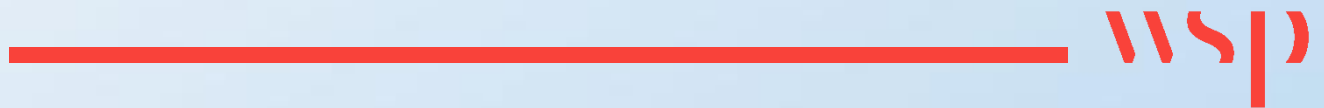


Appendix G

DECEMBER 2025 GROUND INVESTIGATION





Geo-Environmental

GROUND APPRAISAL REPORT

for the site at

**MILL LANE, HITCHIN,
HERTFORDSHIRE, SG4 7NN.**

on behalf of

MARTIN GRANT HOMES





Report:	GROUND APPRAISAL REPORT
Site:	MILL LANE, HITCHIN, HERTFORDSHIRE, SG4 7NN
Client:	MARTIN GRANT HOMES
Date:	05/01/25
Reference:	GE23305-GAR-JAN26
Version:	1.0
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Revision ref.	Date	Reasons for amendment	Author's initials	Reviewer's initials	Authoriser's initials
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EXECUTIVE SUMMARY		
	Site Address	Mill Lane, Hitchin, RH14 0SB
	Form of Development	Construction of a residential development with houses, private gardens, open space, access roads and associated infrastructure.
Encountered Conditions	Scope of works	An intrusive investigation to confirm the ground and groundwater conditions and support the development of geotechnical and geo-environmental assessments of the site in relation to the proposed development.
	Ground Conditions	The ground conditions comprised Topsoil and Made Ground (which was encountered within one location, WS1 to 0.5m bgl) overlying Glaciofluvial Deposits.
	Groundwater	Groundwater was not encountered during the investigation. To date, two groundwater monitoring visits have been undertaken, with all wells being dry.
Geotechnical Considerations	Foundations	Based on the ground and groundwater conditions encountered within the window sampler holes, conventional shallow foundations could be suitable for the proposed residential development across the site, albeit taken through any topsoil, soft zones or disturbed ground and bear wholly into or onto the Medium dense granular material or the firm cohesive material of the Glaciofluvial Deposits. The results of the Atterberg Limit tests, in conjunction with the field observations indicated the Glaciofluvial Deposits as low to medium volume change potential as defined by NHBC Standards, Chapter 4.2 and BRE Digest 240. It is recommended that <i>en masse</i> the cohesive soils at the site be treated as medium volume change potential for which a minimum foundation depth remote from trees of 0.90m would be required should they be founded in clay soils. Foundations terminating in granular soils overlying clay soils may require deepening as if constructed in shrinkable soils. This must be assessed in line with NHBC Standards Chapter 4.2.9. A minimum foundation width of 450mm is recommended. Within the zone of moisture demand of any existing, proposed or recently felled trees it is recommended that foundation depths be calculated in accordance with the NHBC Standards, Chapter 4.2. Foundations should also be taken through any major root zones, loose soils, soft clays and desiccated clay soils should this be found at greater depth. It should be noted that the NHBC stipulate that foundations cast at depths greater than 2.5m should be “engineer designed”. Heave protection measures would also be required if the minimum foundation depth on account of trees is calculated to be in excess of 1.50m within cohesive materials Based on the typical settlement parameters for the types of soil encountered, a maximum net allowable bearing capacity of 100kPa is applicable for trench, strip or isolated pad foundations up to 1.25m wide taken through any Topsoil, Made Ground, soft or loose zones or disturbed soils and placed wholly into or onto the medium dense granular Glaciofluvial Deposits. Under the above loading the settlements should remain within tolerable limits for the proposed construction. In



EXECUTIVE SUMMARY		
		the location of WS6 where loose sands were encountered piled foundations may be required, or further investigation to understand the nature and extent of the loose materials. Where foundations span between cohesive and granular horizons, nominal reinforcement will be required.
	Excavations	Excavations within any shallow Made Ground should remain relatively stable in the short term. Longer deeper excavations within any deeper areas of Made Ground, if encountered, are likely to be prone to instability, particularly where left open for prolonged periods or where water is encountered, and should be battered back to a safe angle, or suitable shoring techniques should be adopted to provide stability. Pumping from sumps would also be required where water is encountered. Shallow excavations within the Glaciofluvial Deposits should remain relatively stable in the short to medium term. However, deeper and longer dry excavations will likely be unstable. Glaciofluvial Deposits exposed to water should be concreted or blinded immediately. Some excavation instability may also be encountered where water seepages are encountered.
	Pavements	A preliminary design CBR value of 5% is recommended across the site. Based on the geotechnical results, the near surface Glaciofluvial Deposits should be considered as being potentially frost susceptible for pavement design purposes.
	Floor Slabs	Based on the laboratory testing results and low volume change potential of near surface soils, it is recommended that ground bearing slabs be adopted.
	Drainage	The testing undertaken indicates that the Glaciofluvial Deposits are possibly suitable for drainage via conventional soakaways. It is recommended that full BRE 365 testing be undertaken in trial pits to confirm.
	Buried Concrete	It is recommended that a design class of DS-1 and an ACEC class of AC-1 be applied to all sub-surface concrete within the Glaciofluvial Deposits.
Considerations	Human Health	There were exceedances for Barium and arsenic in the natural soils on site. Barium was not identified at levels above background concentrations. A detailed quantitative (Tier 3) risk assessment should be undertaken on the bio accessibility of arsenic in the natural soils. A cover system may be required depending on the results of the detailed investigation. Further investigation of the infilled sand pit is recommended once access can be gained.
	Ground gas	A further four visits are planned and a ground gas assessment in the form of a letter will be issued on completion of the ground gas monitoring confirming the final ground gas assessment.
	Built Environment	Based on the findings, protection measures for water supply pipes are not considered warranted but the results should be submitted to the water utility provider for confirmation.

**EXECUTIVE SUMMARY****Waste Disposal**

The laboratory results for the samples of the recovered soils were assessed using the HazWasteOnline software which determines whether a generated waste contains properties considered to be hazardous or non-hazardous.

Based on the results of the analysis, Made Ground and Glaciofluvial Deposits were classified as Non-Hazardous.

Further Actions:

Pre Construction

- The results of this investigation be presented to the water utility company as soon as reasonably practicable to confirm the water pipe material.
- Ongoing ground gas monitoring and reporting.
- Tier 3 assessment of bio accessibility of arsenic
- Investigation into the loose sand around WS6
- Soakage testing in accordance with BRE365.
- Further investigation into the extent of the infilled sand pit, subsequent to vegetation clearance.

During Construction

- A discovery strategy must remain in place during the proposed development works.
- If abnormal conditions, or conditions differing from those reported are encountered, Geotechnical/Geo-Environmental advice must be sought at the earliest practicable opportunity to determine a suitable source of action.

This Executive Summary is intended to provide a brief summary of the main findings and conclusions of the investigation. For detailed information, the reader is referred to the main report ref. GE23305/GAR/JAN26.



1.0 INTRODUCTION

Geo-Environmental Services Limited (Geo-Environmental) was instructed by Martin Grant Homes (the Client) to undertake an investigation of the geotechnical and geo-environmental factors pertaining to development of land at Mill Lane, Hitchin, RH14 0SB (herein referred to as 'the site'). The site's location is presented in Figure 1.

1.1 Development Proposals

It is understood that it is proposed to develop the site with houses, private gardens, access roads and associated infrastructure.

1.2 Site Description

The site generally comprised two rectangular shaped pasture fields that were overgrown and partially wooded, centred over National Grid Reference 519059, 227425 and measured 3.33ha in area. Topographically, whilst localised undulations were noted, the majority of the site sloped down gently in a southerly direction. The larger of the two fields was located on the eastern part of the central portion of the site, and was mostly covered in overgrown grass, scrub and brambles, with an occasional scattering of mature and semi-mature trees. The remaining field, located on the western side, was heavily overgrown with dense scrub, grass and an abundance of semi-mature trees and bushes. The two fields were linked by a small area of heavily vegetated land on the southern boundary. Parts of the site, particularly the north-eastern boundary and southwestern boundary were significantly overgrown with brambles and scrub such that access to these areas was very limited.

The site was bounded to the north by a line of trees and a hedge, with the grounds of a care home (St Ippolyts) and Mill Lane beyond; to the east by a hedge and trees with London Road beyond, set at a slightly lower elevation than the site; to the south by a hedge, trees and brambles with an arable field beyond set at an elevation of approximately 1.0m lower than the site at its boundary; and to the west by densely overgrown tree lines hedge with residential properties beyond.

A shallow overgrown ditch was observed on the lowest part of the eastern boundary with London Road, close to the southern extremity of the site.

The site was accessed via a footpath on the northern boundary immediately adjacent to the western boundary of the neighbouring care home.

1.3 Objectives

The data from the geotechnical and environmental investigation was to form the basis of an interpretation with respect to preliminary foundation design, pavement construction, infiltration, concrete specification, excavation stability and other pertinent construction issues. Investigation was to be undertaken into the geo-environmental conditions pertaining to the site, including geo-chemical testing to provide an indication of the likely waste classification of surplus soils and to inform on potential risks to human health. Six return ground gas and groundwater monitoring visits were proposed to provide an indication of the sites ground gas regime and provide information on groundwater level.

The data was used to evaluate the risks posed to the proposed redevelopment, adjacent land uses and the wider environment, in the context of likely planning requirements, immediate liabilities under the Environmental Protection Act 1990 and risks posed to Controlled Waters under the Water Resources Act from the current status of the site and in line with the proposed redevelopment.



1.4 Standards

Where practicable, the ground investigation and subsequent geotechnical and environmental assessments were undertaken in accordance with the following documents and guidance:

- National Planning Policy Framework – December 2024;
- Land Contamination Risk Management (LCRM), updated July 2023;
- Model Procedures for the Management of Contaminated Land, CLR11, DEFRA and Environment Agency 2004 (withdrawn);
- Environment Agency Guidance on Requirements for Land Contamination Reports, Version 1 dated July 2005;
- BS10175:2011+A2:2017 - Investigation of Potentially Contaminated Sites - Code of Practice, BSI 2017;
- BS5930: 2015+A1:2020 - Code of Practice for Site Investigations, BSI 2020;
- EN ISO 14688 Geotechnical Investigation and Testing Part 1-2002 and Part 2-2004;
- BS1377: 1990 - Soils for Civil Engineering Purposes, BSI1990;
- NHBC Standards Chapter 4.1 Land Quality - Managing Ground Conditions;
- NHBC Standards Chapter 4.2 Building Near Trees;
- CIRIA C665 – Assessing risks posed by hazardous ground gases to buildings (2007);
- BS8485:2015+A1:2019 Code of practice for the characterisation and remediation from ground gas in affected developments;
- NHBC Report NF94 – Hazardous ground gas - an essential guide for housebuilders (April 2023).

1.5 Conditions

This report does not purport to be a “Geotechnical Design Report” as defined in Clause 2.8 of Eurocode 7 (Geotechnical Design BS EN 1997-1:2004) and some of the data used to support this preliminary geotechnical assessment may not be fully compliant with that design code. It is considered possible that further detailed ground investigations could be required to facilitate the detailed geotechnical design process and should be carried out on a structure specific basis if necessary.

The information collected from the intrusive investigation has been used to provide an interpretation of the geotechnical and environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained. Geo-Environmental takes no responsibility for conditions that have either not been revealed in the available records or that occur between or under points of any physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

The data collected from the investigations have been used to provide an interpretation of the geotechnical and/or environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained. Geo-Environmental takes no responsibility for conditions that either have not been revealed in the available records, or that occur between or under points of physical investigation, or that result from updates to desk based data utilised subsequent to that presented herein and at the time of writing which may in turn alter the presented assessment. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

It should be noted that in particular the concentrations and levels of mobile liquid and gaseous materials are likely to vary with time. The results obtained may therefore only be representative of the conditions at the time of sampling. The absence of asbestos within soil samples analysed does not guarantee the absence of asbestos



within buildings, within or bonded to concrete, as discrete burials, or within the soils mass elsewhere within a site. This report must not be taken as any guarantee that a site is free of hazardous or potentially contaminative materials.

Information contained in this report is intended for the use of the Client and Geo-Environmental can take no responsibility for the use of this information by any party for uses other than that described in this report. Geo-Environmental makes no warranty or representation whatsoever express or implied with respect to the use of this information by any third party. Geo-Environmental does not indemnify the Client or any third parties against any dispute or claim arising from any finding or other result of this investigation report or any consequential losses.

Assessment criteria or other parameters developed for the evaluation of contamination on this site are based on a number of assumptions regarding exposure and toxicology. Exposure to contaminants and levels of adverse effects may therefore vary. Whilst reasonable care and expertise has been employed in the development of such criteria, no liability is accepted in this respect. Other criteria or guidance on the development of assessment criteria may be published in the future and no liability is accepted in this respect.

The absence of asbestos noted during the site walkover or within any soil samples analysed does not guarantee the absence of asbestos within buildings, within or bonded to concrete, as discrete burials, or within the soil mass elsewhere within a site. This report must not be taken as, or assumed to imply, any guarantee that a site is free of hazardous or potentially contaminative materials.

This report remains the property of Geo-Environmental and the Client has no rights to, or reliance upon this document or supporting documents until such time as payment has been received in full for all invoices for works undertaken in connection with this report.



2.0 DESK STUDY & GROUND INVESTIGATION REVIEW

A desk study report was prepared by Geo-Environmental on behalf of Martin Grant Homes (Reference: GE23305-DSR-SEPT25). The preliminary risk assessment based on the desk study information and can be found overleaf together with the conclusions made within the report. For further details reference should be made to the full report.

British Geological Survey geological mapping indicated the geology of the site to comprise superficial Glaciofluvial Deposits over the solid geology of the Zig Zag Chalk Formation.

The Groundsure Dataset indicated the superficial geology of the site was indicated to be classified as a Secondary A Aquifer. The underlying Zig Zag Chalk Formation was indicated to be classified as a Principle Aquifer.

The nearest surface feature was identified as an inland river not influenced by normal tidal action, and was located some 156m to the north-east of the site.

A total of 19No. historical industrial land uses were noted within a 500m radius of site 5No. recent industrial land uses were recorded within a 250m radius of the site

No historic, recent or active landfills were recorded within a 500m radius of the Site.

Historic mapping showed that the site mostly comprised part of a field network up to the present day.

The earliest available map records from c.1879 as detailed in the Groundsure report showed the site to be operating as a farm with a sand pit located in the southwest of the site. The Hopground cottages were shown to border the site at the western extremity. A pump was shown on-site from 1922 to 1959 mapping. The site remained relatively unchanged until c.1980 where it appeared that the sand pit had been infilled and buildings (likely to be associated with the farm operations) were present on the north-eastern boundary. By c.2001 the sewage works was no longer identifiable to the east of the site.

Potential Source/media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
Limited Areas of Made Ground and Shallow Soils (including the infilled sandpit)	End users	Direct contact	Likely	Mild	Moderate to Low End users are likely to come into contact with soils via direct contact as the development will include private gardens and communal soft landscaping. Sampling and chemical testing required to assess the risk.
	Soft Landscaping and Ecological Receptors	Root Uptake	Likely	Minor	Low Private gardens and communal soft landscaping are proposed. However, no evidence of harm to existing plant life was identified during the site walkover. Sampling and chemical testing required to assess the risk.
	Adjacent land users	Direct contact	Unlikely	Minor	Very Low Adjacent site users are unlikely to come into contact with soils. Sampling and chemical testing required to assess the risk.
	Water supply pipes	Direct contact	Likely	Mild	Moderate to Low Water supply pipes could come into contact with impacted or aggressive soils depending upon depth of installation and extent of soil impact. Sampling and chemical testing required to assess the risk.
	Buildings and infra-structure	Direct contact	Likely	Mild	Moderate to Low Foundations and utilities will be placed within potentially aggressive soils. Sampling and chemical testing required to assess the risk.
	Groundwater	Vertical migration	Low	Minor	Low Shallow groundwater or perched water could be present within the Glaciofluvial Deposits. These strata are classified as Secondary A



Potential Source/media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
					Aquifers. Significant potentially mobile contamination is not anticipated to be present on site. Sampling and chemical testing required to assess the risk.
	Surface Water	Lateral Migration	Low	Minor	Low Significant potentially mobile contamination is not anticipated. Sampling and chemical testing required to assess the risk.
Naturally Occurring Aggressive Ground Conditions	End users	Direct contact and inhalation / ingestion of soil derived dust	Unlikely	Minor	Very Low No naturally occurring potential sources which could harm human health have been identified.
	Adjacent land users	Direct contact	Unlikely	Minor	Very Low No naturally occurring potential sources which could harm human health have been identified.
	Water supply pipes	Direct contact	Unlikely	Minor	Very Low Services will be placed within soils which may be an aggressive environment which may require specific pipework. Sampling and chemical testing required to assess the risk.
	Buildings and Infrastructure	Direct contact	Unlikely	Minor	Very Low Foundations will be placed within soils which may be an aggressive environment for concrete. Sampling and chemical testing required to assess the risk.
Ground Gases and Vapours from any organic rich Made Ground or Off-Site Sources	End Users	Inhalation	Low	Medium	Low to medium Future occupiers may inhale potential ground gases produced by this source. Extensive or deep Made Ground with sufficient organic content for significant ground gas generation is not anticipated on the majority of the site but depending on the infill material of the historic sandpit, ground gas may be present. No significant off-site sources have been identified.
	Buildings and infrastructure	Gas accumulation	Low	Mild	Low



Potential Source/media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
		of flammable gases			Extensive putrescible material sufficient for significant methane production is not anticipated at the site.
	Adjacent land users	Inhalation	Low	Minor	Very Low The potential sources of ground gases beneath the site are unlikely to be in volumes that could give rise to off -site migration. Adjacent land users may be at risk from off-site ground gases. However, this was beyond the remit of this investigation.

