangish-brown very sandy CLAY with occasional angular, fine to medium gravel of carboniferous material. [BOSWORTH CLAY MEMBER]			
			0.90			HVP=35			
			0.90			HVP=40			
2	1.50			2.00	99.34		1.50 to 2.00m - Becoming firm.		
			2.10			HVP=60			
			2.10			HVP=60			
3	2.10			2.70	98.64		Firm dark grey sandy SILT. [BOSWORTH CLAY MEMBER]		
4				3.10	98.24		Trial pit terminated at 3.100m bgl		
5									

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		29/08/2024	
Project No. : PJS24-0117	Co-ords: E445218 N293536		Equipment: JCB3CX (Meynells Ltd)	
TP03	Ground Level 101.27m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

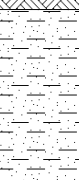
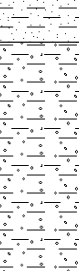
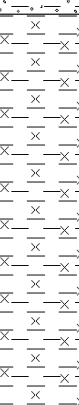
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	
	Depth (m bgl)	Type	Results						
1	1.00 1.00 1.00 1.00	D1	HVP=70 HVP=75 HVP=75	0.30	100.97		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]		
							Firm brown sandy gravelly CLAY. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [BOSWORTH CLAY MEMBER]		
									Firm brown sandy gravelly CLAY with lenses of orangish-brown sand and silt. Gravel is angular, fine to medium chalk and siltstone. [BOSWORTH CLAY MEMBER]
									
2	1.80 1.80 1.80 2.30 2.30 2.30	D2	HVP=85 HVP=85 HVP=90 HVP=100 HVP=95 HVP=95	1.60	99.67				
3				2.60	98.67		Trial pit terminated at 2.600m bgl		
4									
5									

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		29/08/2024	
Project No. : PJS24-0117	Co-ords: E445253 N293478		Equipment: JCB3CX (Meynells Ltd)	
TP04	Ground Level 102.06m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1				0.30	101.76		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm orangish-brown mottled grey sandy CLAY. [BOSWORTH CLAY MEMBER]	
	1.10 1.10 1.10		HVP=70 HVP=70 HVP=70	1.00	101.06		<u>0.90 to 1.00m - Land drain encountered.</u> Firm to stiff brown mottled grey gravelly CLAY. Gravel is angular, fine to medium chalk and siltstone. Becoming slightly gravelly with depth. [BOSWORTH CLAY MEMBER]	
2				1.80	100.26		Firm grey mottled orangish-brown silty CLAY with lenses of brown sand and silt. Becoming grey and brown with depth. [BOSWORTH CLAY MEMBER]	
3	2.50 2.50 2.50		HVP=60 HVP=65 HVP=70	3.20	98.86		Trial pit terminated at 3.200m bgl	
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By	Approved By
Pit Length	Pit Width				
		Excavation Stability	Stable.	10/09/2024	10/09/2024
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		29/08/2024	
Project No. : PJS24-0117	Co-ords: E445175 N293480		Equipment: JCB3CX (Meynells Ltd)	
TP05	Ground Level 101.96m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

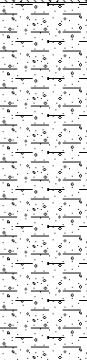
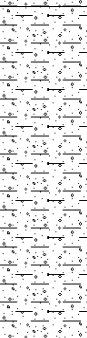
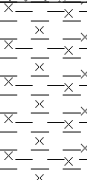
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.50	ES1		0.30	101.66		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm brown and grey sandy CLAY. [BOSWORTH CLAY MEMBER]	
				0.60	101.36		Soft orangish-brown mottled grey sandy gravelly CLAY. Gravel is rounded, fine to coarse quartzite. [BOSWORTH CLAY MEMBER]	
	1.10	D1	HVP=80 HVP=85 HVP=85	0.90	101.06		Firm to stiff brown and grey sandy gravelly CLAY. Gravel is angular to sub-rounded, fine to medium chalk and siltstone. [BOSWORTH CLAY MEMBER]	
							1.40 to 1.50m - Strata continues to 1.80m in north face only.	
2	1.50			1.50	100.46		Soft brown sandy SILT. [BOSWORTH CLAY MEMBER]	
							Firm brown sandy silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
				2.00	99.96		Firm brown sandy silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
	2.10	D2	HVP=60 HVP=60 HVP=70				Firm brown sandy silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
				2.70	99.26		Grey sandy SILT. [BOSWORTH CLAY MEMBER]	
3	3.00			3.00	98.96		Trial pit terminated at 3.000m bgl	
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		29/08/2024	
Project No. : PJS24-0117	Co-ords: E445230 N293433		Equipment: JCB3CX (Meynells Ltd)	
TP06	Ground Level	Logged By	Scale	Page Number
	101.90m AoD		NB	
				Sheet 1 of 1

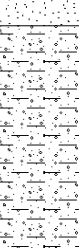
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.30	101.60		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Stiff brown and grey sandy gravelly CLAY. Gravel is angular to sub-rounded, fine to coarse quartzite and chert. [BOSWORTH CLAY MEMBER]	
	1.00 1.00 1.00 1.20	D1	HVP=80 HVP=80 HVP=90					
2	1.60 1.60 1.60		HVP=90 HVP=95 HVP=95	1.50	100.40		Stiff brown mottled grey sandy gravelly CLAY with lenses of brown sand and silt. Gravel is angular, fine to medium chalk and siltstone. Becoming grey mottled brown slightly gravelly with depth. [BOSWORTH CLAY MEMBER]	
3	3.00 3.00 3.00		HVP=60 HVP=60 HVP=70	2.60	99.30		Firm grey silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
4				3.20	98.70		Trial pit terminated at 3.200m bgl	
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes	29/08/2024		
Project No. : PJS24-0117	Co-ords: E445171 N293413		Equipment: JCB3CX (Meynells Ltd)	
TP07	Ground Level 101.78m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

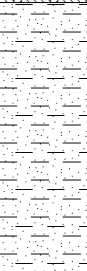
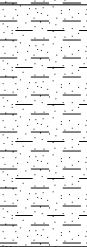
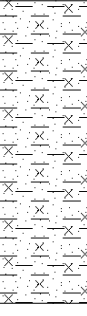
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.50	ES1		0.35	101.43		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Brown gravelly fine to coarse SAND. Gravel is rounded, fine to coarse quartzite. [BOSWORTH CLAY MEMBER]	
	1.10	D1	HVP=30	0.80	100.98		Soft orangish-brown mottled grey very sandy slightly gravelly CLAY. Gravel is rounded to sub-angular, fine to coarse quartzite and chert with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
	1.10		HVP=30					
	1.10		HVP=35					
	1.20							
2	2.00	D2	HVP=20 HVP=20 HVP=25	1.60	100.18		Soft brown very sandy SILT. [BOSWORTH CLAY MEMBER]	
3	3.30	D3					3.20 to 3.40m - Becoming grey.	
4				3.40	98.38		Trial pit terminated at 3.400m bgl	
5								

Dimensions		Groundwater Remarks	No groundwater noted during excavation. Excavation left open for 5 minutes with slow seepage noted in base.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		29/08/2024	
Project No. : PJS24-0117	Co-ords: E445126 N293447		Equipment: JCB3CX (Meynells Ltd)	
TP08	Ground Level 101.99m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

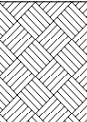
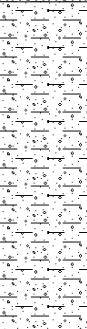
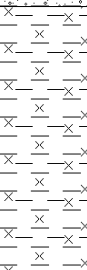
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.30	101.69		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm orangish-brown mottled grey sandy CLAY. [BOSWORTH CLAY MEMBER]	
	0.90 0.90 0.90 0.90	D1	HVP=60 HVP=65 HVP=65	1.20	100.79		Soft brown very sandy CLAY with pockets of brown very clayey SAND. [BOSWORTH CLAY MEMBER]	
	1.50 1.50 1.50 1.50	D2	HVP=20 HVP=20 HVP=20	2.00	99.99		Soft brown silty sandy CLAY. [BOSWORTH CLAY MEMBER]	
2	2.20 2.20 2.20 2.20	D3	HVP=35 HVP=40 HVP=40	3.00	98.99		Trial pit terminated at 3.000m bgl	
3								
4								
5								

Dimensions		Groundwater Remarks	No groundwater noted during excavation. Excavation left open for 10 minutes with slow seepage noted in base.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	No instability noted during excavation, major instability and collapse noted from 2.20m after left open for 10 minutes.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E445147 N293319		Equipment: JCB3CX (Meynells Ltd)	
TP09	Ground Level 101.11m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.40	100.71		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm with soft lenses orangish-brown mottled grey sandy gravelly CLAY. Gravel is sub-angular to rounded, fine to medium quartzite and chert. [BOSWORTH CLAY MEMBER]	
	1.00 1.00 1.00 1.00	D1	HVP=55 HVP=55 HVP=60	1.50	99.61		Firm grey and brown silty CLAY with occasional gravel of angular to sub-rounded, fine to medium carboniferous material and siltstone. [BOSWORTH CLAY MEMBER]	
	1.60 1.60 1.60 1.60	D2	HVP=65 HVP=70 HVP=70	2.40	98.71		Firm bluish-grey sandy SILT. [BOSWORTH CLAY MEMBER]	
2	2.50	D3		2.70	98.41		Trial pit terminated at 2.700m bgl	
3								
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By	Approved By
Pit Length	Pit Width			 10/09/2024	 10/09/2024
		Excavation Stability	Stable.	PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
General Remarks and Observations:					
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E445088 N293320		Equipment: JCB3CX (Meynells Ltd)	
TP10	Ground Level 101.25m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

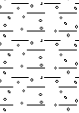
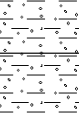
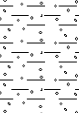
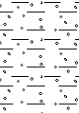
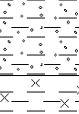
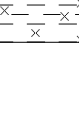
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.50	ES1		0.40	100.85		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
	1.00		HVP=50				Firm orangish-brown mottled grey sandy gravelly CLAY. Gravel is angular to sub-rounded, fine to coarse quartzite, chert, siltstone and chalk. [BOSWORTH CLAY MEMBER]	
	1.00		HVP=50					
	1.00		HVP=55				1.10 to 1.30m - Pocket of reddish-brown coarse SAND noted in south-east face of excavation.	
2	1.60	D1	HVP=65	1.50	99.75		Firm grey mottled orangish-brown silty CLAY. [BOSWORTH CLAY MEMBER]	
	1.60		HVP=65					
	1.60		HVP=70					
	2.00							
3				2.50	98.75		Firm grey SILT. [BOSWORTH CLAY MEMBER]	
4				3.10	98.15		Trial pit terminated at 3.100m bgl	
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By 10/09/2024	Approved By 10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E445003 N293298		Equipment: JCB3CX (Meynells Ltd)	
TP11	Ground Level 100.97m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

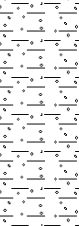
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.50	ES1		0.40	100.57		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm brown gravelly CLAY. Gravel is angular to sub-rounded, fine to coarse quartzite and chert. [BOSWORTH CLAY MEMBER]	
							0.80 to 0.90m - Land drain encountered.	
	1.20 1.20 1.20 1.40	D1	HVP=80 HVP=80 HVP=85	1.00	99.97		Firm brown and grey gravelly CLAY. Gravel is angular to sub-angular, fine to medium chalk and siltstone. Gravel content decreasing with depth. [BOSWORTH CLAY MEMBER] 1.10 to 1.30m - Pocket of rounded, fine to coarse gravel of quartzite noted in north face of excavation.	
								
2				2.30	98.67		Stiff bluish-grey mottled brown slightly silty friable CLAY. [BOSWORTH CLAY MEMBER]	
	2.50	D2		2.60	98.37		Trial pit terminated at 2.600m bgl	
3								
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes	28/08/2024		
Project No. : PJS24-0117	Co-ords: E444934 N293299		Equipment: JCB3CX (Meynells Ltd)	
TP12	Ground Level 100.96m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

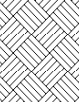
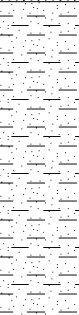
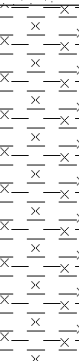
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.50	ES1		0.40	100.56		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
	1.00	D1	HVP=80 HVP=80 HVP=85	1.20	99.76		Stiff brown and grey very gravelly CLAY. Gravel is rounded to sub-angular, fine to coarse quartzite, chert and carboniferous material. [BOSWORTH CLAY MEMBER]	
	1.00						Firm reddish-brown mottled grey gravelly CLAY. Gravel is angular, fine to coarse siltstone and carboniferous material. [BOSWORTH CLAY MEMBER]	
	1.00							
2	1.70	D2						
	2.30	D3		2.60	98.36			
3							Trial pit terminated at 2.600m bgl	
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E444807 N293270		Equipment: JCB3CX (Meynells Ltd)	
TP13	Ground Level 102.71m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

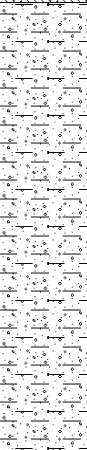
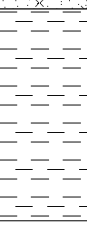
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.35	102.36		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm orangish-brown sandy CLAY with occasional sub-angular, fine to medium gravel of chert and carboniferous material. [BOSWORTH CLAY MEMBER]	
	1.00 1.00 1.00 1.00	D1	HVP=55 HVP=60 HVP=65	1.40	101.31		Firm to stiff grey mottled brown silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
	1.60 1.60 1.60 1.60	D2	HVP=65 HVP=70 HVP=70					
2	2.00 2.00 2.00		HVP=65 HVP=70 HVP=70	2.60	100.11		Trial pit terminated at 2.600m bgl	
	2.40	D3						
3								
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E444852 N293225		Equipment: JCB3CX (Meynells Ltd)	
TP14	Ground Level	Logged By	Scale	Page Number
	101.60m AoD		NB	1:25
				Sheet 1 of 1