Table 2.1: Preliminary Risk Assessment



2.1 Preliminary Risk Assessment

The PRA and CSM developed from the information gathered as part of the desk study process have identified plausible potential pollutant linkages that exist in relation to the proposed redevelopment of the site.

The potential pollutant linkages established within this desk study are not considered to prevent development on the subject site, but could require investigation and assessment to support further characterisation, calibration of the CSM and where/if necessary determine a remedial strategy to reduce, remove or otherwise control any risk within the site to key receptors.

It is considered that the overall risk from potential contamination on the site is 'low' albeit with specific potential pollutant linkages being assigned a moderate to low rating and that further assessment would be necessary to satisfy planning conditions or to provide clarification of the risk assessment.

In order to progress this assessment in line with the National Planning Policy Framework, to provide further characterisation of the site and refinement of the PRA and CSM, it is recommended that intrusive investigation and associated testing is undertaken to confirm the findings of the desk study report and to provide a robust risk assessment for the site and proposed redevelopment. As such it is recommended that geochemical and geotechnical investigation be carried out on the site to include analysis of soil and groundwater (if encountered) samples for the range of potential contaminants identified within the Desk Study, together with ground gas monitoring and an assessment of the site's ground gas climate.

2.2 Preliminary Geotechnical Assessment Summary (From Desk Study)

The proposed development area of the site was shown to be underlain by superficial Glaciofluvial Deposits. Made Ground was not expected in any significant quantity, but isolated areas may be present on the site, with note to the area of the historic infilled sandpit on the western portion of the site. The potential variability of the underlying natural strata may include shrinkable soils and desiccation due to mature trees/hedgerows, so a piled foundation solution may be more appropriate for some areas of the site.

It is possible that conventional strip or pad foundations could be suitable for the proposed development over the majority of the site, assuming foundations terminate within the Glaciofluvial Deposits. Whilst the sandier deposits might be non-shrinkable, soils containing a higher proportion of cohesive materials may be subject to a higher volume change potential in accordance with NHBC guidance. The foundation design would also need to account for the presence of numerous trees on-site and on the site boundaries, these could require the localised deepening of foundations.

If the Client has developed any other sites in close proximity to this site it may be prudent to review the foundation solution for that site as an indicator of the possible solution for this site. An intrusive investigation will be required in due course in order to inform the design process.

It is possible that soakaways will function effectively on this site, although this would be subject to testing to inform design. It may also be necessary (subject to testing) to utilise on-site storage and attenuation of peak storm flow, through systems such as porous paving and cellular storage crates.



2.3 Conclusions from Desk Study

The desk study has shown the site comprised overgrown and partly wooded fields bounded by trees and hedgerows up to the present day. A feature, comprising an infilled sandpit, is located within the development area on the western end of the site.

The surrounding land use predominately comprised open countryside, agricultural fields and stands of woodland. A sewage works was located some 150m to the east of the site.

The proposed end use of the site is understood to comprise a residential development, areas of soft landscaping, access roads and associated infrastructure. As such, sensitive uses such as in private gardens with gardening activities (including dust being tracked back into buildings) and growing vegetables are considered likely to form part of the end use scenario for this site.

It is concluded that the overall risk of harm to end users is generally low, but that further assessment is likely to be required in order to better characterise potential contamination on-site as result of current and historical land uses and the associated risk to human health and the environment.

It is possible that conventional foundations would be suitable for the proposed development, although any design should account for the potential presence of shrinkable soils and trees in proximity to proposed foundations.



3.0 GROUND INVESTIGATION SCOPE & RATIONALE

The following sections detail the scope and rationale for the investigation undertaken on 30th October 2025.

3.1 Investigation Scope

The following scope of works was agreed with the Client:

- Attendance of a specialist surveyor to undertake a buried utilities clearance survey of the proposed exploratory hole locations using radio-detection and ground penetrating radar techniques.
- Attendance of a Geo-Environmental Engineer to set out and supervise the intrusive investigation, undertake sampling, in-situ testing and logging of recovered soils from exploratory holes.
- Construction of 7No. dynamic sampler boreholes to depths of up to 4m bgl, depending on drilling conditions, using a self-propelled track mounted rig.
- Indicative falling head soakage tests in four of the window sampling boreholes.
- Installation of 3No. dual purpose ground gas/groundwater monitoring wells to a depth of 4m bgl to facilitate return monitoring on 6No. occasions, in accordance with best practice. This may include some winter monitoring, depending on the time of the initial fieldworks. The wells would be completed with a lockable cover fitted flush with adjacent ground.
- Undertake a series of TRL DCP tests for preliminary CBR parameters for pavement designs.
- Geotechnical laboratory testing to support the geotechnical assessment for foundations, ground floor construction and buried concrete design.
- Geochemical laboratory testing for a suite of commonly occurring brownfield contaminants, including pesticide scan and waste classification.

Where deviation from the scope of works on site was required these are detailed below:

- WS1, WS2 and WS4 were terminated at 1.3m, 2.00m and 2.4m bgl respectively due to dense ground conditions. WS1 was continued as dynamic probe.
- Falling Head Tests were unable to be undertaken during the intrusive investigation, they were carried out in installed window sampler boreholes on return monitoring.
- Location WS7 was not undertaken due to time constraints and failing light.

3.2 Investigation Rationale

The exploratory holes were located to provide broad coverage across the proposed development area. The following tables summarise the strategy of the environmental (Table 3.1) and geotechnical (Table 3.2) investigations.

Environmental Area of Concern	Investigation	Positions
Near Surface Soils and Made Ground	Window sampler boreholes situated across the site with regular sampling and laboratory analysis	All Locations
Ground Gas and Vapours	Ground gas monitoring standpipes installed within selected window sampler boreholes.	WS2, WS5 and WS6

Table 3.1: Summary of Environmental Investigation Strategy



Geotechnical Area of Concern	Investigation	Positions
Lateral changes in ground conditions	Window sampler boreholes undertaken with regular in-situ testing and sampling.	All Locations
Shrinkable soils	Window sampler boreholes undertaken with regular in-situ testing and sampling.	All Locations
Shallow Groundwater	Standpipes installed within selected boreholes and groundwater observations made within all holes during drilling.	WS2, WS5 and WS6
Significant depths of Made Ground	Window sampler boreholes undertaken with regular in-situ testing and sampling.	All Locations
Aggressive chemical ground conditions (sulphates)	BRE SD1 Testing undertaken in samples from selected Window Sampler locations.	WS2, WS3 and WS5
Falling Head Tests	Falling Head Tests within window sampler borehole monitoring wells.	WS2, WS5 and WS6

Table 3.2: Summary of Geotechnical Investigation Strategy

Soil samples for chemical testing were collected and placed into amber jars for transportation in cool boxes to the laboratory by their in-house courier. Both the geotechnical and chemical testing were undertaken by UKAS accredited laboratories. Chemical testing of soil samples was also undertaken in accordance with accredited MCERTS protocols.



4.0 ENCOUNTERED CONDITIONS

A factual record of the conditions encountered during the physical investigations of the site is presented in the following section.

For further details of the encountered ground conditions, reference should be made to the Engineer's logs presented in Appendix B, the preliminary groundwater/gas monitoring assessment presented in Appendix C, the geotechnical testing results in Appendix D, and the chemical testing and Hazwaste results in Appendix E.

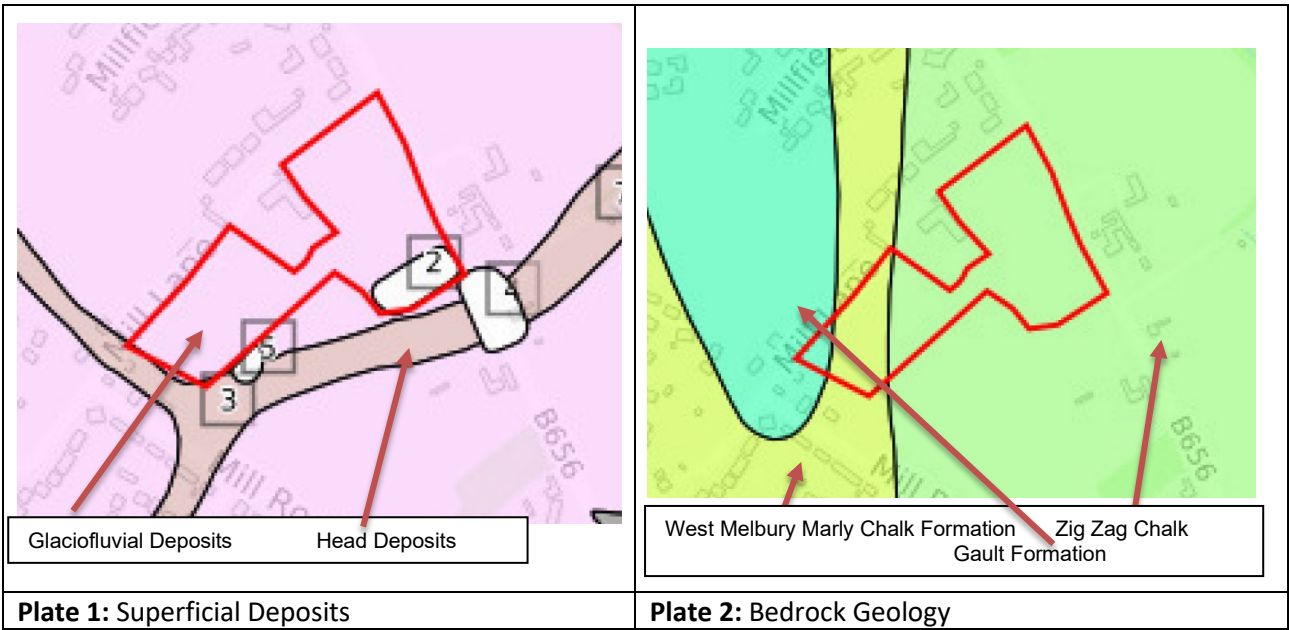
The physical ground investigation works were undertaken on 30th October 2025. Return spot gas and groundwater monitoring was undertaken on 7th and 20th November and 12th and 22nd December 2025 to date, with a further two visits proposed.

Unless stated otherwise, all depths are reported as metres below ground level (m bgl).

4.1 Anticipated Ground Conditions

British Geological Survey geological mapping indicated the geology of the site was likely to comprise superficial Glaciofluvial deposits, with Head Deposits mapped nearby over the West Melbury Marly Chalk Formation in the east, Zig Zag Chalk Formation in the west and Gault Clay in the very west.

For further details of the distribution of geological units, reference should be made to Plate 1 – Superficial deposits and Plate 2 – Bedrock geology.



4.2 Ground Conditions

The ground conditions encountered within the exploratory holes comprised a mantle of Topsoil or Made Ground overlying Glaciofluvial Deposits. Topsoil was encountered within all locations.

A generalised summary of the encountered conditions is presented in Table 4.1 below.



Top (m bgl)	Base (m bgl)	Geology	Locations
0.00	0.25-0.50	TOPSOIL: Grass over brown slightly gravelly/sandy silt. Gravel comprises fine to medium sub angular to rounded flint and chert. Occasional rootlets.	All
0.30	0.50	MADE GROUND: Orangish brown very gravelly slightly sandy silt. Sand is fine. Gravel comprises fine to coarse sub angular to sub rounded flint and chert. Occasional brick.	WS1
0.30 - 1.10	1.50 - 1.82	GLACIOFLUVIAL DEPOSITS (cohesive): Stiff Orangish brown sandy CLAY with frequent fine to coarse gravel sized pockets/lenses of sand. Sand is coarse	WS2 & WS4
0.30	0.60 – 0.80	Orangish brown sandy slightly clayey gravelly SILT. Sand is fine to coarse. Gravel comprises fine to coarse sub angular to sub rounded flint and chert. Occasional rootlets.	WS2 & WS6
0.25 – 1.50	1.30 – 4.00+	GLACIOFLUVIAL DEPOSITS (granular): Orangish brown silty sandy slightly clayey GRAVEL. Sand is coarse. Gravel comprises fine to coarse sub angular to subrounded flint and chert. Occasional rootlets. Yellow/orangish brown fine to coarse SAND with occasional pockets of clay. Occasionally gravelly. Gravel comprises fine to coarse sub angular to subrounded flint and chert.	All

Table 4.1: Summary of Ground Conditions

Made Ground was encountered within a single location, WS1 to a depth of 0.50m bgl. Anthropogenic materials within this soil included brick and concrete fragments. With the exception of the Made Ground no visual evidence of possible contamination was recorded within the exploratory holes undertaken. No olfactory evidence of contamination was noted during the site works.

Standard penetration testing (SPT) was undertaken within WS1-WS6 with SPT 'N' values ranging between 10-50(refusal) within the Glaciofluvial Deposits.

For further details of the ground conditions encountered and SPT results, reference should be made to the Engineers Logs included within Appendix B.

4.3 Ground Gases

Dual purpose gas and water monitoring standpipes were installed within WS2, WS5 and WS6 to a depth of 4.00m bgl as summarised in the table below.

Location	Depth of borehole (m bgl)	Response Zone (m bgl)
WS2	4.00	1.00 – 4.00
WS5	4.00	1.00 – 4.00
WS6	4.00	1.00 – 4.00

Table 4.2 Summary of monitoring well construction

For further details, reference should be made to the preliminary ground gas assessment sheet in Appendix C.



4.4 Groundwater

Groundwater was not recorded within any location during the investigation.

A total of six fortnightly monitoring visits were scheduled to determine any possible variation in groundwater levels. Dual ground gas/groundwater monitoring wells were installed within WS2, WS5 and WS6. To date four monitoring visits have been completed with the groundwater levels summarised within Table 4.2 overleaf.

Location	Groundwater depth (m bgl) & Level [m AOD]					
	07/11/25	20/11/25	12/12/25	22/12/25	09/01/25	23/01/25
WS2	Dry	Dry	Dry	Dry		
WS5	Dry	Dry	Dry	Dry		
WS6	Dry	Dry	Dry	Dry		

Table 4.3: Summary of Groundwater Levels During Monitoring Visits (to date)

It should be noted that changes in groundwater and perched water levels do occur for a number of reasons including seasonal effects and variations in drainage. Such fluctuations may only be recorded by the measurement of the groundwater level within a series of standpipes or piezometers installed within appropriate response zones.

4.5 Obstructions

No artificial obstructions were encountered during the investigation. The presence of obstructions elsewhere at the site cannot be discounted.

WS1, WS2 and WS4 were all terminated early due to dense natural strata between 1.3m and 2.4m bgl.

4.6 Geotechnical Analysis

The results of geotechnical testing undertaken as part of the ground investigation are summarised in Table 4.3 with test results presented in Appendix D.