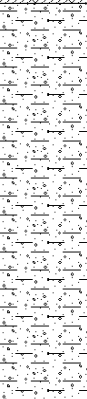
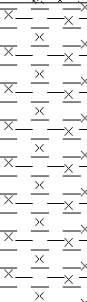
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.30	101.30		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
	1.10	D1					Firm orangish-brown sandy gravelly CLAY. Gravel is angular to rounded, fine to coarse quartzite, chert and carboniferous material. [BOSWORTH CLAY MEMBER]	
	1.20		HVP=60					
	1.20		HVP=60					
2	1.20		HVP=65					
	1.90	B1		1.80	99.80		Orangish-brown silty sandy CLAY. [BOSWORTH CLAY MEMBER]	
				2.10	99.50		Firm bluish-grey CLAY with lenses of orangish-brown silty sand. [BOSWORTH CLAY MEMBER]	
				2.80	98.80		Trial pit terminated at 2.800m bgl	
3								
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By	Approved By
Pit Length	Pit Width				
		Excavation Stability	Stable.	10/09/2024	10/09/2024
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E444993 N293230		Equipment: JCB3CX (Meynells Ltd)	
TP15	Ground Level 100.40m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.10	ES1		0.25	100.15		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm orangish-brown sandy gravelly CLAY. Gravel is angular to rounded, fine to coarse quartzite, chert and carboniferous material. [BOSWORTH CLAY MEMBER]	
	1.00 1.00 1.00		HVP=60 HVP=60 HVP=65					
2	1.70 1.70 1.70 1.70	D1	HVP=80 HVP=85 HVP=85	1.60	98.80		Stiff brown and grey slightly silty CLAY. Occasional gravel of angular, fine to medium siltstone and chalk. Becoming brown with depth. [BOSWORTH CLAY MEMBER]	
	2.50 2.50 2.50		HVP=100 HVP=100 HVP=110					
3				2.60	97.80		Trial pit terminated at 2.600m bgl	
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

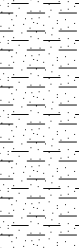
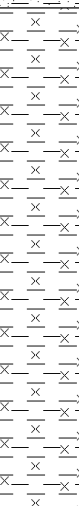
Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E445076 N293265		Equipment: JCB3CX (Meynells Ltd)	
TP16	Ground Level 100.64m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1					Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
				0.40	100.24		Firm orangish-brown gravelly CLAY. Gravel is angular to sub-rounded, fine to coarse quartzite and chert. [BOSWORTH CLAY MEMBER]	
				0.90	99.74		Firm to stiff grey sandy gravelly CLAY. Gravel is angular to rounded, fine to coarse quartzite, chert, chalk and siltstone. Becoming slightly gravelly with depth. [BOSWORTH CLAY MEMBER]	
	1.10 1.10 1.10		HVP=80 HVP=80 HVP=85				1.20 to 1.40m - Pocket of rounded, fine to coarse gravel of quartzite noted in north face of excavation.	
2	1.70	D1						
				2.20	98.44		Stiff brown and grey silty friable CLAY. [BOSWORTH CLAY MEMBER]	
				2.60	98.04			
3							Trial pit terminated at 2.600m bgl	
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By 10/09/2024	Approved By 10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E445202 N293229		Equipment: JCB3CX (Meynells Ltd)	
TP17	Ground Level 100.04m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.40	99.64		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
				1.30	98.74		Firm orangish-brown mottled grey sandy CLAY. [BOSWORTH CLAY MEMBER]	
2							Firm grey mottled orangish-brown and dark brown silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
3				3.00	97.04		Firm grey and brown SILT. [BOSWORTH CLAY MEMBER]	
				3.20	96.84		Trial pit terminated at 3.200m bgl	
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By	Approved By
Pit Length	Pit Width				
		Excavation Stability	Stable.	10/09/2024	10/09/2024
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Trial Pit Log

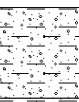
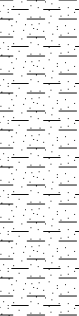
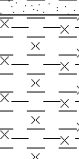
Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E445077 N293190		Equipment: JCB3CX (Meynells Ltd)	
TP18	Ground Level	Logged By	Scale	Page Number
	99.91m AoD		NB	
				Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.40	ES1		0.30	99.61		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
	0.90		HVP=55				Firm orangish-brown sandy gravelly CLAY. Gravel is angular to rounded, fine to coarse quartzite, chert and carboniferous material. [BOSWORTH CLAY MEMBER]	
	0.90		HVP=60					
	0.90		HVP=60					
	1.00	D1						
2	1.50		HVP=90	1.20	98.71		Stiff brown mottled grey sandy gravelly CLAY. Gravel is angular, fine to medium chalk and siltstone. Becoming grey mottled brown slightly gravelly with depth. [BOSWORTH CLAY MEMBER]	
	1.50		HVP=90					
	1.50		HVP=95					
	2.50		HVP=115					
	2.50		HVP=120					
	2.50		HVP=120	2.60	97.31		Trial pit terminated at 2.600m bgl	
3								
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

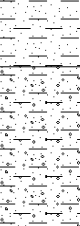
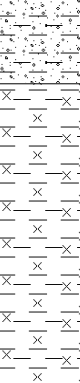
Project Name: Sapcote Road, Burbage	Client: Jelson Homes	28/08/2024		
Project No. : PJS24-0117	Co-ords: E444931 N293190		Equipment: JCB3CX (Meynells Ltd)	
TP19	Ground Level 100.50m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.35	100.15		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
				0.70	99.80		Firm brown CLAY. [BOSWORTH CLAY MEMBER]	
	1.10		HVP=70	1.00	99.50		Firm with soft lenses orangish-brown very sandy very gravelly CLAY. Gravel is angular to rounded, fine to coarse quartzite, chert, carbon and sandstone. [BOSWORTH CLAY MEMBER]	
	1.10		HVP=70				Firm grey mottled orangish-brown sandy CLAY with lenses of orangish-brown sand and silt. Occasional gravel of angular, fine to coarse chalk and siltstone. Becoming slightly gravelly with depth. [BOSWORTH CLAY MEMBER]	
2	1.10		HVP=75					
	2.20		HVP=65	2.10	98.40		Firm bluish-grey silty CLAY with lenses of orangish-brown sand and silt. [BOSWORTH CLAY MEMBER]	
3	2.20		HVP=70	2.60	97.90		Trial pit terminated at 2.600m bgl	
	2.20		HVP=70					
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E444857 N293177		Equipment: JCB3CX (Meynells Ltd)	
TP20	Ground Level 101.38m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.50	ES1	HVP=65 HVP=70 HVP=70	0.30	101.08		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm orangish-brown sandy CLAY. [BOSWORTH CLAY MEMBER]	
		D1		0.80	100.58		Firm grey and brown sandy gravelly CLAY with lenses of brown sand and silt. Gravel is angular to sub-angular, fine to medium chalk and siltstone. Becoming slightly gravelly with depth. [BOSWORTH CLAY MEMBER]	
				1.10				
				1.10				
2	1.40	D1						
	1.80	D2		1.60	99.78		Firm grey mottled orangish-brown silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
3				2.60	98.78		Trial pit terminated at 2.600m bgl	
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E445082 N293138		Equipment: JCB3CX (Meynells Ltd)	
TP21	Ground Level 99.41m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.20	ES1		0.25	99.16		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm brown and grey CLAY. [BOSWORTH CLAY MEMBER]	
				0.80	98.61		Firm orangish-brown sandy gravelly CLAY. Gravel is angular to rounded, fine to coarse quartzite, chert and carboniferous material. [BOSWORTH CLAY MEMBER]	
	1.10	D1	HVP=45					
	1.10		HVP=50					
	1.10		HVP=50					
	1.20							
	1.60	D2	HVP=60	1.40	98.01		Firm grey mottled orangish-brown silty CLAY with lenses of brown sand and silt. [BOSWORTH CLAY MEMBER]	
	1.60		HVP=60					
	1.60		HVP=65					
	2.30							
2	2.30	D2	HVP=80					
	2.30		HVP=85					
	2.30		HVP=85					
	2.30							
				2.60	96.81			
								