Parameter		Made Ground	Glaciofluvial (cohesive)	Glaciofluvial (granular)
pH		7.4	6.8 – 7.2	6.2 – 7.2
Water soluble sulphate (mg/l)		12.3	9.84 – 17.7	2.64 - 14
Total Sulphur (%)		-	0.011	0.008 – 0.016
Natural Moisture Content (%)		-	10.7 – 14.5	8.7 – 14.8
Liquid Limit (%)		-	33 – 56	33 – 49
Plastic Limit (%)		-	13 – 22	15 – 21
Plasticity Indices (%)		-	20 – 34	16 – 28
Modified Plasticity Indices (%)		-	17.6 – 20.1	8.68 – 16.56
NHBC Volume Change Classification		-	Low to Medium	Low
Particle Size Distribution	Very Coarse (%)	-	-	0
	Gravel (%)	-	-	2 – 31
	Sand (%)	-	-	55 – 61
	Fines <0.063mm (%)	-	—	14 - 37

Table 4.3: Summary of Geotechnical Laboratory Test Results



4.7 Chemical Analysis

In order to assess the general chemical quality of the strata encountered, samples of soils recovered from the exploratory holes were submitted for analysis for a range of potential contaminants supported by CLR publication CLR8 and Environment Agency R&D66 publication.

The testing rationale included sampling and analysis to provide a general coverage of the subject site. Testing was undertaken for the range of contaminants identified by the desk study including eighteen soil samples tested for metals, metalloids, inorganic compounds, phenols, speciated TPH, PAH and asbestos screening. One sample was also tested for pesticides.

The testing undertaken is summarised in Table 4.4.

Laboratory Test	Number of samples tested	Soil Type
GESL Soil Suite 4	1	Made Ground
	5	Glaciofluvial Deposits
Pesticides	1	Made Ground

Table 4.4 Summary of Chemical Laboratory Tests Undertaken by Soil Type

Location	Depth (m bgl)	Testing Suite		Stratum
		GESL/4	Pesticides	
WS1	0.45	X	X	Made Ground
WS2	0.45	X		Glaciofluvial Deposits
WS3	0.45	X		Glaciofluvial Deposits
WS4	0.50	X		Glaciofluvial Deposits
WS5	0.80	X		Glaciofluvial Deposits
WS5	2.60	X		Glaciofluvial Deposits
WS6	1.50	X		Glaciofluvial Deposits

Table 4.5 Soils Submitted for Laboratory Analysis



5.0 ENGINEERING CONSIDERATIONS

Subsequent to intrusive investigation of the site and receipt of the laboratory test results, the following interpretative assessments have been made with respect to engineering considerations.

5.1 Foundations

Based on the ground and groundwater conditions encountered within the window sampler holes, conventional shallow foundations could be suitable for the proposed residential development across the site, albeit taken through any topsoil, soft zones or disturbed ground and bear wholly into or onto the medium dense granular material or the firm cohesive material of the Glaciofluvial Deposits.

The results of the Atterberg Limit tests, in conjunction with the field observations indicated the Glaciofluvial Deposits as low to medium volume change potential as defined by NHBC Standards, Chapter 4.2 and BRE Digest 240. It is recommended that *en masse* the cohesive soils at the site be treated as medium volume change potential for which a minimum foundation depth remote from trees of 0.90m would be required should they be founded in clay soils. Foundations terminating in granular soils overlying clay soils may require deepening as if constructed in shrinkable soils. This must be assessed in line with NHBC Standards Chapter 4.2.9. A minimum foundation width of 450mm is recommended.

Within the zone of moisture demand of any existing, proposed or recently felled trees it is recommended that foundation depths be calculated in accordance with the NHBC Standards, Chapter 4.2 where in clay soils. Foundations should also be taken through any major root zones, loose soils, soft clays and desiccated clay soils should this be found at greater depth. It should be noted that the NHBC stipulate that foundations cast at depths greater than 2.5m should be "engineer designed".

Heave protection measures would also be required if the minimum foundation depth on account of trees is calculated to be in excess of 1.50m within cohesive materials.

Any spread foundations placed within purely granular soils may not require any heave protection and further assessment at each plot is recommended once a final layout is available.

Based on the typical settlement parameters for the types of soil encountered, a maximum net allowable bearing capacity of 100kPa is applicable for trench, strip or isolated pad foundations up to 1.25m wide taken through any Topsoil, Made Ground, soft or loose zones or disturbed soils and placed wholly into or onto the medium dense granular Glaciofluvial Deposits or firm cohesive Glaciofluvial Deposits. Under the above loading the settlements should remain within tolerable limits for the proposed construction. Further assessment is recommended in the location of WS6 where loose sands were encountered to approximately 3.5mbgl to understand the nature and extent of the loose materials. Where foundations span between cohesive and granular horizons, nominal horizontal reinforcement will be required between the material types.

Where foundations in excess of 2.0m are required due to the presence of trees and shrinkable soils, or where Made Ground is found to significant depths, a piled foundation is likely to prove more suitable.

It should be noted that due to access and time restrictions, the extent and depth of the infilled pit (as identified by the Desk Study) could not be fully investigated and should be considered as a further phase of investigation, once access can be gained.

5.2 Floor Slabs

Development levels are currently unknown and therefore the level of any site strip is also unknown. Should floor slabs be constructed directly on to the medium dense granular deposits then ground bearing slabs could be utilised.



Should the surface materials on completion of the site strip comprise clay deposits then further assessment should be made.

No floor slabs should be placed onto either topsoil, any Made Ground greater than 0.6m in thickness or any soft clay deposits.

Should ground bearing slabs be used then the area should be proof rolled prior to placement and any soft or loose spots should be removed and replaced with an inert granular rolled fill.

5.3 Excavations

Excavations within any shallow Made Ground should remain relatively stable in the short term. Longer deeper excavations within any deeper areas of Made Ground, if encountered, are likely to be prone to instability, particularly where left open for prolonged periods or where water is encountered, and should be battered back to a safe angle, or suitable shoring techniques should be adopted to provide stability. Pumping from sumps may also be required if shallow water is encountered.

Shallow excavations within the Glaciofluvial Deposits should remain relatively stable in the short to medium term. However, deeper and longer dry excavations will likely be unstable. Glaciofluvial Deposits exposed to water should be concreted or blinded immediately. Some excavation instability may also be encountered where water seepages are encountered.

Ground works should always be designed in such a manner to avoid man entry into excavations. In the event that such works cannot be avoided or designed out, they should only be undertaken in accordance with a safe system of work, following an appropriate risk assessment and in accordance with any legislative requirements, e.g. Confined Spaces Regulations.

5.4 Pavements

Five in-situ California Bearing Ratio (CBR) tests were undertaken across the site using a Transport Research Laboratory (TRL) Dynamic Cone Penetrometer (DCP). Table 5.1 summarises the results of the in-situ CBR testing.

Location	Strata Depth Range (mm bgl)	Range DCP CBR (%)
DCP1	110 - 780	2 - 26
DCP2	80 - 760	3 - 29
DCP3	140 - 790	7 - 45
DCP4	110 - 820	2 - 41
DCP5	200 - 800	4 - 50
DCP6	100 - 800	2 - 44

Table 5.1: Summary of CBR Results

CBR values were also estimated based on the Atterberg Limit Test results and the Transport and Road Research Laboratory Report (LR1132) entitled 'The Structural Design of Bituminous Roads' (1984) which cites estimated equilibrium suction indices (ESI) of 20% for poorly graded sand for thin pavement construction (non motorway) average construction conditions and a presumed low water table.

For the cohesive soils using a Plasticity Index of 20% and a low water table, for average construction conditions a CBR value of 5% is recommended.

TRRL LR1132 sets out equilibrium suction index CBR values which are commonly used as good practice for the determination of CBR for the long-term characterisation of sub-grade condition and performance. Unless the



subgrade is exposed for an extended period over which deterioration or saturation could occur, the equilibrium suction index CBR is generally considered to be the relevant value upon which to base pavement design.

A preliminary design CBR value of 5% is recommended across the site. Based on the geotechnical results, the near surface Glaciofluvial Deposits should be considered as being potentially frost susceptible for pavement design purposes.

5.5 Sulphates

Three BRE SD1 tests were undertaken on the Glaciofluvial Deposits. The results for the Glaciofluvial Deposits corresponded to design class of DS-1 as defined within the BRE Special Digest 1 (2005). The pH analyses indicate the ACEC class to be AC-1. It is recommended that a design class of DS-1 and an ACEC class of AC-1 be applied to all sub-surface concrete within this stratum.

This also correlated with all of the soluble sulphate analysis within the other samples tested across the site.

5.6 Soakaways

Indicative Preliminary Falling Head Testing was undertaken on Friday 12th December 2025.

The indicative infiltration rates are summarised below:

Location	Indicative Infiltration Rate (l/min)
WS2	2.3×10^{-6}
WS5	4×10^{-4}
WS6	3.51×10^{-5}

Table 5.2: Summary of Falling Head Results

The soakage results are contained within Appendix F.

The testing undertaken indicates that the Glaciofluvial Deposits are possibly suitable for drainage via conventional soakaways however, this would need to be confirmed with full BRE 365 testing in trial pits.



6.0 ENVIRONMENTAL CONSIDERATIONS

A Generic Quantitative Risk Assessment (GQRA) was undertaken on the results of the chemical testing on the soil samples, the findings of which are presented in the following sections.

Site workers involved in the preparation and construction of the development have not been considered further in this assessment as the Principal Contractor is duty bound under the current CDM Regulations to undertake their own risk assessments with respect to their employees.

6.1 Outline Risk Assessment

A number of plausible contamination linkages were identified by the Desk Study for the site. The investigation did not encounter conditions that warranted a revision of the preliminary Conceptual Site Model except Made Ground was only encountered within WS1. It should be noted that due to access and time restrictions, the extent and depth of the infilled pit (as identified by the Desk Study) could not be fully investigated and should be considered as a further phase of investigation, once access can be gained.

6.2 Soil Contamination vs. End Users

The presence of a possible contaminant does not necessarily imply that a site or area is contaminated or that there is any unacceptable risk to human health. A Preliminary Quantitative Risk Assessment has been undertaken in order to evaluate any unacceptable risks posed to human health with respect to the proposed redevelopment. It should be noted that this assessment is protective of the chronic long-term effects of contaminants, which is also likely to be protective of any possible immediate acute effects.

A quantitative risk assessment has been undertaken by comparing the results of the laboratory chemical testing of shallow soils against Tier 1 screening criteria in the first instance. These criteria comprise the Atkins ATRISK soil screening values (SSVs), the Suitable for Use Levels (S4ULs) published by LQM (Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3453. All rights reserved) and the Category 4 Screening Levels (C4SLs) published by DEFRA. Although the C4SLs were released for Part 2A use, the associated policy companion document for the C4SLs indicated that they may also be used for planning. Although the C4SLs represent a marginally higher risk level than the SSVs and S4ULs (low risk rather than minimal risk) it is considered that the risk levels remain very low. Therefore, the final C4SLs are considered to be suitable to assess soils under the planning regime.

In the first instance, the results of the sample analysis were compared to the Tier 1 screening criteria where available. If/where any screening values are exceeded, further statistical assessment is required.

The results of the chemical testing have been compared directly with the generic assessment criteria for a residential end use with plant uptake.

No asbestos was identified, and pesticide concentrations were below laboratory detection limits.

The results indicated that there were four exceedances for Arsenic and Barium, higher than the Atkins ATRISK/C4SL/SSSVs screening values for the residential end use with home grown produce. Table 6.1 below details the results for the elevated concentrations:

Determinant	Range of Results (mg/kg)	Soil Screening Value (mg/kg)			Exceedance Locations
		C4SL	S4UL	Atkins Atrisk	
Arsenic	36 - 89	37	37	37	WS3 0.45m WS4 0.50m



					WS5 0.80 WS5 2.70
Barium	35 - 88			56.8	WS1 0.45m WS2 0.45m WS4 0.50m WS5 0.80m

Table 6.1: Summary of Exceedances

Exceedances for Arsenic were only noted in the northeastern field. Exceedances for Barium were recorded in both fields.

The desk study (Reference: GE23305/DSR/JAN26) did not identify any specific potential source of barium as a soil contaminant and given that the soils sampled were natural soils, excluding the Made Ground encountered over WS1, it is considered that the concentrations reported are associated with natural, background presence of Barium. As part of the assessment of reported barium concentrations, the UK Soil Observatory natural background map was reviewed (extract included in Figure 3), and this indicated natural background concentrations of barium within the subject site to be in the range of 320.69mg/kg. Given the reported concentrations of barium in the underlying natural soils (Glaciofluvial Deposits) were in the range 35-88mg/kg, it is considered that the concentrations detected are not indicative of gross contamination which represent a specific risk of harm to end users or would warrant remedial intervention.

The desk study did not identify any specific potential source of arsenic as a soil contaminant and given that the soils were mostly natural soils it is considered that the concentrations reported are associated with natural, background presence of arsenic. It is recommended that a detailed quantitative (Tier 3) risk assessment for the bio accessibility of the arsenic present on site is undertaken to understand the risk to human health.

In addition, a discovery strategy should be in place on site during site clearance and development works and implemented if/where unexpected condition are encountered.

6.3 Soil Contamination vs. Adjacent land Users

Surrounding land uses were identified to mostly comprise residential properties and agricultural fields. No mobile contamination was found during the investigation and therefore, no significant risks to adjacent land users are considered to exist.

However, short term risks to adjacent land users may arise in relation to the generation of soil derived dust and particles as fugitive emissions from the site during the construction phase. Therefore, it is recommended that dust suppression techniques, e.g. damping down exposed soils, are employed during the ground works and construction phases on site in order to minimise and manage potential nuisance issues for adjacent land users.

6.4 Soil Contamination vs. Soft Landscaping

British Standard BS3882:2015 *Specification for topsoil and requirements for use* provides assessment criteria for a number of potentially phytotoxic contaminants in terms of new planting.

The results of the chemical analysis for determinants known to pose a potential phytotoxic risk to plant growth are summarised in Table 6.2 together with the respective adopted Generic Assessment Criteria (GAC) for plant growth. The compliance criteria set out in BS3882:2015 are pH dependent and thus the GAC used relate to the pH range measured on samples recovered from the site.



Determinant	Phytotoxicity GAC (mg/kg)			GAC Exceedances
	pH <6.0	pH 6.0-7.0	pH >7.0	
Zinc	200	200	300	No
Copper	100	135	200	No
Nickel	60	75	110	No

Table 6.2: Summary of Plant Phytotoxicity Assessment

No exceedances for the above listed metals were identified and therefore, no remedial measures are considered necessary for the protection of plants.

6.5 Soil Contamination vs. Built Environment

Recommendations with respect to pH and sulphate in relation to buried concrete are made in Section 5.5.

The current guidance on selection of materials for water supply pipes to be laid in contaminated land is contained in UK Water Industry Research's (UKWIR) report reference 10/WM/03/21 (re-issued 2010). However, the guidance is not mandatory and there have been concerns raised by various industry technical associations regarding the document and the methodologies proposed.

Review of the ground conditions and geochemical testing undertaken during this investigation it is considered that that specific protection measures are unlikely to be required for potable water supply at the site. However, clarification in this respect should be sought from the appropriate water supplier.

As a matter of good practice, and to maximise the protection to utilities, it is recommended that clean, granular backfill is used in service runs and that marker tapes are used for all buried services.

6.6 Ground Gases

Dual purpose gas and water monitoring standpipes were installed within WS2, WS5 and WS6 to depths of between 2.00m and 4.00m bgl. To date, four of six monitoring visits have been undertaken. Methane was recorded at concentrations of between 0.0% v/v and 0.5% v/v, whilst carbon dioxide and oxygen concentrations have been recorded within the range of 0.2% v/v to 1.5% v/v and 2.6% v/v to 21.2% v/v respectively. Atmospheric pressure has been recorded between 995mb and 1007mb. A maximum steady flow of 0.1l/hr was recorded. Once the remaining visits have been completed, the report will be updated.

A further two visits are planned and a ground gas assessment in the form of an updated report will be issued on completion of the ground gas monitoring confirming the final ground gas assessment. Based on initial data it is likely that protection against the presence of ground gases will not be required at this site.

The results of the first three rounds of ground gas monitoring are presented in Appendix C.

6.7 Waste Disposal

The following information is provided for preliminary guidance purposes, as different facilities or operators may have differing acceptance criteria and Waste Acceptance Criteria (WAC) analysis may be required to confirm the exact classification. In addition, if the intention is to retain excess spoil/arising on site for specific purposes, then these soils would not comprise waste, although this is subject to confirmation and relevant declaration under the Definition of Waste Code of Practice.



Where waste soil is being disposed to landfill it must first be classified as either Hazardous or Non-Hazardous. The classification is carried out in accordance with the Environment Agency's publication WM3 'Waste Classification-Guidance on the classification and assessment of waste'. Waste that is classified as Non-Hazardous in accordance with WM3 may be disposed without further testing to a Non-Hazardous landfill. Alternatively, once the waste soils have been identified, Waste Acceptance Criteria (WAC) testing can be undertaken to establish whether the material can be disposed to an Inert landfill, a subgroup of Non-Hazardous landfill. It should be noted that inert wastes are typically from a consistent source that meet a number of qualifying criteria, and thus Made Ground commonly will not meet the requirements to be disposed as Inert.

The laboratory results for the samples of the recovered soils were assessed using the HazWasteOnline software which determines whether a generated waste is identified as having hazardous or non-hazardous properties. The Hazwasteonline analysis indicated that the natural soils on site would likely be classed as Non-Hazardous.

Furthermore, no asbestos was identified.

It must be noted that any waste classification assessment is indicative only and actual classification would depend on permit status of the final disposal facility. Once soils for disposal have been identified it is recommended that further testing of these specific soils be undertaken in order to confirm the above assessment.

It must be noted that the waste classification assessment is based on samples of in situ soils and is preliminary only as the number of samples tested may not be representative of the volume of waste soils. Once soils for disposal have been identified further testing of these specific soils must be undertaken in order to confirm the above assessment.

6.7.1 General

In accordance with the CL:AIRE Definition of Waste Code of Practice (2011) materials are only considered waste if 'they are discarded, intended to be discarded or required to be discarded by the holder'.

The Code of Practice therefore allows soils to be reused on site where the following criteria are met:

- The re-use of the soils will not present an unacceptable or increased risk to controlled waters, the environment and human health;
- The soils are suitable both in terms of chemical and geotechnical properties for the intended use without prior treatment;
- Only the required volume is used and no more;
- There is a required use and a certainty of use not just a possibility.

In order to comply with the Code of Practice, a Materials Management Plan (MMP) that confirms the above criteria are met must be prepared. The MMP must be reviewed by a 'Qualified Person' who then issues a declaration to the Environment Agency. The MMP and declaration must be in place before soils are excavated and it cannot be applied retrospectively. Geo-Environmental can provide this service should it be required.

Where materials do not meet the required criteria, it may be possible to treat them under an environmental permit so that they may be re-used on site. In addition, where material is discarded as waste, it may still be possible to reuse the waste on site under a standard rules environmental permit. However, strict limits on the volumes that can be reused apply in these cases.

Under current legislation, where wastes are to be disposed of to landfill, they may, depending on their classification, require pre-treatment. Pre-treatment shall comprise a chemical, physical (including sorting), thermal or biological



process. The pre-treatment is required to change the characteristics of the waste, reduce its volume, reduce its hazardous nature, and facilitate its handling and enhance its recovery.

Other materials disposed of from site as part of the development of the site may require disposal separately. All materials containing dangerous substances e.g. tar or bitumen, asbestos, mercury, hydrocarbons, PCBs and asbestos are likely to be classified as Hazardous Waste and therefore susceptible to the relevant legislative controls.

Should it be proposed to dispose of any of the material the results should be forwarded to the proposed receiving landfill for confirmation of this assessment as it is their decision on whether they will accept the waste material.

6.8 Revised Risk Assessment

Based on the findings of the investigation, a revised risk assessment has been prepared.



Potential Source/media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
Limited Areas of Made Ground and Shallow Soils (including the infilled sandpit)	End users	Direct contact	Unlikely	Mild	Low There were exceedances for Barium and arsenic in the natural soils on site. Barium was not identified at levels above background concentrations. A detailed quantitative (Tier 3) risk assessment should be undertaken on the bio accessibility of arsenic in the natural soils. A cover system may be required depending on the results of the detailed investigation.
	Soft Landscaping and Ecological Receptors	Root Uptake	Unlikely	Minor	Very Low No exceedances for the above listed metals were identified and therefore, no remedial measures are considered necessary for the protection of plants.
	Adjacent land users	Direct contact	Unlikely	Minor	Very Low No mobile contamination was found during the investigation and therefore, no significant risks to adjacent land users are considered to exist.
	Water supply pipes	Direct contact	Unlikely	Mild	Low Review of the ground conditions and geochemical testing undertaken during this investigation it is considered that that specific protection measures are unlikely to be required for potable water supply at the site. However, clarification in this respect should be sought from the appropriate water supplier.
	Buildings and infra-structure	Direct contact	Unlikely	Mild	Low It is recommended that a design class of DS-1 and an ACEC class of AC-1 be applied to all sub-surface concrete within the Glaciofluvial Deposits.
	Groundwater	Vertical migration	Low	Minor	Low No mobile contamination was found in the soils. No water testing undertaken.



Potential Source/media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
	Surface Water	Lateral Migration	Low	Minor	Low No mobile contamination was found in the soils. No leachability testing undertaken.
Naturally Occurring Aggressive Ground Conditions	End users	Direct contact and inhalation / ingestion of soil derived dust	Unlikely	Minor	Very Low No naturally occurring potential sources which could harm human health have been identified.
	Adjacent land users	Direct contact	Unlikely	Minor	Very Low No naturally occurring potential sources which could harm human health have been identified.
	Water supply pipes	Direct contact	Unlikely	Minor	Very Low It is recommended that a design class of DS-1 and an ACEC class of AC-1 be applied to all sub-surface concrete within the Glaciofluvial Deposits.
	Buildings and Infrastructure	Direct contact	Unlikely	Minor	Very Low It is recommended that a design class of DS-1 and an ACEC class of AC-1 be applied to all sub-surface concrete within the Glaciofluvial Deposits.
Ground Gases and Vapours from any organic rich Made or Off-Site Sources	End Users	Inhalation	Low	Medium	Low Based on initial data it is likely that protection against the presence of ground gases will not be required at this site.
	Buildings and infrastructure	Gas accumulation of flammable gases	Low	Mild	Low Extensive putrescible material sufficient for significant methane production was not encountered during the investigation, significant methane not recorded during monitoring.
	Adjacent land users	Inhalation	Low	Minor	Very Low Based on initial data it is likely that protection against the presence of ground gases generated at this site will not be required on adjacent sites.

Table 6.3: Revised Risk Assessment

7.0 Discovery Strategy

Whilst an intrusive investigation has been undertaken on the site, it remains possible that unexpected ground and/or groundwater conditions may be encountered during the process of construction.

Should previously undiscovered contamination or unforeseen ground conditions be encountered during construction by the ground workers, this must be reported to the Site Manager immediately in order that the Consultant is notified. Where deemed necessary, the Consultant shall attend the site to inspect the discovery and provide recommendations on the further actions required, if any. Where necessary the regulatory authority shall be informed. Post any additional investigation or laboratory testing the results and any proposed remedial measures shall be reported to the regulatory authority or other appropriate organisation for consent, before proceeding or implementing the remedial measures.

A copy of the discovery strategy must be lodged on site, and provisions made to ensure that all workers are made aware of their responsibility to observe, report, and act on any potentially suspicious, abnormal, unforeseen or contaminated ground and/or groundwater conditions they may encounter.

Depending on the type, nature and extent of any such 'discovery', it may be necessary to halt works in that location until such time as the assessment has been completed. This shall be reviewed on a 'discovery' specific basis and in conjunction with consultation with the client, other technical personnel and/or regulatory/approval organisations.

As a general guide, where such unexpected conditions are encountered the following approach is required as a minimum:

- All discoveries are to be reported to the Site Manager immediately and works at that location are to halt until further notice;
- The Site Manager is to report any such discoveries to the Client and the Consultant;
- Following notification from the Site Manager, the Consultant shall discuss the discovery with the Local Authority and/or other relevant parties and if considered necessary, arrange to meet on site to view the discovery;
- The Consultant shall attend the site to record the location, extent and nature of the discovery and implement an appropriate sampling and analysis regime, taking due account of the type and nature of the discovery, known and probable land uses in that area of the site;
- Where remedial action is required, regulatory consultation and approval will be sought;
- A record will be produced by the Consultant and held on site (with copies held by the Consultant, Client and Local Authority/other relevant organisation), detailing the discovery, assessment works undertaken, findings thereof, confirmation either of no action required or detailing the remedial action taken and validation thereof.

The process is shown overleaf:

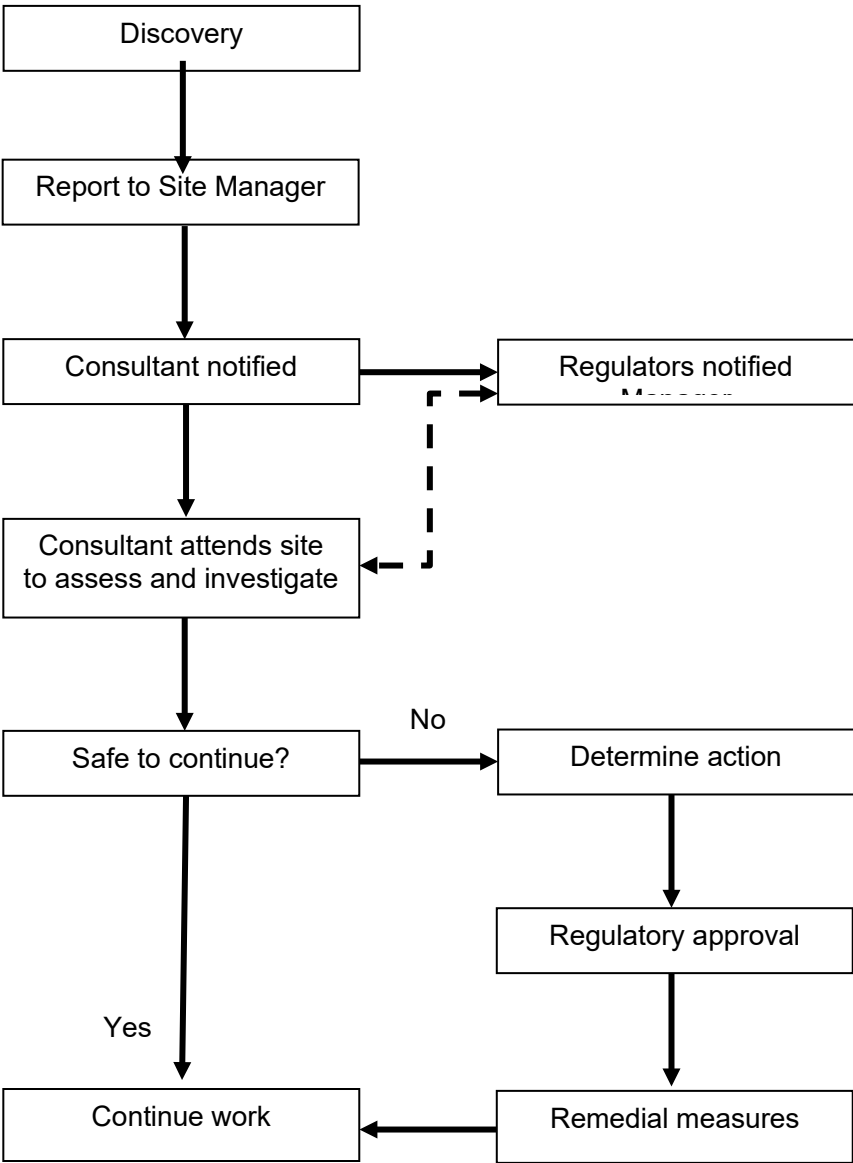
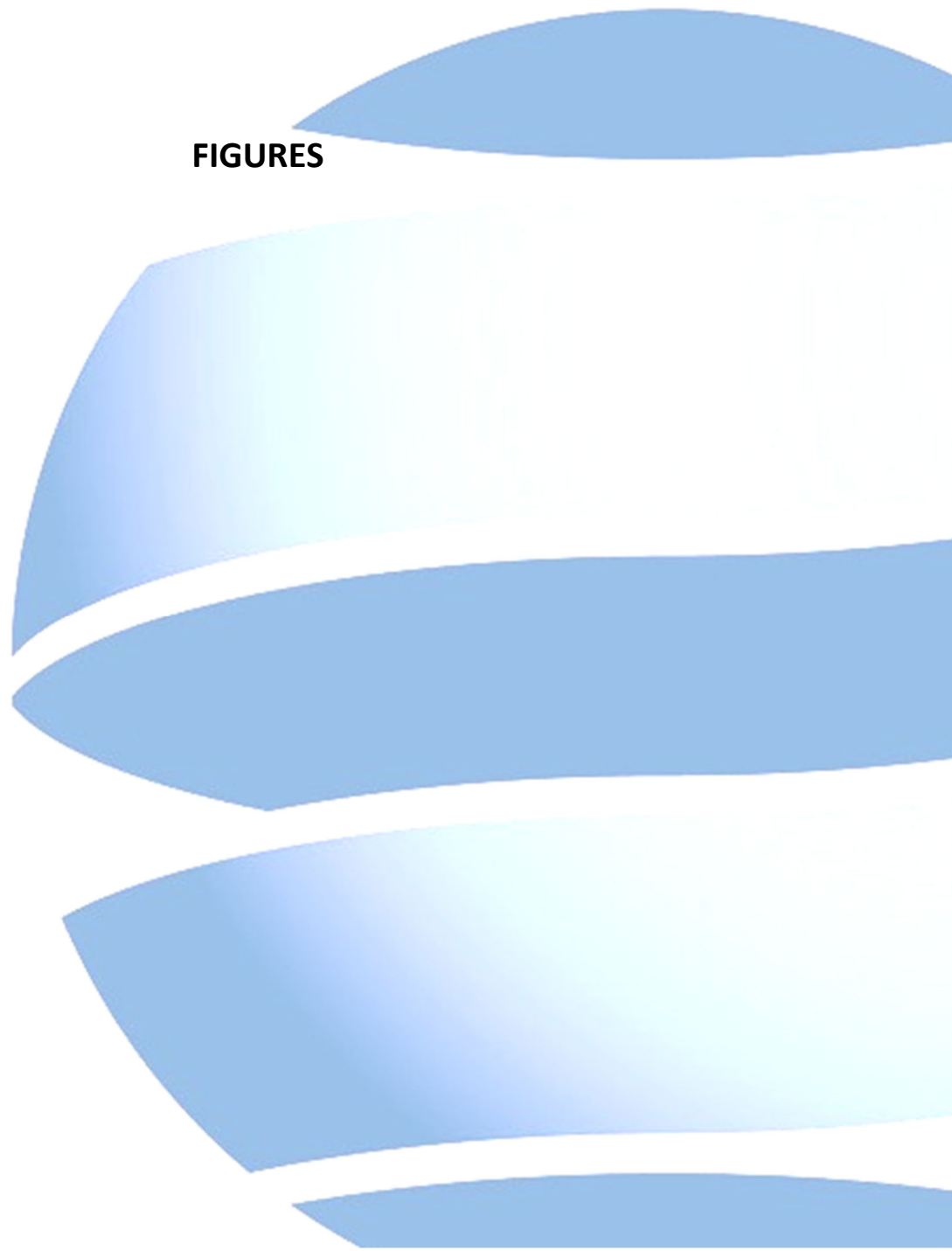
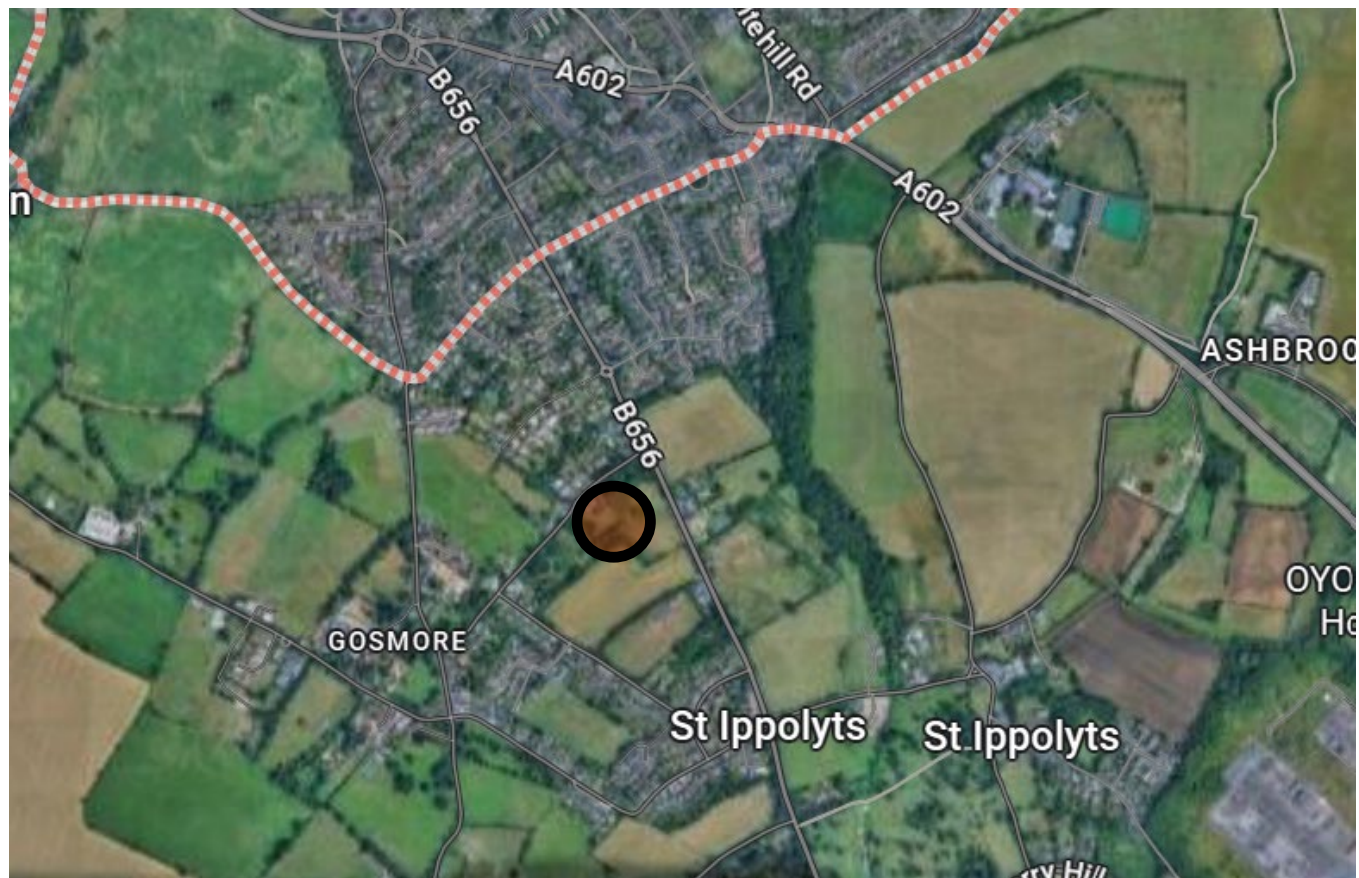