								
								
								
								
3							Trial pit terminated at 2.600m bgl	
4								
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

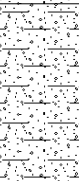
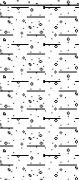
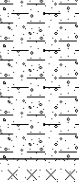
Project Name: Sapcote Road, Burbage	Client: Jelson Homes		28/08/2024	
Project No. : PJS24-0117	Co-ords: E445165 N293099		Equipment: JCB3CX (Meynells Ltd)	
TP22	Ground Level 98.92m AoD	Logged By NB	Scale 1:25	Page Number Sheet 1 of 1

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1	0.10	ES1		0.20	98.72		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
							Firm grey and brown CLAY. [BOSWORTH CLAY MEMBER]	
				0.60	98.32		Firm orangish-brown sandy gravelly CLAY. Gravel is angular to rounded, fine to coarse quartzite, chert and carboniferous material. [BOSWORTH CLAY MEMBER]	
				1.20	97.72		Firm grey and brown gravelly CLAY with lenses of brown silt and sand. Gravel is angular, fine to medium chalk and siltstone. Becoming slightly gravelly with depth. [BOSWORTH CLAY MEMBER]	
2	1.50		HVP=55					
	1.50		HVP=55					
	1.50		HVP=60					
3	2.30		HVP=70					
	2.30		HVP=70					
	2.30		HVP=70					
4				2.60	96.32		Trial pit terminated at 2.600m bgl	
5								

Dimensions		Groundwater Remarks	No groundwater encountered.	Reviewed By	Approved By
Pit Length	Pit Width				
		Excavation Stability	Stable.	10/09/2024	10/09/2024
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Trial pit terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Excavation backfilled with arisings upon completion.					

Trial Pit Log

Project Name: Sapcote Road, Burbage	Client: Jelson Homes		29/08/2024	
Project No. : PJS24-0117	Co-ords: E445114 N293370		Equipment: JCB3CX (Meynells Ltd)	
TP23	Ground Level	Logged By	Scale	Page Number
	101.88m AoD		NB	1:25

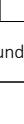
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)
	Depth (m bgl)	Type	Results					
1				0.35	101.53		Grass overlying firm brown sandy gravelly CLAY with roots and rootlets. Gravel is angular to sub-rounded, fine to coarse quartzite, chert and carboniferous material. [TOPSOIL]	
				0.80	101.08		Light brown gravelly SAND. Gravel is rounded, fine to coarse quartzite. [BOSWORTH CLAY MEMBER]	
				1.40	100.48		Reddish-brown and orangish-brown clayey gravelly SAND. Gravel is rounded, fine to coarse quartzite. [BOSWORTH CLAY MEMBER]	
	1.50 1.50 1.50		HVP=35 HVP=35 HVP=40				Soft orangish-brown sandy gravelly CLAY. Gravel is rounded, fine to coarse quartzite. [BOSWORTH CLAY MEMBER]	
2	2.00 2.00 2.00		HVP=0 HVP=0 HVP=0				2.10 to 2.50m - Becoming wet, very soft and unstable.	
				2.50	99.38		Soft brown and grey sandy SILT. [BOSWORTH CLAY MEMBER]	
3				3.40	98.48		Trial pit terminated at 3.400m bgl	
4								
5								

Dimensions		Groundwater Remarks	Fast groundwater ingress encountered at 2.10m.	Reviewed By  10/09/2024	Approved By  10/09/2024
Pit Length	Pit Width				
		Excavation Stability	Stable.		
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

1. Trial pit terminated due to reaching target depth.
2. No visual or olfactory evidence of contamination noted.
3. Excavation backfilled with arisings upon completion.

Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				29/08/2024			
Project No. : PJS24-0117				Co-ords: E445344 N293606				Equipment: Dando Terrier (DSUK Ltd)			
WS01				Ground Level 100.67m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well
	Depth (m bgl)	Type	Results						
1	0.20	ES1		0.30	100.37		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]		
							Firm slightly sandy slightly gravelly CLAY. Gravel is sub-rounded to rounded, fine to coarse quartzite and sandstone. [BOSWORTH CLAY MEMBER]		
2	1.00	SPT (S)	N=4 (1,0/1,1,1,1)	1.00	99.67		Very soft orangish-brown mottled grey silty sandy CLAY. [BOSWORTH CLAY MEMBER]		
	2.00 2.00	D1 SPT (S)	N=6 (1,1/1,2,1,2)	2.20	98.47		Soft grey and brown slightly sandy SILT. [BOSWORTH CLAY MEMBER]		
3	3.00	SPT (S)	N=12 (2,2/3,3,3,3)				2.60 to 3.00m - Becoming grey only.		
	3.50	D2					3.00 to 4.00m - Becoming firm.		
4	4.00	SPT (S)	N=20 (5,5/4,5,5,6)				4.00 to 5.00m - Becoming stiff.		
	5.00	SPT (S)	N=19 (3,3/4,5,5,5)	5.00	95.67		Borehole terminated at 5.000m bgl		

Hole Diameter		Casing Diameter		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Depth Base	Diameter	Depth Base	Diameter				
				Borehole Stability			

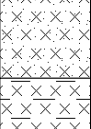
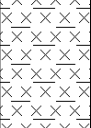
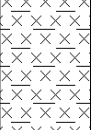
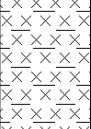
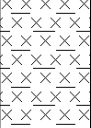
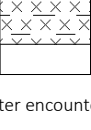
General Remarks and Observations:

- Borehole terminated due to reaching target depth.
- No visual or olfactory evidence of contamination noted.
- Borehole backfilled with arisings upon completion.

PJS Geotechnical
Geneva II - Lakeview
Annesley, Nottinghamshire
NG15 0ED
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Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				29/08/2024			
Project No. : PJS24-0117				Co-ords: E445258 N293570				Equipment: Dando Terrier (DSUK Ltd)			
WS02				Ground Level 100.75m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well
	Depth (m bgl)	Type	Results						
1	0.60	ES1		0.50	100.25		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]		
	1.00 1.00	D1 SPT (S)	N=15 (2,2/3,3,4,5)				Firm reddish-brown mottled grey silty slightly sandy CLAY. [BOSWORTH CLAY MEMBER]		
2	2.00	SPT (S)	N=12 (1,2/3,3,3,3)	1.60	99.15		Soft orangish-brown clayey slightly sandy SILT. [BOSWORTH CLAY MEMBER]		
				2.00	98.75		Firm brown clayey slightly sandy SILT. [BOSWORTH CLAY MEMBER]		
3	3.00	SPT (S)	N=11 (1,2/2,3,3,3)	3.00	97.75		Firm grey and brown clayey SILT. [BOSWORTH CLAY MEMBER]		
4	4.00	SPT (S)	N=17 (2,3/3,5,5,4)						
5	5.00	SPT (S)	N=22 (4,4/5,5,6,6)	5.00	95.75		Borehole terminated at 5.000m bgl		

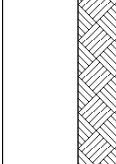
Hole Diameter		Casing Diameter		Groundwater Remarks	Groundwater encountered at 1.60m.	Reviewed By  10/09/2024	Approved By  10/09/2024
Depth Base	Diameter	Depth Base	Diameter				
				Borehole Stability			

General Remarks and Observations:

- Borehole terminated due to reaching target depth.
- No visual or olfactory evidence of contamination noted.
- Borehole backfilled with arisings upon completion.

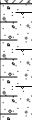
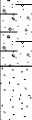
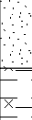
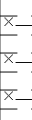
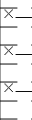
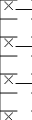
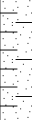
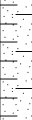
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Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				29/08/2024			
Project No. : PJS24-0117				Co-ords: E445184 N293517				Equipment: Dando Terrier (DSUK Ltd)			
WS03				Ground Level 101.49m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well		
	Depth (m bgl)	Type	Results								
1	0.30	ES1		0.40	101.09		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]				
							Firm orangish-brown mottled grey silty slightly sandy CLAY. [BOSWORTH CLAY MEMBER]				
	1.00	SPT (S)	N=10 (2,2/2,3,2,3)								
1.50	D1										
2	2.00	SPT (S)	N=12 (3,3/3,3,3,3)	2.00	99.49		Firm brown silty CLAY. [BOSWORTH CLAY MEMBER]				
3	3.00	D2		3.00	99.49						
	3.00	SPT (S)	N=20 (3,4/4,4,6,6)								
4	4.00	SPT (S)	N=22 (5,5/5,5,6,6)	4.00	97.49		Firm grey and brown silty CLAY. [BOSWORTH CLAY MEMBER]				
5	5.00	SPT (S)	N=17 (3,4/4,4,4,5)	5.00	96.49		Borehole terminated at 5.000m bgl				
Hole Diameter		Casing Diameter		Groundwater Remarks No groundwater encountered.		Reviewed By  10/09/2024		Approved By  10/09/2024			
Depth Base	Diameter	Depth Base	Diameter								
				Borehole Stability							
General Remarks and Observations:											
1. Borehole terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Borehole backfilled with arisings upon completion.											
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Window Sample Drilling Log

Project Name: Sapcote Road, Burbage		Client: Jelson Homes		29/08/2024	
Project No. : PJS24-0117		Co-ords: E445288 N293477		Equipment: Dando Terrier (DSUK Ltd)	
WS04	Ground Level	Logged By	Scale	Page Number	
	102.19m AoD	DH	1:25	Sheet 1 of 1	

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well
	Depth (m bgl)	Type	Results						
1	0.40	ES1		0.40	101.79		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]		
	0.50						Firm brown sandy slightly gravelly CLAY. Gravel is sub-rounded to rounded, fine to coarse quartzite and sandstone. [BOSWORTH CLAY MEMBER]		
	1.00	SPT (S)	N=9 (1,3/3,2,2,2)	1.00	101.19		Loose red fine to coarse SAND. [BOSWORTH CLAY MEMBER]		
	1.40			1.40	100.79		Firm orangish-brown mottled grey sandy SILT / CLAY. [BOSWORTH CLAY MEMBER]		
2	1.70	D1							
	2.00	SPT (S)	N=8 (1,2/2,2,2,2)						
									
									
3	2.80			2.80	99.39				
	3.00	SPT (S)	N=11 (3,3/3,3,2,3)						
									
									
4	4.00	SPT (S)	N=12 (1,2/3,3,3,3)						
									
									
									
5	5.00	SPT (S)	N=22 (4,4/5,5,6,6)	5.00	97.19		Borehole terminated at 5.000m bgl		

Hole Diameter	Casing Diameter	Groundwater Remarks	Groundwater encountered at 3.00m.	Reviewed By  10/09/2024	Approved By  10/09/2024
Depth Base Diameter	Depth Base Diameter				
		Borehole Stability			
General Remarks and Observations:				PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	

- Borehole terminated due to reaching target depth.
- No visual or olfactory evidence of contamination noted.
- Borehole backfilled with arisings upon completion.

Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				29/08/2024			
Project No. : PJS24-0117				Co-ords: E445193 N293387				Equipment: Dando Terrier (DSUK Ltd)			
WS05				Ground Level 101.62m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well
	Depth (m bgl)	Type	Results						
1	0.30	ES1		0.50	101.12		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]		
							Soft orangish-brown mottled grey silty sandy CLAY. [BOSWORTH CLAY MEMBER]		
2	1.00	SPT (S)	N=5 (1,1/1,1,1,2)	2.30	99.32				
	2.00	SPT (S)	N=7 (2,1/2,1,2,2)						
	2.50	D1							
3	3.00	SPT (S)	N=8 (1,2/2,2,2,2)	5.00	96.62		Firm to stiff grey SILT. [BOSWORTH CLAY MEMBER]		
4	4.00	SPT (S)	N=14 (2,3/3,3,4,4)	5.00	96.62				
5	5.00	SPT (S)	N=20 (2,3/4,5,5,6)				Borehole terminated at 5.000m bgl		

Hole Diameter		Casing Diameter		Groundwater Remarks	Groundwater encountered at 1.50m.	Reviewed By  10/09/2024	Approved By  10/09/2024
Depth Base	Diameter	Depth Base	Diameter				
				Borehole Stability			

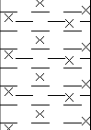
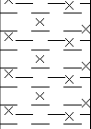
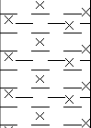
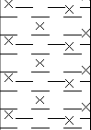
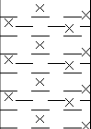
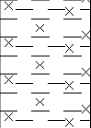
General Remarks and Observations:

- Borehole terminated due to reaching target depth.
- No visual or olfactory evidence of contamination noted.
- Borehole backfilled with arisings upon completion.