Chart 1: Discovery Strategy Process

FIGURES





Project:	Land South of Mill Lane, Hitchin			Title	Site Location	
Client:	Martin Grant Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GE23305	Revision:	V1			
Drawn:	GE	Date:	15/09/2025			
Figure:	1	Scale:	NTS			





Legend

- DCPs
- Window Sample Locations
- Site Boundary

0 25 m 50 m
© Mapbox



Geo-Environmental

Produced by **Datanest.earth**

Title: Exploratory Location Holes

Client: Martin Grant Homes

Size: A3

Project:
Mill Lane Hitchin
SI

Drawn: CG

Figure No.: 2

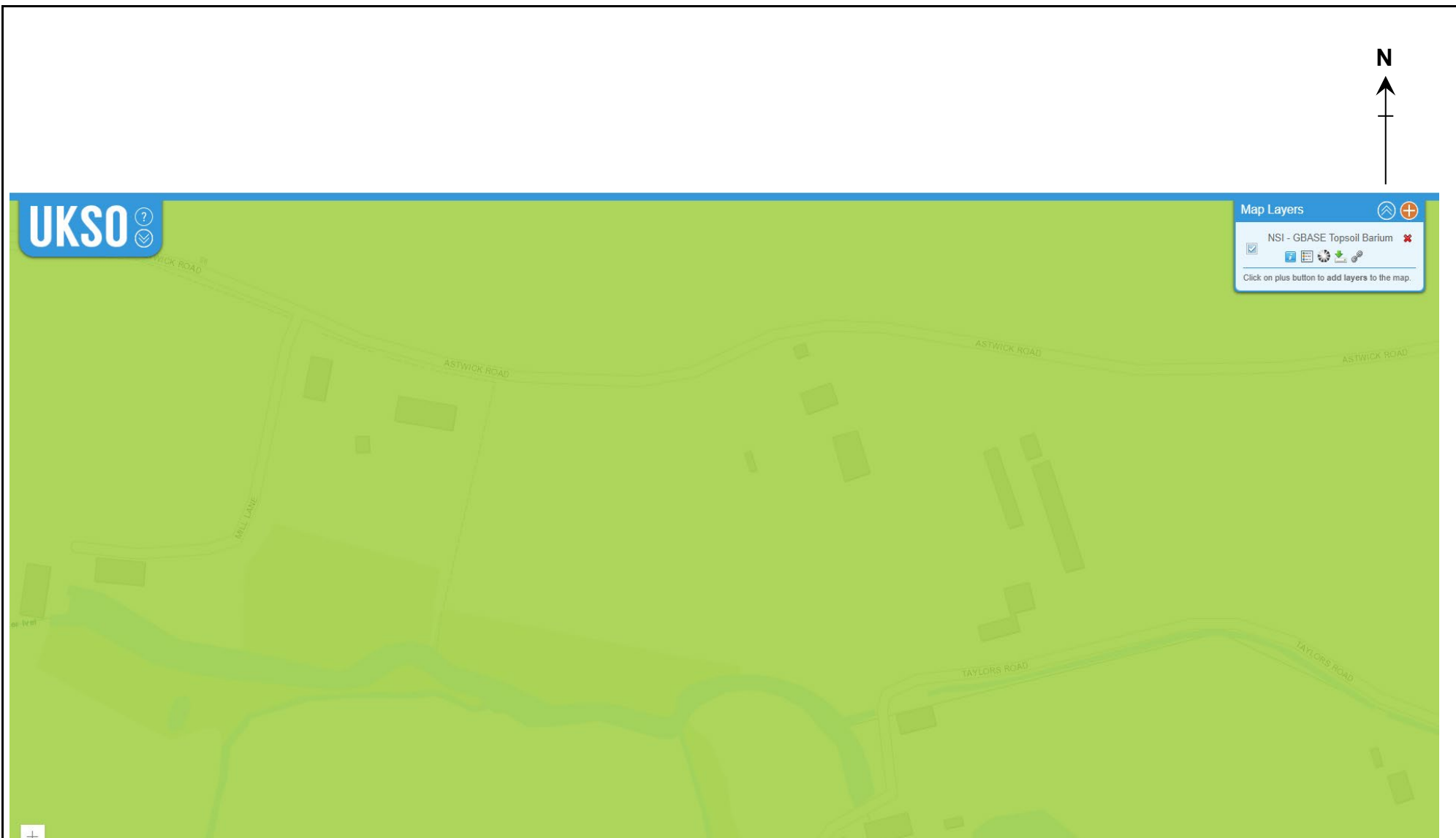
Date: 17-12-2025

Checked:
CG

Proj No: GE23305

Scale: 1:1500

Version:
Final



Project:	Land South of Mill Lane, Hitchin			Title	UKSO Barium Map	
Client:	Martin Grant Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental	
Ref No:	GE23305	Revision:	V1			
Drawn:	CG	Date:	17/12/2025			
Figure:	3	Scale:	NTS			



Project:	Land South of Mill Lane, Hitchin			Title	Preliminary Proposed Development Plan		
Client:	MGH			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net		 Geo-Environmental	
Ref No:	GE23305	Revision:	1.0				
Drawn:	CG	Date:	17/12/2025				
Figure:	4	Scale:	Not To Scale				

APPENDIX A



Geo-Environmental

DESK STUDY REPORT

for the land at

MILL LANE, HITCHIN,

HERTFORDSHIRE, SG4 7NN,

on behalf of

MARTIN GRANT HOMES

Report:	DESK STUDY REPORT
Site:	MILL LANE, HITCHIN, HERTS, SG47NN
Client:	MARTIN GRANT HOMES
Date:	10/09/2025
Reference:	GE23305-DSR-SEPT25
Version:	1.0
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FIGURES

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FIGURE 2	Proposed Development Site Plan
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APPENDICES

APPENDIX A	Desk Study Information
APPENDIX B	Walkover Survey Photographs and View Plan



1.0 INTRODUCTION

1.1 General

Geo-Environmental Services Limited (Geo-Environmental) was instructed by Martin Grant Homes to undertake a Phase I desk study into the geotechnical and geo-environmental factors pertaining to the planned redevelopment of the land at Mill Lane, Hitchin, Hertfordshire, SG4 7NN, herein referred to as 'the site'. The site's location is presented in Figure 1.

1.2 Form of Development

It is understood that a residential development is proposed, including detached, semi-detached and terraced housing, areas of soft landscaping, access roads and associated infrastructure.

A preliminary proposed development site plan is presented in Figure 2.

1.3 Objectives

The investigation was to comprise a desk study of geotechnical and geo-environmental factors pertaining to the site, including a review of available historic maps and an examination of other available sources of geo-environmental information.

A preliminary Risk Assessment (PRA) was to be undertaken as part of the desk study in accordance with CLR11. The objective of the risk assessment was to evaluate plausible pollutant linkages with respect to the proposed development, adjacent land uses, and the wider environment, in the context of planning, immediate liabilities under the Environment Act 1990, and risks posed to Controlled Waters under the Water Resources Act.

1.4 Standards

Where practicable, the desk study was undertaken in accordance with the following documents and guidance:

- National Planning Policy Framework – March 2012;
- Planning Policy Statement 23 – Planning and Pollution Control;
- Model Procedures for the Management of Contaminated Land, CLR11, DEFRA and Environment Agency 2004;
- Environment Agency Guidance on Requirements for Land Contamination Reports, Version 1 dated July 2005;
- BS10175:2011 - Investigation of Potentially Contaminated Sites - Code of Practice, BSI 2011;
- BS5930: 2015 - Code of Practice for Site Investigations, BSI 2015;
- EN ISO 14688 Geotechnical Investigation and Testing Part 1-2002 and Part 2-2004;
- BS1377: 1990 - Soils for Civil Engineering Purposes, BSI1990;
- NHBC Standards Chapter 4.1 Land Quality - Managing Ground Conditions;
- NHBC Standards Chapter 4.2 Building Near Trees;
- CIRIA C665 – Assessing risks posed by hazardous ground gases to buildings (2007);



- NHBC 10627-R01(04)- Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present (2007);
- BS8485:2007 Code of practice for the characterisation and remediation from ground gas in affected developments;
- Department of Environment - Industry Profiles (1995 - 1996).

1.5 Conditions

The information collected from the desk study has been used to provide an interpretation of the geotechnical and environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained. Geo-Environmental takes no responsibility for conditions that have either not been revealed in the available records or that occur between or under points of any physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

Information contained in this report is intended for the use of the Client, and Geo-Environmental can take no responsibility for the use of this information by any party for uses other than that described in this report. Geo-Environmental makes no warranty or representation whatsoever expressed or implied with respect to the use of this information by any third party. Geo-Environmental does not indemnify the Client or any third parties against any dispute or claim arising from any finding or other result of this investigation report or any consequential losses.

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2.0 DESK STUDY

The findings of the Phase I desk study are presented in the following section. A copy of the information obtained as part of the desk study is presented in Appendix A.

2.1 Site Description

The site generally comprised two rectangular shaped pasture fields that were overgrown and partially wooded, centred over National Grid Reference 519059, 227425 and measured 3.33ha in area. Topographically, whilst localised undulations were noted, the majority of the site sloped down gently in a southerly direction. The larger of the two fields was located on the eastern part of the central portion of the site, and was mostly covered in overgrown grass, scrub and brambles, with an occasional scattering of mature and semi-mature trees. The remaining field, located on the western side, was heavily overgrown with dense scrub, grass and an abundance of semi-mature trees and bushes. The two fields were linked by a small area of heavily vegetated land on the southern boundary. Parts of the site, particularly the north-eastern boundary and southwestern boundary were significantly overgrown with brambles and scrub such that access to these areas was very limited.

The site was bounded to the north by a line of trees and a hedge, with the grounds of a care home (St Ippolyts) and Mill Lane beyond; to the east by a hedge and trees with London Road beyond, set at a slightly lower elevation than the site; to the south by a hedge, trees and brambles with an arable field beyond set at an elevation of approximately 1.0m lower than the site at its boundary; and to the west by densely overgrown tree lines hedge with residential properties beyond.

A shallow overgrown ditch was observed on the lowest part of the eastern boundary with London Road, close to the southern extremity of the site.

Photographs taken during the walkover survey are presented in Appendix A, with a sketch plan of the view direction of the photographs.

The site was accessed via a footpath on the northern boundary immediately adjacent to the western boundary of the neighbouring care home.

2.2 Geology

British Geological Survey geological mapping indicated the geology of the site to comprise superficial Glaciofluvial Deposits over the solid geology of the Zig Zag Chalk Formation.

The Glaciofluvial Deposits were deposited by melt water flows during periods of ice retreat to the north and comprises water rounded pebbles and sand. During the final retreat of the ice a large glacial lake was formed that occupied extensive areas of the lowlands. Within the lake sand and silt accumulated to form the Glacial Lake Deposits.

The Zig Zag Chalk Formation (formerly known as Lower Chalk) comprises mostly firm, pale grey to off-white blocky chalk with a lower part characterised by rhythmic alternations of marls and marly chalks with firm white chalk.

**Desk Study Report**

The nearest BGS borehole record with any relevant information was located some 237m to the north of the site. The borehole record is presented in Appendix A, and a screen snip is presented below.

HITCHIN		
BH 3. Close to the old brick-pit east of New England. Height of surface, about 235 feet.		
	Soil	Feet.
	Brickearth and small stones	2
	Gravelly brickearth	1
Paleolithic?	Coarse loamy and gravelly sand	1½
	Hard sandy and gravelly brickearth	2
	Loamy gravel	1
		7
No attempt to go deeper was made at this spot.		
191.278		
BH 4. Preliminary trial in old brickpit N.N.E. of Maydencroft Farm (south side of the Charlton Road). Level about 260 feet.		
	Brickearth (dug 11 feet, bored 2 feet)	Feet.
Paleolithic.	White marl with freshwater shells	13
Ancient alluvium.	Blackish loamy sand	4
	Black loam, with freshwater shells and traces of plants....	1½
		18½
For lower beds see BH 8.		
185.277		

2.3 Hydrogeology

With reference to information provided by the Groundsure Dataset, the superficial geology of the site was indicated to be classified as a Secondary A Aquifer. The underlying Zig Zag Chalk Formation was indicated to be classified as a Principle Aquifer.

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

Principle Aquifers are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

In addition, the eastern part of the site was indicated to be within a Source Protection Zone 3 (Total Catchment), whilst the western portion was indicated to be within a Source Protection Zone 2 (Outer Catchment).

No discharge consents to groundwater were recorded within a 500m radius of the subject site.



No groundwater aquifer or surface water abstractions were recorded within 500m radius of the site.

2.4 Hydrology

The nearest surface feature was identified as an inland river not influenced by normal tidal action, and was located some 156m to the north-east of the site. A total of 7No. Pollution Incidents to controlled waters were identified within a 500m radius of the site.

Location	Incident Date	Pollutant/Pollutant Description	Impact
79m E	09/07/2002	Sewage Materials/Storm Sewage	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
194m NE	09/12/2001	Sewage Materials/Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
251m NE	02/01/2003	Sewage Materials/Storm Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
309m NE	29/12/2002	Sewage Materials/Crude Sewage	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
309m NE	24/12/2002	Sewage Materials/Crude Sewage	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
309m NE	02/09/2002	Sewage Materials/Crude Sewage	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
309m NE	07/11/2002	Sewage Materials/Crude Sewage	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

Table 2.1: Pollution Incidents within a 500m Radius of Site

A total of 8 Licenced Discharges to controlled waters were recorded within a 500m Radius of Site.

Location	Address	Effluent Type	Receiving Water	Status
249m NE	Pound Farm Pumping Station	Sewage Discharge	Ippollitts Brook	NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 01/12/1999 Effective Date: 26/11/1999 Revocation Date: 01/12/1999
249m NE	Pound Farm Pumping Station	Sewage Discharge	not stated	PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 11/02/1966 Effective Date: 11/02/1966 Revocation Date: -



249m NE	Pound Farm Pumping Station	Sewage Discharge	Ippollitts Brook	POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 13/10/2000 Effective Date: 26/11/1999 Revocation Date: -
323m NE	Land off London Road, Hitchin	Sewage Discharge	Ippollitts Brook	POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 26/04/1990 Effective Date: 14/01/2000 Revocation Date: 19/01/2000
323m NE	Land off London Road, Hitchin	Sewage Discharges	Land	POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 26/04/1990 Effective Date: 26/04/1990 Revocation Date: 10/02/1992
323m NE	Land off London Road, Hitchin	Sewage Discharges	Ippollitts Brook	POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 26/04/1990 Effective Date: 26/04/1990 Revocation Date: 24/09/1999
323m NE	Land off London Road, Hitchin	Sewage Discharges	Ippollitts Brook	POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 26/04/1990 Effective Date: 25/09/1999 Revocation Date: 13/01/2000
323m NE	Land off London Road, Hitchin	Sewage Discharges	Ippollitts Brook	POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 26/04/1990 Effective Date: 20/01/2000 Revocation Date: -

Table 2.2: Licenced Discharges to Controlled Waters within 500m Radius of the Site

The site was indicated to be located outside an area designated as being at risk from flooding from rivers or sea without defences.

The site has a negligible risk of surface water flooding caused by extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding, with the exception of the most extreme western boundary, which is indicated to be at risk from 1 in 30 year return period rainfall event and depth between 0.1m and 0.3m.

The site was indicated to be located within an area designated as a Nitrate Vulnerable Zone. These are defined as areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

No licensed surface water abstractions were recorded within a 500m radius of the site.



2.5 Radon

Based on data supplied, the estimated probability of the property being above the Action Level for radon is: between 1% and 3%. The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain.

2.6 Environmental Data

Searches of other various environmental databases were made as part of the desk study, including air pollution control sites, Part IIA contaminated land, Integrated Pollution Control (IPC) and Integrated Pollution Prevention and Control (IPPC) sites, registered radioactive substances, COMAH sites, explosives sites, Notification of Installations Handling Hazardous Substances (NIHHS) sites, planning permissions for sites involving hazardous substances, fuel station registers, points of interest – commercial services and points of interest – manufacturing and production. No Contaminated Land Register entries or Integrated Pollution Controls were recorded within a 500m radius of the site.

A total of 19No. historical industrial land uses were noted within a 500m radius of site, Table 2.3 provides a summary of those within a 400m radius of site.

Location	Land Use	Date
On-Site	Unspecified Pit	1897-1946
On-Site	Unspecified Pit	1884
On-Site	Unspecified Groundworkings	1946
35m E	Sewage Works	1991
134m NE	Nurseries	1980-1991

Table 2.3: Historical Industrial Land Uses within a 400m Radius of Site.

A total of 5No. recent industrial land uses were recorded within a 250m radius of the site, these are presented in Table 2.4 below:-

Location	Company	Activity	Category
141m E	Pumping Station	Water Pumping Station	Industrial Feature
157m S	Electricity sub-station	Electrical Features	Infrastructure and Facilities
180 SE	Electricity Sub Station	Electrical Features	Infrastructure and Facilities
193m E	Telecommunications Mast	Telecommunications Features	Infrastructure and Facilities
236m N	Electricity Sub Station	Electrical Features	Infrastructure and Facilities

Table 2.4: Recent Industrial Lane Uses within a 250m Radius of Site.

A total of 21No. historical energy features were recorded within a 500m radius of site, Table 2.5 provides a summary of those within a 200m radius of site.

Location	Land Use	Date
152m S	Electricity Substation	1981
153m S	Electricity Substation	1995
177m SE	Electricity Substation	1981

Table 2.5: Historical Energy Features within a 100m Radius of Site.



No Historical garages, historical petrol stations or currently operational or recent petrol stations were recorded within a 500m radius of the site.

No historical tanks were noted within a radius of 250m of the site.

2.7 Soil Chemistry

Data obtained as part of the desk study provides details on the estimated soil chemistry for the natural soils in the vicinity of the site. The estimated soil quality on the subject site is presented Table 2.6.

Contaminant	Estimated Concentration (mg/kg)
Arsenic	15-25
Cadmium	1.8
Chromium	40-90
Lead	100
Nickel	30-45

Table 2.6: Estimated Soil Concentrations on site

The natural background concentrations were below respective published Soil Guideline Values, Generic Assessment Criteria and Category 4 Screening Levels for the protection of human health under a residential with plant uptake land use, i.e. the most conservative end use proposed.

However, these values are not necessarily representative of the site's soil chemistry. Furthermore, some SGVs and GACs are dependent on pH and soil organic matter content. Therefore, concentrations of specific determinants and the utilised SGV/GAC cannot be determined without site specific investigation and analysis.

2.8 Sensitive Land Uses

A search was made of environmentally sensitive areas, including areas of green belt, scenic or natural beauty, parks, reserves, protected conservation, designated ancient woodlands and scientific areas.

Whilst the site was indicated to be within the London Green Belt and an SSSI Impact Risk Zone, no other such environmental sensitivities were identified within 500m of the site.

2.9 Geotechnical Data

According to the Coal Authority, the site was located in an area that may not be affected by coal mining activities.

No non-coal mining records were recorded within a 500m radius of the site.

National databases for a number of different geological hazards have been compiled by the BGS, and a summary of the hazard data pertaining to the site itself is presented in Table 2.7 below.



Hazard	Designation
Non-coal mining	Negligible
Collapsible ground	Very low
Compressible ground	Negligible to very low
Ground dissolution	Negligible
Landslide	Very low
Running sand	Very low
Shrinking and Swelling clay	Negligible to very low

Table 2.7 Summary of BGS Geological Hazards

2.10 Landfill and Waste Management Facilities

A search of BGS recorded landfill sites, IPC registered waste sites, licensed waste management facilities, local authority recorded landfill sites, other registered landfill sites, waste transfer stations and other waste treatment or disposal sites was undertaken as part of the desk study. Such sites may form an artificial source of ground gases, such as carbon dioxide and methane, where wastes are buried or disposed of to landfill.

No historic, recent or active landfills were recorded within a 500m radius of the Site.

A total of 2No. historical waste site was recorded within a 500m radius of the Site. These are summarised in Table 2.8 below.

Location	Address	Further Details	Date
332m NW	Maydencroft Manor, Gosmore, Hitchin.	Environmental Permitting Regulations (Waste)	Not recorded
476m NW	Maydencroft Manor, Gosmore, Hitchin.	Environmental Permitting Regulations (Waste)	Not recorded

Table 2.8 Historical Waste Sites within a 500m Radius of Site.

There were no waste exemption sites recorded within 500m radius of the site.

2.11 Historic Mapping

Historic maps dating back to 1879 were obtained as part of the desk study. A summary of the apparent key features observed on the map extracts both on the site and within the local area is presented within Table 2.9.

Date	On Site	Off Site
1879-1881	The site was shown to essentially comprise two approximately rectangular shaped fields. The field to the west was named Mill Farm and the field on the eastern side was named Pound Farm. The buildings associated with Mill Farm are indicated to be immediately beyond the northern boundary of the field beyond Mill Lane, whilst the buildings of Pound Farm are	The site was generally set in a rural environment, comprising farms and woodland. Mill Lane was indicated on the northern boundary, trending in a south-west to north-east direction. London Road was indicated on the eastern boundary, generally trending north to south.



Date	On Site	Off Site
	noted immediately beyond the eastern boundary off London Road. The fields were linked via a narrow portion of field on the southern boundary. A sandpit was indicated to be within the western field, close to its northern boundary with Mill Lane.	Ippollitts Brook was shown trending north-south, some 250m remote from the eastern boundary. Hopground Cottages were shown adjacent to the western boundary. The village of Gosmore was indicated to the west, whilst the village of Ippollitts was indicated to the south-east.
1887-1898	No significant changes indicated. Though the sand pit labelled “old sand pit” and was therefore assumed to be inactive from this date.	Sloe Hill, a large house, was indicated on the southern side of Mill Lane, immediately beyond the northern site boundary. Brickworks were shown to be present some 600m to the north of the site at Sunnyside. Tumulus was shown in the village of Gosmore some 400m remote from the site to the west.
1922-1924	A pump was indicated to be present within the eastern field. A small rectangular shed like building was indicated in the small linking field central to the site.	No significant changes indicated, though the brickworks to the north were indicated to be a sawmill. Hopground Cottages were indicated to be of a different configuration.
1946-1949	The northernmost portion of the eastern field was indicated to form woodland.	No significant changes, other than further residential development, particularly to the north and south.
1959	No significant changes, though the pump was no longer indicated.	No significant changes indicated.
1976	No Significant changes.	No significant changes.
1980	There appeared to be two rectangular shaped buildings located on the northern boundary of the eastern field in the area previously indicated to form woodland. The sandpit appeared to be infilled.	Further residential development was indicated, particularly to the north and south-west of the site. A sewage works was indicated some c.100m to the east of the site. A foundry and works were shown c.500m to the south-east. Broadmead Nurseries are indicated circa 400m to the north-east.
1981	The map showed single rectangular building intruding into the site from the west on the northern boundary, together with a “track”.	A pumping station, likely to be associated with the sewage works, was indicated c.100m to the east of the site. An electric sub-station was indicated c.150m to the south of the site on London Road.
1991	No significant changes indicated.	No significant changes
2001	No significant changes	The sewage works to the east was no longer indicated.
2010	No significant changes indicated.	No significant changes indicated
2025	No significant changes indicated.	No significant changes indicated.

Table 2.90 Summary of Historic Map extracts



Historic mapping has shown that the site mostly comprised part of a field network up to the present day.

The earliest available map records from c.1879 as detailed in the Groundsure report presented in Appendix A, showed the site to be operating as a farm with a sand pit located in the southwest of the site. The Hopground cottages are shown to border the site at the western extremity. A pump is shown on-site from 1922 to 1959 mapping. The site remained relatively unchanged until c.1980 where it appeared that the sand pit had been infilled and buildings (likely to be associated with the farm operations) were present on the north-eastern boundary. By c.2001 the sewage works was no longer identifiable to the east of the site.

2.12 Asbestos

Some historic buildings were noted on site. It is possible that asbestos containing materials (ACM) could be present on site, associated with damage or the refurbishment of asbestos containing buildings.

2.13 Previous Ground Investigations

Geo-Environmental was made aware of a letter report for a basic desk study and limited intrusive investigation undertaken by RSK at the site in January 2019 ref: 1920378-L01 (00). A copy of this report is presented within Appendix A.

The report concluded the following :-

The main feature of potential contamination on site identified from the findings of the desk study relate to the potential for made ground associated with the fill material used to infill the historical sand pit on site.

It was recommended that an intrusive investigation was conducted to further investigate the nature and magnitude of the fill material.

The ground conditions encountered during the site investigation carried out on 3 December 2018 were generally in line with the initial conceptual site model. The former sand pit, recorded on historic maps appears to have been located in the western corner of the site. Suspected infilled material was identified in 5 trial pits below the topsoil.

The proven depths of the former sand pit varied between 1.5 m bgl (TP6) and 3.9 m bgl (TP12). The fill material was generally described as orangish brown very sandy very gravelly clay and occasional partings of clayey very sandy gravel in places. Gravel was flints with a significant proportion of anthropogenic material including fragments of bricks, concrete, bituminous material, charcoal, ceramic, structured chalk, rare glass, slate and fragmented wood.

Variable cohesive and granular soils of the Glaciofluvial Deposits were encountered below the topsoil at a depth of between 0.3 m to 0.4 m bgl or below the made ground in the area of the suspected former sand pit at a depth of between 1.4 m and 3.9 m bgl.

Groundwater was not encountered to a depth of 4mbgl.



No asbestos containing material was visually identified and no visual or olfactory contamination of concern was noted within the fill. No asbestos has been found in made ground samples tested.

Generally, the results of the GQRA indicate that relevant pollutant linkages are not present.

The marginally elevated arsenic concentration in the sample obtained from the superficial deposits is considered to be naturally occurring within the underlying stratum. No exceedances of arsenic were indicated in made ground samples. Marginal exceedances in chromium indicated in made ground samples were considered not to be of concern.

The initial hazardous waste risk assessment indicates that none of the samples contain hazardous properties therefore waste might be classified as inert or non-hazardous (subject to WAC testing).

In terms of any future development, it is likely that any proposed buildings in the location of the former sand pit may need to give consideration to a piled foundation solution.

Should a redevelopment option be pursued, then further site investigation will be required across the rest of the site, and possibly to greater depths depending on the exact scheme proposed.

2.14 Potential Contamination

The site had been historically used for agricultural purposes. The site was located immediately adjacent to farm buildings and assumed farm buildings were also indicated to be present on parts of the site. The Groundsure dataset identified a sandpit on the western part of the site, which was infilled circa 1980. There is therefore, a potential for Made Ground or contamination to be present within the shallow soils or deeper infilled soils within these areas of the site.

Whilst the current status of the site would suggest that farming has not been undertaken for a number of years, the use of the land for agricultural practices indicated that there is a potential for pesticides and/or herbicide impacted soils within the near surface soils.

Agricultural practices are not covered by the National House Building Council (NHBC), Environment Agency (EA) and Chartered Institute of Environmental Health (CIEH) publication 'Guidance for the Safe Development of Housing on Land Affected by Contamination' (2008), which provides a summary of industrial profiles (1995-1996) published by the former Department of the Environment (DoE) (now part of the Department for Environment, Food and Rural Affairs (DEFRA).

In general, gross contamination is considered unlikely to be present over the vast majority of the site.

2.15 Ground Gas Summary

The desk study identified no present or historic landfill sites within a 500m radius of the Site.

The infilled sandpit may have been subject to backfilling with putrescible materials which have the potential to present a source of ground gases including methane and carbon dioxide.



2.16 Climate Change

Climate change is a factor for consideration under LCRM. Current climate models are showing an increase in extreme weather patterns, with extended periods of warm dry weather and/or extreme wet weather and flooding.

The effect of extreme and/or extended dry weather and extreme wet weather and flooding should be considered further as part of the proposed works. Extended periods of low flow or reduced rainfall would reduce dilution and potential for mobilisation of any mobile contaminants present. Extended periods of heavy rainfall or prolonged rainfall and flooding which would increase the volumes and duration of saturated soils at the site and increase the potential for leaching of contaminants and contaminant migration. However, the risks associated with such periods would only apply where contamination has been identified/is present which would be considered as part of the wider contamination assessment of the site.

2.17 Unexploded Ordnance

The Zetica risk mapping indicates the site is within a “low” risk area with respect to potential UXO.



3.0 PRELIMINARY ASSESSMENT

Based on the findings of the desk study, the following sections summarise the anticipated geotechnical and environmental factors likely to impact the site.

3.1 Geotechnical Risk Assessment

3.1.1 Potential Geotechnical Issues

The following factors that might impact the geotechnical condition of the site were identified as part of the desk study:

Hazards identified as being potentially present on site could have implications for foundation design and construction. A summary of commonly occurring geotechnical hazards is given in the following table:

Geotechnical Hazard	Probability	Engineering Implications
Lateral changes in ground conditions	Likely	Variable ground conditions posed by the presence of Glaciofluvial Deposits across the site which may affect foundation design, construction and zoning.
Shrinkable soils	Low-Moderate	The Glaciofluvial Depots could vary from potentially shrinkable gravelly clays to non-shrinkable sandy gravels.
Significant depths of Made Ground	Likely	This would only be in relation to the infilled sandpit on the western part of the site, the extent of which is currently unknown.
Aggressive chemical ground conditions (sulphates)	Likely	The possible presence of aggressive chemical ground conditions may affect foundation design and construction.
Shallow Groundwater	Low-moderate	Shallow groundwater or perched water may be present within the Glaciofluvial Gravel.
Potential for shallow soakaways to be unviable	Low-Moderate	Soakage testing required to confirm infiltration rates.
Potential for dissolution features	Low	Soluble rock deposits were not identified on-site by the Desk Study.
Potential for slope stability issues	Low	No landslips recorded within 500m of the site.

Table 3.1: Possible Geotechnical Hazards

3.2 Preliminary Environmental Conceptual Site Model & Risk Assessment

3.2.1 Methodology

A Preliminary Risk Assessment ('PRA') and Conceptual Site Model ('CSM') have been prepared in accordance with CLR11 based on information obtained as part of the desk study. Possible risks associated with potential sources of contamination and sensitive receptors identified have been qualitatively assessed following a source-pathway-receptor ('Pollutant Linkage') approach in accordance with current UK protocols.



A risk of harm may only exist where a plausible pollutant linkage is present, and where the quantity or concentration of a contaminant is sufficient so as to pose harm. Under the statutory definition, "Contamination" may only strictly exist where contaminants pose a risk of harm to a receptor. The risk classification has been assessed in accordance with CIRIA C552 (Rudland et al., 2001). A summary of how the risks are derived and their definitions are presented in Tables 3.2 and 3.3.