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Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				28/08/2024			
Project No. : PJS24-0117				Co-ords: E445114 N293370				Equipment: Dando Terrier (DSUK Ltd)			
WS06				Ground Level 101.88m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well
	Depth (m bgl)	Type	Results						
1	0.60	ES1		0.40	101.48		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]		
				0.60	101.28		Dessicated friable grey and brown silty CLAY. [BOSWORTH CLAY MEMBER]		
							Soft reddish-brown mottled grey silty slightly sandy CLAY. [BOSWORTH CLAY MEMBER]		
2	1.00	SPT (S)	N=6 (1,1/1,2,1,2)						
	1.80	D1							
3	2.00	D2		2.00	99.88		Soft reddish-brown SILT / CLAY. [BOSWORTH CLAY MEMBER]		
	2.00	SPT (S)	N=4 (1,1/1,1,1,1)						
4	3.00	D3							
	3.00	SPT (S)	N=22 (2,4/5,5,6,6)						
5	4.00	SPT (S)	N=12 (3,3/3,3,3,3)						
	5.00	SPT (S)	N=20 (4,4/4,5,5,6)	5.00	96.88		Borehole terminated at 5.000m bgl		



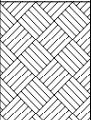
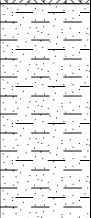
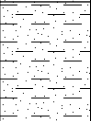
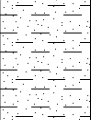
Hole Diameter		Casing Diameter		Groundwater Remarks	Groundwater encountered at 2.80m.	Reviewed By  10/09/2024	Approved By  10/09/2024
Depth Base	Diameter	Depth Base	Diameter				
				Borehole Stability			

General Remarks and Observations:

- Borehole terminated due to reaching target depth.
- No visual or olfactory evidence of contamination noted.
- Borehole backfilled with arisings upon completion.

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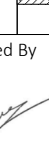
Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				28/08/2024			
Project No. : PJS24-0117				Co-ords: E444995 N293346				Equipment: Dando Terrier (DSUK Ltd)			
WS07				Ground Level 101.68m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well		
	Depth (m bgl)	Type	Results								
1	0.60	ES1		0.40	101.28		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]				
	1.00	SPT (S)	N=13 (1,2/4,3,3,3)				Stiff reddish-brown mottled grey sandy CLAY. [BOSWORTH CLAY MEMBER]				
	1.20	D1					1.10 to 1.20m - Pocket of fine sand.				
	2.00	SPT (S)	N=9 (3,2/2,2,2,3)				2.00 to 2.10m - Pocket of loose fine sand.				
3	3.00	SPT (S)	N=17 (2,3/3,4,5,5)	2.10	99.58		Firm to stiff brown sandy CLAY. [BOSWORTH CLAY MEMBER]				
4	4.00	SPT (S)	N=26 (5,5/5,6,7,8)	4.00	97.68		Borehole terminated at 4.000m bgl				
5											
Hole Diameter		Casing Diameter		Groundwater Remarks No groundwater encountered.		Reviewed By  10/09/2024		Approved By  10/09/2024			
Depth Base	Diameter	Depth Base	Diameter								
				Borehole Stability							
General Remarks and Observations:											
1. Borehole terminated due to instability. 2. No visual or olfactory evidence of contamination noted. 3. Borehole backfilled with arisings upon completion.						PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk					

Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				28/08/2024			
Project No. : PJS24-0117				Co-ords: E445123 N293243				Equipment: Dando Terrier (DSUK Ltd)			
WS08				Ground Level 100.38m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well	
	Depth (m bgl)	Type	Results							
1	0.20	ES1		0.30	100.08		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]			
							Firm orangish-brown sandy gravelly CLAY. Gravel is sub-angular to sub-rounded, fine to coarse quartzite and sandstone. [BOSWORTH CLAY MEMBER]			
	1.00	SPT (S)	N=4 (1,1/1,1,1,1)	1.00	99.38		Soft orangish-brown mottled grey silty CLAY. [BOSWORTH CLAY MEMBER] <i>1.10 to 1.50m - Soft pocket noted.</i>			
2	1.50	D1								
	2.00	SPT (S)	N=15 (3,2/3,4,4,4)	2.10	98.28		Firm to stiff brown silty CLAY. [BOSWORTH CLAY MEMBER]			
3	3.00	SPT (S)	N=11 (2,2/2,3,3,3)							
4	4.00	SPT (S)	N=17 (4,4/4,4,4,5)							
5	5.00	SPT (S)	N=29 (5,5/6,7,8,8)	5.00	95.38					
							Borehole terminated at 5.000m bgl			

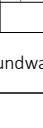
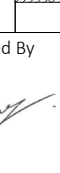
Hole Diameter		Casing Diameter		Groundwater Remarks	No groundwater encountered.	Reviewed By  10/09/2024	Approved By  10/09/2024
Depth Base	Diameter	Depth Base	Diameter				
				Borehole Stability			

General Remarks and Observations:

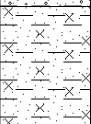
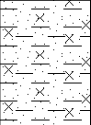
- Borehole terminated due to reaching target depth.
- No visual or olfactory evidence of contamination noted.
- Borehole backfilled with arisings upon completion.

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Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				28/08/2024			
Project No. : PJS24-0117				Co-ords: E444871 N293275				Equipment: Dando Terrier (DSUK Ltd)			
WS09				Ground Level 101.71m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well		
	Depth (m bgl)	Type	Results								
1	0.30	ES1		0.30	101.41		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]				
	0.50						Firm to stiff brown sandy CLAY. [BOSWORTH CLAY MEMBER]				
	1.00	SPT (S)	N=4 (1,1/1,1,1,1)				<u>0.90 to 1.00m - Soft pocket encountered.</u> <u>1.00 to 5.00m - Becoming mottled grey.</u> <u>1.10 to 1.20m - Land drain encountered.</u> <u>1.20 to 1.50m - Soft pocket encountered.</u>				
	1.80	D1									
2	2.00	SPT (S)	N=8 (2,2/2,2,2,2)				2.00 to 2.10m - Soft pocket encountered.				
3	3.00	SPT (S)	N=13 (2,2/3,3,3,4)								
4	4.00	SPT (S)	N=23 (4,5/5,6,6,6)								
5	5.00	SPT (S)	N=21 (3,4/4,5,6,6)	5.00	96.71		Borehole terminated at 5.000m bgl				
Hole Diameter		Casing Diameter		Groundwater Remarks		No groundwater encountered.		Reviewed By  10/09/2024		Approved By  10/09/2024	
Depth Base	Diameter	Depth Base	Diameter								
				Borehole Stability							
General Remarks and Observations:										PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Borehole terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Borehole backfilled with arisings upon completion.											

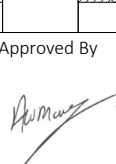
Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				28/08/2024			
Project No. : PJS24-0117				Co-ords: E444926 N293232				Equipment: Dando Terrier (DSUK Ltd)			
WS10				Ground Level 100.83m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well		
	Depth (m bgl)	Type	Results								
1	0.30	ES1		0.40	100.43		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]				
	1.00	SPT (S)	N=8 (2,4/2,3,2,1)				Firm orangish-brown sandy gravelly CLAY. Gravel is sub-angular to sub-rounded, fine to coarse quartzite and sandstone. [BOSWORTH CLAY MEMBER]				
2	1.60	D1		1.50	99.33		Firm grey mottled orangish-brown slightly silty sandy CLAY. [BOSWORTH CLAY MEMBER]				
	2.00	SPT (S)	N=9 (2,2/2,2,2,3)								
3	3.00	SPT (S)	N=15 (2,3/3,4,4,4)	3.00	97.83		Firm to stiff grey slightly silty sandy CLAY. [BOSWORTH CLAY MEMBER]				
4	4.00	SPT (S)	N=20 (4,4/4,5,5,6)								
5	5.00	SPT (S)	N=27 (5,5/5,7,7,8)	5.00	95.83	Borehole terminated at 5.000m bgl					
Hole Diameter		Casing Diameter		Groundwater Remarks		No groundwater encountered.		Reviewed By  10/09/2024		Approved By  10/09/2024	
Depth Base	Diameter	Depth Base	Diameter								
				Borehole Stability							
General Remarks and Observations:										PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Borehole terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Borehole backfilled with arisings upon completion.											

Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				28/08/2024			
Project No. : PJS24-0117				Co-ords: E445051 N293153				Equipment: Dando Terrier (DSUK Ltd)			
WS11				Ground Level 99.61m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	

	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well
	Depth (m bgl)	Type	Results						
1	0.20	ES1	N=6 (1,1/1,1,2,2)	0.20	99.41		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]		
	0.40					Firm grey mottled orangish-brown slightly sandy CLAY. [BOSWORTH CLAY MEMBER]			
	0.70	98.91			Soft orangish-brown mottled grey slightly sandy gravelly CLAY. Gravel is sub-angular to rounded, fine to coarse quartzite, chalk and sandstone. [BOSWORTH CLAY MEMBER]				
	1.20	98.41			Firm to stiff brown CLAY with occasional gravel of sub-angular to sub-rounded, fine to coarse sandstone. [BOSWORTH CLAY MEMBER]				
2	2.00	SPT (S)	N=10 (3,2/2,2,3,3)						
3	3.00	SPT (S)	N=16 (3,3/3,4,4,5)						
4	4.00	SPT (S)	N=21 (4,4/5,5,5,6)						
5	5.00	SPT (S)	N=25 (5,5/5,5,7,8)	5.00	94.61				
							Borehole terminated at 5.000m bgl		

Hole Diameter		Casing Diameter		Groundwater Remarks	Groundwater encountered at 2.00m.	Reviewed By  10/09/2024	Approved By  10/09/2024
Depth Base	Diameter	Depth Base	Diameter				
				Borehole Stability			

General Remarks and Observations:

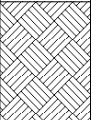
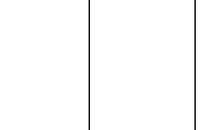
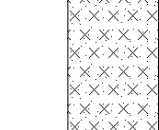
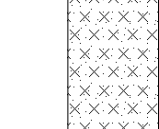
- Borehole terminated due to reaching target depth.
- No visual or olfactory evidence of contamination noted.
- Borehole backfilled with arisings upon completion.

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Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				28/08/2024			
Project No. : PJS24-0117				Co-ords: E444803 N293203				Equipment: Dando Terrier (DSUK Ltd)			
WS12				Ground Level 101.98m AoD		Logged By DH		Scale 1:25		Page Number Sheet 1 of 1	
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well		
	Depth (m bgl)	Type	Results								
1	0.20	ES1		0.30	101.68		Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]				
							Firm orangish-brown sandy gravelly CLAY. Gravel is sub-angular to sub-rounded, fine to coarse quartzite and sandstone. [BOSWORTH CLAY MEMBER]				
	1.00	SPT (S)	N=4 (1,1/1,1,1,1)	1.00	100.98		Soft bluish-grey mottled orangish-brown sandy CLAY. [BOSWORTH CLAY MEMBER]				
2	2.00	SPT (S)	N=8 (1,2/2,2,2,2)	2.10	99.88		Firm to stiff brown silty CLAY. [BOSWORTH CLAY MEMBER]				
	2.50	D1									
3	3.00	SPT (S)	N=12 (2,3/3,3,3,3)								
4	4.00	SPT (S)	N=15 (3,3/3,4,4,4)								
5	5.00	SPT (S)	N=22 (5,5/5,5,6,6)	5.00	96.98		Borehole terminated at 5.000m bgl				
Hole Diameter		Casing Diameter		Groundwater Remarks		No groundwater encountered.		Reviewed By  10/09/2024		Approved By  10/09/2024	
Depth Base	Diameter	Depth Base	Diameter								
				Borehole Stability							
General Remarks and Observations:											
1. Borehole terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Borehole backfilled with arisings upon completion.								PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk			

Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				29/08/2024																			
Project No. : PJS24-0117								Equipment: Dando Terrier (DSUK Ltd)																			
WS13				Ground Level		Logged By DH		Scale 1:25		Page Number Sheet 1 of 2																	
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well																		
	Depth (m bgl)	Type	Results																								
1	0.20	ES1		0.40			Firm brown slightly sandy CLAY with roots and rootlets. [TOPSOIL]																				
							Firm orangish-brown slightly sandy CLAY. [BOSWORTH CLAY MEMBER]																				
2	1.00	SPT (S)	N=7 (1,1/2,1,2,2)	1.00			Soft brown silty sandy CLAY. [BOSWORTH CLAY MEMBER]																				
3	2.00	SPT (S)	N=12 (1,2/3,3,3,3)	2.00			Firm to stiff orangish-brown clayey slightly sandy SILT. [BOSWORTH CLAY MEMBER]																				
4	3.00	SPT (S)	N=18 (3,3/3,4,5,6)																								
	3.30	D1																									
5	4.00	SPT (S)	N=21 (4,4/4,5,6,6)																								
	5.00	SPT (S)	N=20 (3,4/4,5,5,6)																								
<table border="1"> <tr> <th>Hole Diameter</th> <th>Casing Diameter</th> <th rowspan="2">Groundwater Remarks</th> <th rowspan="2">Groundwater encountered at 2.00m.</th> <th rowspan="2">Reviewed By  10/09/2024</th> <th rowspan="2">Approved By  10/09/2024</th> </tr> <tr> <th>Depth Base</th> <th>Diameter</th> <th>Depth Base</th> <th>Diameter</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				Hole Diameter	Casing Diameter	Groundwater Remarks	Groundwater encountered at 2.00m.	Reviewed By  10/09/2024	Approved By  10/09/2024	Depth Base	Diameter	Depth Base	Diameter							<table border="1"> <tr> <td rowspan="2">Groundwater Remarks</td> <td rowspan="2">Groundwater encountered at 2.00m.</td> <td rowspan="2">Reviewed By  10/09/2024</td> <td rowspan="2">Approved By  10/09/2024</td> </tr> <tr> <td>Borehole Stability</td> <td></td> </tr> </table>		Groundwater Remarks	Groundwater encountered at 2.00m.	Reviewed By  10/09/2024	Approved By  10/09/2024	Borehole Stability	
Hole Diameter	Casing Diameter	Groundwater Remarks	Groundwater encountered at 2.00m.	Reviewed By  10/09/2024	Approved By  10/09/2024																						
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				Borehole Stability																							
General Remarks and Observations:								PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk																			
1. Borehole terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Borehole backfilled with arisings upon completion.																											