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low Likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Table 3.2: Risk Ratings Matrix

Risk Rating	Definitions
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High risk	Harm is likely to arise to a designated receptor from an identified hazard Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not already undertaken) is required and remediation works may be necessary in the short term and are likely over the longer 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.
Moderate to low risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is unlikely that any such harm would be severe, or if any harm were to occur it is probable that the harm would be relatively mild.



Low risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk	There is low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Table 3.3: Risk Rating Definitions**3.2.2 Summary of Plausible Sources**

Possible sources of contamination identified from the desk study are summarised in Table 3.4.

Source	Description	Contaminants
Made Ground and shallow soils	The general quality of Made Ground and shallow soils could be impacted by the presence of contamination due to agricultural practises and backfill material utilised within the former sandpit.	Potential for pesticides and herbicides. Possible elevated concentrations of metals, metalloids, TPH and PAH compounds, and asbestos in Made Ground (where present).
Naturally Occurring aggressive ground conditions	Naturally occurring compounds in the ground which could damage buried concrete.	Possible elevated sulphate concentrations.
Ground Gases/Vapours	Possible presence of Made Ground beneath the section of the site associated with the infilled sandpit. This is only considered a viable source of ground gas if significant proportions of organic material are present.	Methane, carbon dioxide, depleted oxygen, trace gases.

Table 3.4: Possible Sources of Contamination**3.2.3 Summary of Plausible Pathways**

The plausible pathways are summarised in Table 3.5. These pathways are based on the proposed end use, including houses and gardens.

Pathway	Description
Direct Contact	Ingestion of soil particles, ingestion and bioaccumulation in vegetables/fruit and inhalation of soil derived dust (including tracked back dust), dermal contact.
Inhalation	Inhalation of soil dust and vapours both inside and outside of buildings.
Vertical & Lateral Migration	Contaminant movement both vertically through leaching/gravity and horizontally along preferential pathways, e.g. services trenches, or with groundwater.
Root Uptake	Uptake of soil and waterborne contaminants by plants.
Chemical Attack	Attack of buried plastics and concrete by aggressive ground conditions.

Table 3.5: Possible Contamination Pathways



3.2.4 Summary of Plausible Receptors

Potential receptors associated with the site and its development are summarised in Table 3.6.

Receptor	Description	Comments
Site Workers	Persons involved in construction and future maintenance of the proposed development.	Ground Workers could become exposed during site clearance, construction and maintenance.
End Users	Residents/occupants of the proposed development.	The proposed development is likely to include areas of private and managed communal soft landscaping.
Soft Landscaping and Ecological Receptors	Possible areas of planting including lawns, shrubs, trees, etc. Mature trees; and well-established old growth hedgerows/trees delineating fields.	Planting is anticipated in private and communal soft landscaping. Well established hedgerows and trees were identified in the site walkover and may also be plausible ecological receptors.
Built Environment	Buried concrete for foundations and plastics for potable water supply pipes may be laid in contact with contaminated soils.	Aggressive ground conditions and significant depths of Made Ground may be present beneath the site, albeit in localised limited areas.
Adjacent Land Users	Sensitive land uses identified within the immediate vicinity.	Adjacent land comprises residential use to the north and west.
Groundwater	Controlled Waters contained within the aquifer(s) beneath the site.	The majority of the site overlies a Secondary A Aquifer. The site is also situated within two SPZ's.
Surface Water	Controlled Waters within lakes, rivers, and ponds, etc., or coastal waters.	The nearest surface water feature was Ippollitts Brook, located some 156m to the north-east of the site.

Table 3.6: Possible Receptors of Contamination

Site workers involved in the preparation and construction of the development have not been considered further in this assessment as the Principal Contractor is duty bound under the current CDM Regulations to undertake their own risk assessments with respect to their employees.

Whilst the above sources and receptors have been identified, Table 3.7 overleaf summarises the identified plausible pollution linkages and a qualitative assessment of the risks based on the desk study research.



Potential Source/media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
Limited Areas of Made Ground and Shallow Soils (including the infilled sandpit)	End users	Direct contact	Likely	Mild	Moderate to Low End users are likely to come into contact with soils via direct contact as the development will include private gardens and communal soft landscaping. Sampling and chemical testing required to assess the risk.
	Soft Landscaping and Ecological Receptors	Root Uptake	Likely	Minor	Low Private gardens and communal soft landscaping are proposed. However, no evidence of harm to existing plant life was identified during the site walkover. Sampling and chemical testing required to assess the risk.
	Adjacent land users	Direct contact	Unlikely	Minor	Very Low Adjacent site users are unlikely to come into contact with soils. Sampling and chemical testing required to assess the risk.
	Water supply pipes	Direct contact	Likely	Mild	Moderate to Low Water supply pipes could come into contact with impacted or aggressive soils depending upon depth of installation and extent of soil impact. Sampling and chemical testing required to assess the risk.
	Buildings and infra-structure	Direct contact	Likely	Mild	Moderate to Low Foundations and utilities will be placed within potentially aggressive soils. Sampling and chemical testing required to assess the risk.
	Groundwater	Vertical migration	Low	Minor	Low Shallow groundwater or perched water could be present within the Glaciofluvial Deposits. These strata are classified as Secondary A Aquifers. Significant potentially mobile contamination is not anticipated to be present on site. Sampling and chemical testing required to assess the risk.



Desk Study Report

Potential Source/media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
	Surface Water	Lateral Migration	Low	Minor	Low Significant potentially mobile contamination is not anticipated. Sampling and chemical testing required to assess the risk.
Naturally Occurring Aggressive Ground Conditions	End users	Direct contact and inhalation / ingestion of soil derived dust	Unlikely	Minor	Very Low No naturally occurring potential sources which could harm human health have been identified.
	Adjacent land users	Direct contact	Unlikely	Minor	Very Low No naturally occurring potential sources which could harm human health have been identified.
	Water supply pipes	Direct contact	Unlikely	Minor	Very Low Services will be placed within soils which may be an aggressive environment which may require specific pipework. Sampling and chemical testing required to assess the risk.
	Buildings and Infrastructure	Direct contact	Unlikely	Minor	Very Low Foundations will be placed within soils which may be an aggressive environment for concrete. Sampling and chemical testing required to assess the risk.
Ground Gases and Vapours from any organic rich Made Ground or Off-Site Sources	End Users	Inhalation	Low	Medium	Low to medium Future occupiers may inhale potential ground gases produced by this source. Extensive or deep Made Ground with sufficient organic content for significant ground gas generation is not anticipated on the majority of the site but depending on the infill material of the historic sandpit, ground gas may be present. No significant off-site sources have been identified.
	Buildings and infrastructure	Gas accumulation of flammable gases	Low	Mild	Low Extensive putrescible material sufficient for significant methane production is not anticipated at the site.



Potential Source/media	Potential Receptors	Potential Pathways	Likelihood	Severity	Risk and Justification
	Adjacent land users	Inhalation	Low	Minor	Very Low The potential sources of ground gases beneath the site are unlikely to be in volumes that could give rise to off -site migration. Adjacent land users may be at risk from off-site ground gases. However, this was beyond the remit of this investigation.

Table 3.7: Plausible Pollutant Linkages & Qualitative Risk Assessment



3.3 Preliminary Contamination Risk Assessment Summary

The PRA and CSM developed from the information gathered as part of the desk study process have identified plausible potential pollutant linkages that exist in relation to the proposed redevelopment of the site.

The potential pollutant linkages established within this desk study are not considered to prevent development on the subject site, but could require investigation and assessment to support further characterisation, calibration of the CSM and where/if necessary determine a remedial strategy to reduce, remove or otherwise control any risk within the site to key receptors.

It is considered that the overall risk from potential contamination on the site is 'low' albeit with specific potential pollutant linkages being assigned a moderate to low rating and that further assessment would be necessary to satisfy planning conditions or to provide clarification of the risk assessment.

In order to progress this assessment in line with the National Planning Policy Framework, to provide further characterisation of the site and refinement of the PRA and CSM, it is recommended that intrusive investigation and associated testing is undertaken to confirm the findings of the desk study report and to provide a robust risk assessment for the site and proposed redevelopment. As such it is recommended that geochemical and geotechnical investigation be carried out on the site to include analysis of soil and groundwater (if encountered) samples for the range of potential contaminants identified within the Desk Study, together with ground gas monitoring and an assessment of the site's ground gas climate.

3.4 Preliminary Geotechnical Assessment Summary

The proposed development area of the site was shown to be underlain by superficial deposits of the Glaciofluvial Deposits. Made Ground is not expected in any significant quantity, but isolated areas may be present on the site, with note to the area of the historic infilled sandpit on the western portion of the site. The potential variability of the underlying natural strata may include shrinkable soils and desiccation due to mature trees/hedgerows, so a piled foundation solution may be more appropriate for some areas of the site.

It is possible that conventional strip or pad foundations could be suitable for the proposed development over the majority of the site, assuming foundations terminate within the Glaciofluvial Deposits. Whilst the sandier deposits might be non-shrinkable, soils containing a higher proportion of cohesive materials may be subject to a higher volume change potential in accordance with NHBC guidance. The foundation design would also need to account for the presence of numerous trees on-site and on the site boundaries, these could require the localised deepening of foundations.

If the Client has developed any other sites in close proximity to this site it may be prudent to review the foundation solution for that site as an indicator of the possible solution for this site. An intrusive investigation will be required in due course in order to inform the design process.

It is possible that soakaways will function effectively on this site, although this would be subject to testing to inform design. It may also be necessary (subject to testing) to utilise on-site storage and attenuation of peak storm flow, through systems such as porous paving and cellular storage crates.



4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The desk study has shown the site comprised overgrown and partly wooded fields bounded by trees and hedgerows up to the present day. A feature, comprising an infilled sandpit, is located within the development area on the western end of the site.

The surrounding land use predominately comprised open countryside, agricultural fields and stands of woodland. A sewage works was located some 150m to the east of the site.

The proposed end use of the site is understood to comprise a residential development, areas of soft landscaping, access roads and associated infrastructure. As such, sensitive uses such as in private gardens with gardening activities (including dust being tracked back into buildings) and growing vegetables are considered likely to form part of the end use scenario for this site.

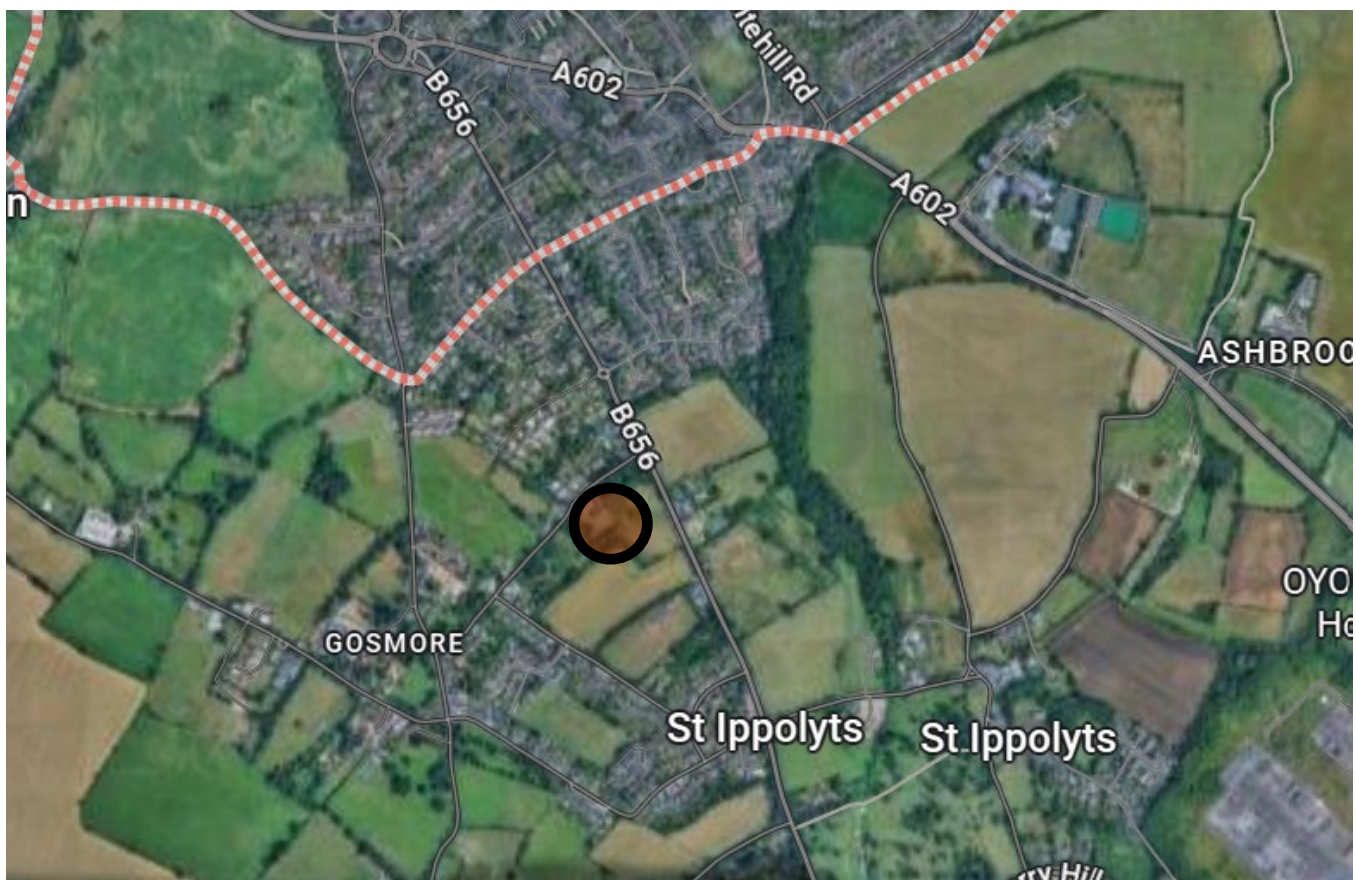
It is concluded that the overall risk of harm to end users is generally low (as defined in Section 3) but that further assessment is likely to be required in order to better characterise potential contamination on-site as result of current and historical land uses and the associated risk to human health and the environment.

It is possible that conventional foundations would be suitable for the proposed development, although any design should account for the potential presence of shrinkable soils and trees in proximity to proposed foundations.

4.2 Recommendations

At this stage and based on the findings of the desk study and preliminary risk assessment, the following scope of works is recommended for the intrusive investigation on the site.