Window Sample Drilling Log

Project Name: Sapcote Road, Burbage				Client: Jelson Homes				29/08/2024			
Project No. : PJS24-0117								Equipment: Dando Terrier (DSUK Ltd)			
WS13				Ground Level		Logged By DH		Scale 1:25		Page Number Sheet 2 of 2	
	Sample and In Situ Testing			Depth (m bgl)	Level (m AOD)	Legend	Stratum Description	Water Strikes (m bgl)	Well		
	Depth (m bgl)	Type	Results								
6	6.00	SPT (S)	N=20 (5,4/4,5,5,6)	6.00			Firm to stiff orangish-brown clayey slightly sandy SILT. [BOSWORTH CLAY MEMBER]				
7							Borehole terminated at 6.000m bgl				
8											
9											
10											
Hole Diameter		Casing Diameter		Groundwater Remarks		Groundwater encountered at 2.00m.		Reviewed By  10/09/2024		Approved By  10/09/2024	
Depth Base	Diameter	Depth Base	Diameter								
				Borehole Stability							
General Remarks and Observations:										PJS Geotechnical Geneva II - Lakeview Annesley, Nottinghamshire NG15 0ED enquiries@pjs-geo.co.uk	
1. Borehole terminated due to reaching target depth. 2. No visual or olfactory evidence of contamination noted. 3. Borehole backfilled with arisings upon completion.											

Appendix C: SPT Trip Hammer Calibration Certificates

Dynamic Sampling Uk Ltd
Unit 8 Victory Park
Victory Road
Derby
DE248ZF

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref: 120.58
Test Date: 16/05/2024
Report Date: 16/05/2024
File Name: 120.58.spt
Test Operator: B.HUNTER

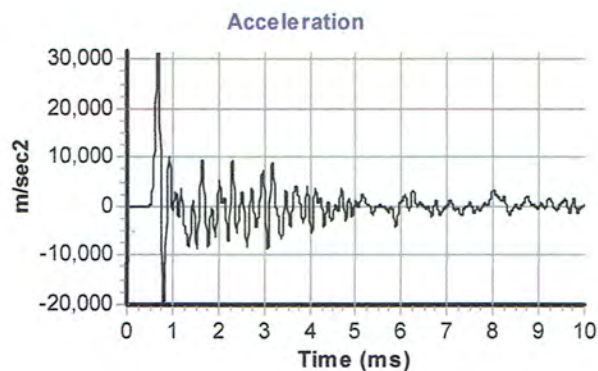
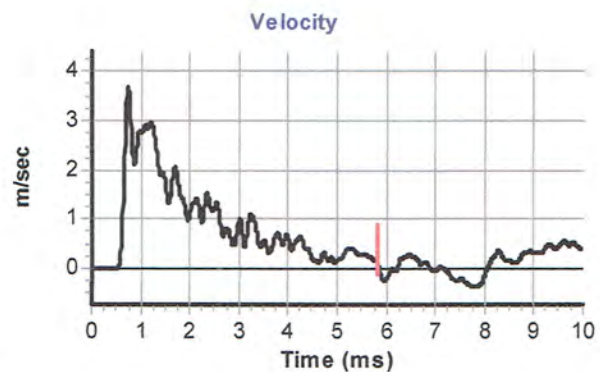
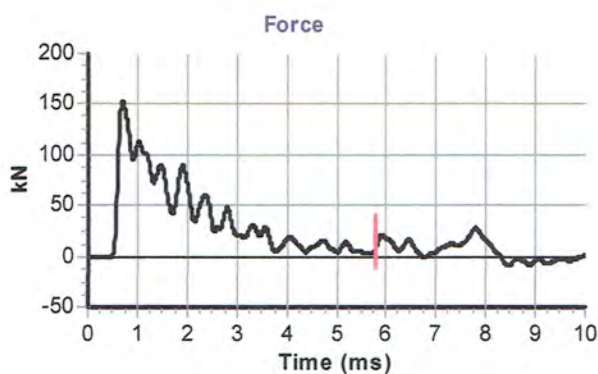
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.6
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 62901
Accelerometer No.2: 69902

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location



Calculations

Area of Rod A (mm^2): 983
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 365

Energy Ratio E_r (%): **77**

Signed: B.Hunter
Title: Operations Manager

Appendix D: Exploratory Hole Photographs

Item 1

ID: A010

Folder: TP

28 Aug 2024
TP09



Folder: TP

28 Aug 2024

TP10



Folder: TP

28 Aug 2024

TP17

28 Aug 2024 9:57:27 am



28 Aug 2024 9:57:31 am



Folder: TP

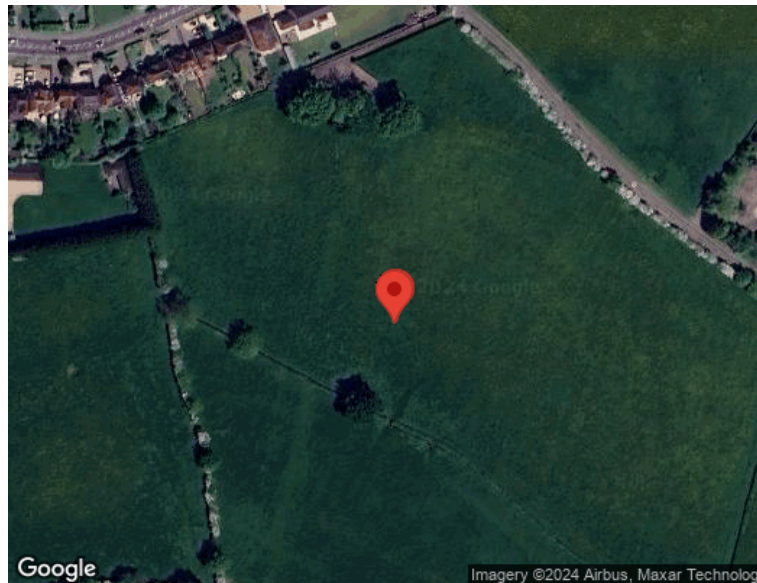
28 Aug 2024

TP16

28 Aug 2024 10:16:26 am



28 Aug 2024 10:16:29 am



Folder: TP

28 Aug 2024

TP11

28 Aug 2024 10:42:17 am



28 Aug 2024 10:42:20 am



Folder: TP

28 Aug 2024

TP13

28 Aug 2024 11:10:25 am



28 Aug 2024 11:10:27 am