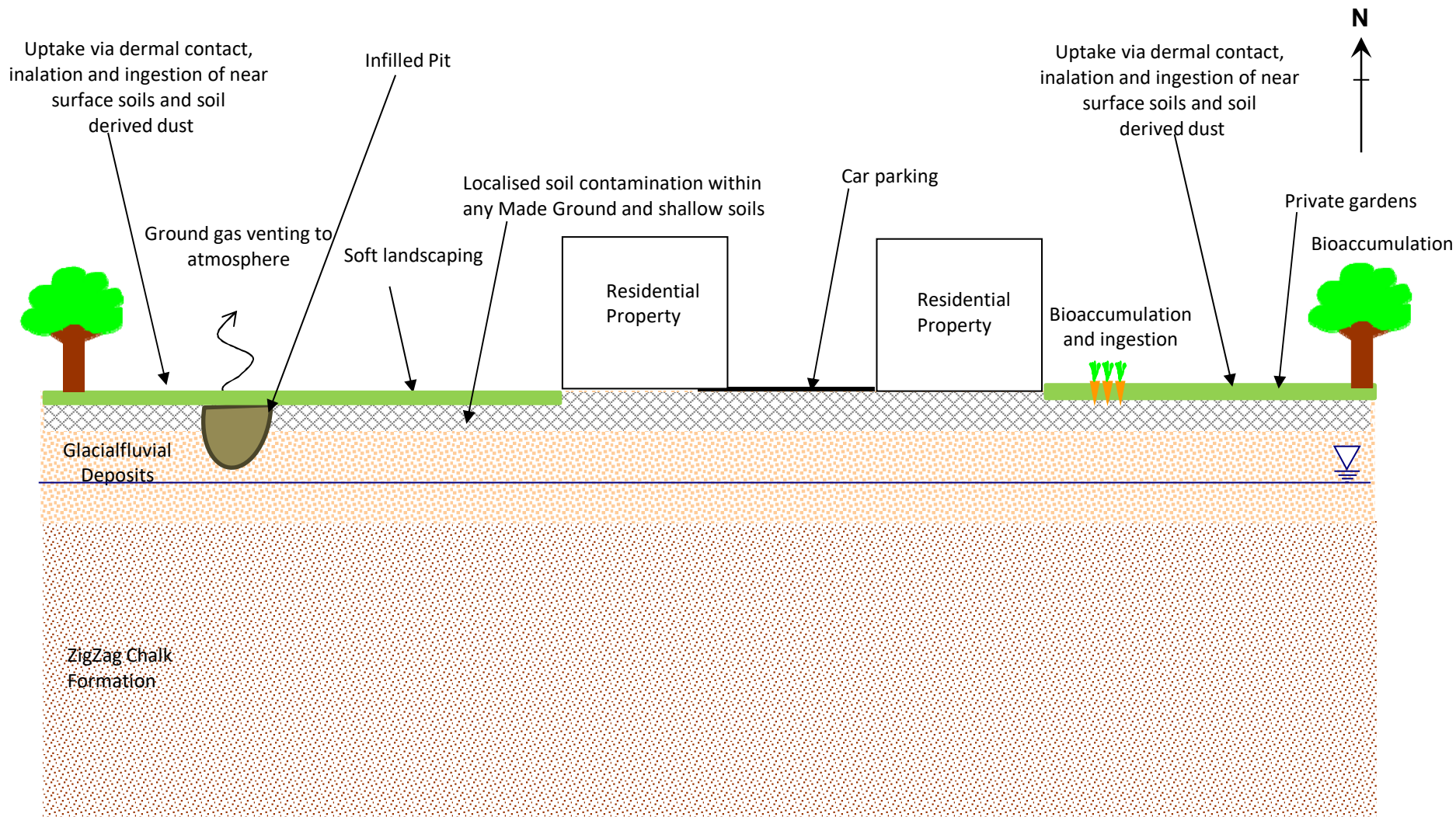
- Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the site. This should target the infilled sandpit and define its depth and extent.
- Soakage testing to determine the infiltration rates of representative strata.
- Soil and groundwater (if encountered) sampling and analysis should be undertaken to inform subsequent geotechnical and geo-environmental risk assessment.
- Ground gas monitoring and assessment should be undertaken to characterise the site's ground gas regime.
- Laboratory analysis, on soil samples recovered from the exploratory holes for a range of geotechnical parameters to support foundation design and the like.
- Laboratory analysis, on shallow and deeper soil samples and groundwater samples recovered from the exploratory holes (if encountered), for an analytical suite to include the potential contaminants identified within the desk study and encountered during any intrusive investigation. The suite should include pesticide scans, commonly occurring metals, non-metals, asbestos, TPH, and PAH.
- Waste Acceptance Criteria testing may be required if surplus spoil is to be disposed of from the development.



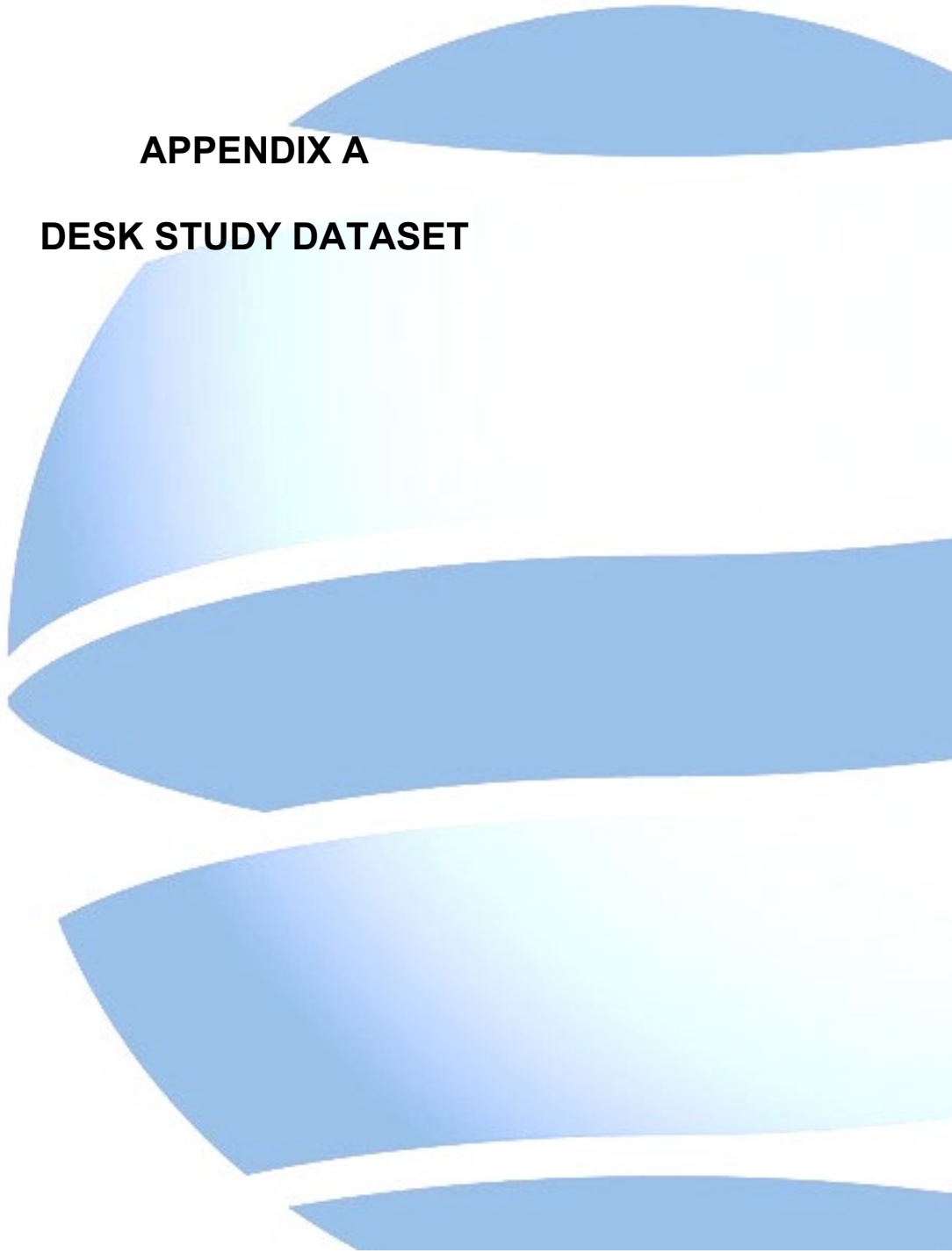
Project:	Land South of Mill Lane, Hitchin			Title	Site Location	
Client:	Martin Grant Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net  Geo-Environmental		
Ref No:	GE23305	Revision:	V1			
Drawn:	GE	Date:	15/09/2025			
Figure:	1	Scale:	NTS			



Project:	Land South of Mill Lane, Hitchin			Title	Preliminary Proposed Development Plan		
Client:	MGH			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net		 Geo-Environmental	
Ref No:	GE23305	Revision:	1.0				
Drawn:		Date:	15/09/2025				
Figure:	2	Scale:	Not To Scale				



Project:	Mill Lane, Hitchen			Title	Conceptual Site Model (Future Land Use)		
Client:	Martin Grant Homes			Geo-Environmental Services Ltd Unit 7 Danworth Farm, Cuckfield Road Hurstpierpoint, West Sussex BN6 9GL +44(0)1273 832972 www.gesl.net	 Geo-Environmental		
Ref No:	GE23305	Revision:	1.0				
Drawn:	AP	Date:	15/09/2025				
Figure:	3	Scale:	Not To Scale				

The background features a series of overlapping, wavy blue shapes that create a sense of depth and movement. These shapes are rendered in various shades of blue, from a deep cerulean to a lighter, almost white, sky blue, giving the impression of a stylized ocean or a series of flowing ribbons.

APPENDIX A

DESK STUDY DATASET

Our ref: 1920378-L01 (00)

10th January 2019

Martin Grant Homes
Grant House
Felday Road
Abinger Hammer
Dorking, Surrey
RH5 6QP

Dear Isabella,

**RE: LAND AT MILL LANE / LONDON ROAD, ST IPPOLYTS, HITCHIN, HERTFORDSHIRE
SITE INVESTIGATION**

1. INTRODUCTION

On the instruction of Martin Grant Homes (Client), RSK Environment Ltd (RSK) has carried out a site assessment for the above-mentioned site. It is understood that the site is being considered for acquisition and an initial assessment will identify possible environmental concerns pertaining to the previous and current use of the site in order to ascertain any potential contamination liabilities.

This report is subject to the service constraints given in **Appendix A**.

1.1 Site location and description

The site is located at National Grid reference 519070, 227410 and is bounded to the north by Mill Lane and to the east by London Road, as shown on **Figure 1**.

The site is understood to be agricultural land and currently consists of rough grassland bordered by hedges and mature/semi mature trees on the perimeter of the site. The area around the site is predominantly residential and agricultural land as detailed in **Table 1**.

Table 1: Site setting

To the north:	Immediately to the north the site is bounded by Mill Lane beyond which lies residential housing.
To the east:	Adjacent to the east of site lies London Road and beyond this agricultural land is present.
To the south:	The south of the site is adjacent to agricultural land and beyond this lies residential properties.
To the west:	Adjacent to the west the site is bounded by Mill Road with residential properties beyond

The site covers approximately 2.84 hectares at an elevation of approximately 80 m above Ordnance Datum (mAOD). The site is generally level with a slight slope upwards towards the north.

2. SITE DEVELOPMENT HISTORY

- The earliest available map records from 1881 as detailed in the Landmark report **Appendix B** show the site to be operating as a farm with a sand pit located in the southwest of the site. The Hopground cottages are shown to border the site at the western end;
- The 1884 map shows a well is also present on the parcel of land to the south east of the site;
- By 1898 the sand pit is now inactive and buildings have been constructed adjacent to Mill Lane; The Hopground cottages are no longer present and the site has been developed with a different configuration of five small buildings;
- The 1924 historical map shows another small building to have been constructed on site and the addition of a pump;
- The site remained relatively unchanged until 1981 where it appears the inactive sand pit has now been infilled and Mill Farm is no longer operating on the land parcel of the western section of the site. A sewage works is now visible to the east of site beyond London Road;
- Aerial photography from 2000 shows the site to be characterised by grassland and bordered by mature trees and hedges with a small number of mature trees located on site;
- By 2006 the sewage works are no longer identifiable to the east of the site;
- The latest map available from 2018 indicates the south western land parcel of the site to have a surface layer now characterised by rough grassland.

3. GEOLOGY

The BGS website indicates the geology of the site to be characterised by the succession shown in **Table 2** below.

Table 2: Conjectural geological succession beneath the site

Geological unit	Brief description	Thickness
Superficial soils		
Glaciofluvial deposits	Sands and gravels	Unknown
Solid geology deposits		
Zig Zag Chalk Formation	Chalk – mostly firm, pale grey to off-white blocky chalk	Up to 75 m

Some made ground is likely to be present due to the existing history of development on site dating back to before the 1900's and the infilling of a former sand pit.

4. HYDROGEOLOGY

4.1.1 Aquifer characteristics

Based on the findings of the Landmark report dated 23rd November 2018 **Appendix B**, the hydrogeology of the site is likely to be characterised by the presence of a Secondary A aquifer within the superficial glaciofluvial deposits and a Principal aquifer within the chalk bedrock.

It is also possible that localised perched water may be present in any made ground.

4.1.2 Vulnerability of groundwater resources

The site has been classified by the EA website to overlie a:

- Secondary A aquifer: permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers, and;
- Principal aquifer: Principal Aquifers (previously called Major): geology that exhibit high permeability and/or provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

The soils beneath the site are classified as having HIGH URBAN (HU) leaching potential.

HU - soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere, so a worst-case vulnerability classification is assumed until proven otherwise.

Information available on the DEFRA Magic website indicates that the site lies within a currently designated zone 3 (total Catchment) groundwater Source Protection Zone. This zone is defined as the total area needed to support the abstraction or discharge from the protected groundwater source.

4.1.3 Licensed groundwater abstractions

The environmental database report (Landmark report, dated 23rd November 2018) indicates the presence of one licensed groundwater abstraction within a 1 km radius of the site. The licence is for domestic and agricultural purposes located 819 m south west of site which operates under licence number 6/33/13/*g/063.

5. SITE INVESTIGATION STRATEGY & METHODOLOGY

5.1 Introduction

RSK carried out intrusive investigation works on 3 December 2018.

Prior to conducting intrusive works, utility service plans were obtained and buried service clearance undertaken in line with RSK's health and safety procedures. Copies of statutory service records obtained by RSK as part of the agreed scope of works are contained in **Appendix C**.

5.2 Objectives

The specific objectives of the investigation were as follows:

- to establish the location and extent of an infilled former sand pit, identified on historic maps in the south-western corner of the site, including the thickness of the fill
- to determine the composition of the infill material and assess its contamination status; and
- to obtain samples for chemical testing.

5.3 Selection of investigation methods

The techniques adopted for the investigation were chosen with consideration of the objectives and site constraints.

Mechanically excavated trial pitting was chosen to obtain a sufficient number of investigation locations, to achieve greater visibility of the made ground and consequently enable delineation of the former sand pit.

5.4 Investigation strategy

The ground investigation was carried out using intrusive ground investigation techniques in general accordance with the recommendations of BS5930: 2015 Code of practice for ground investigations, which maintains compliance with BS EN 1997-1 and 1997-2 and their related standards. Whilst every attempt was made to record full details of the strata encountered in the boreholes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks.

The investigation strategy involved targeted trial pits, focussing on the area of the possible location of the former sand pit, identified on historic maps in the south-western corner of the site.

Twelve machine excavated trial pits were dug to a maximum depth of 4 m bgl before being backfilled with arisings.

5.5 Implementation of investigation works

The exploratory holes were logged by an engineer in general accordance with the recommendations of BS 5930:2015 (which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1).

Soils collected for laboratory analysis were placed in a variety of containers appropriate to the anticipated testing suite required. They were dispatched to the laboratory in cool boxes under chain of custody documentation. Samples were stored in accordance with the RSK quality procedures to maintain sample integrity and preservation and to minimise the chance of cross contamination.

Selected samples were placed in polythene bags for headspace screening with a photo-ionisation detector (PID) fitted with a 10.2 eV bulb PID screening results are presented on the exploratory hole records (**Appendix D**).

5.6 Laboratory testing

Laboratory testing was undertaken at a UKAS accredited laboratory with ISO17025 and MCERTS accredited test methods were specified where applicable for contamination testing and as shown in the laboratory test certificates appended.

The soil sampling strategy was designed to characterise made ground that has been used to infill the former sand pit.

The programme of chemical tests undertaken on soil samples obtained from the intrusive investigation is presented in **Table 3** with the laboratory testing results contained in **Appendix E**.

Table 3: Summary of chemical testing of soil samples

Stratum	Tests undertaken	No. of tests
Made ground	Asbestos screening, Speciated PAH - 16MS, TPHCWG (spec. TPH), pH, As, Cd, Cr, Cu, Hg, Pb, Ni, Se, Zn, Total Sulphate, w/s Sulphate	6
Glaciofluvial deposits	Speciated PAH - 16MS, TPHCWG (spec. TPH), pH, As, Cd, Cr, Cu, Hg, Pb, Ni, Se, Zn, Total Sulphate, w/s Sulphate	1

6. GROUND CONDITIONS ENCOUNTERED

The results of the intrusive investigation and subsequent geo-environmental analysis undertaken are detailed below.

6.1 Ground conditions encountered

The descriptions of the strata encountered, notes regarding visual or olfactory evidence of contamination, list of samples taken, field observations of soil and groundwater and in-situ testing are included on the exploratory hole records presented in **Appendix D**.

The exploratory holes appear to confirm the presence of the infilled sand pit, recorded on historic maps in the south-western corner of the site. A cross-section of the possible sand pit is presented in **Figure 3**.

It should be noted that the area to the west-north of the former sand pit was not accessible due to very dense vegetation, including shrubs and bushes, therefore the north-western boundary of the sand pit could not be established.

The ground conditions encountered during the fieldworks are summarised in **Table 4** and discussed below.

Table 4: General succession of strata encountered

Stratum	Exploratory holes encountered	Depth to top of stratum m bgl	Proven thickness (m)
Topsoil	All	0	0.2 - 0.40
Made ground	TP3, TP5, TP6, TP9 and TP12	0.20 - 0.40	1.20 - 3.60
Glaciofluvial deposits	Majority of locations except for TP3 and TP5	0.30 – 3.90	Not proven

6.1.1 Topsoil

Topsoil generally comprised soft dark brown very sandy clay, with rootlets.

6.1.2 Made ground

Made ground was encountered in the south-western corner of the site, within the area of the former sand pit recorded on historic maps.

Suspected infilled material was identified in 5 trial pits below topsoil (see attached Exploratory hole location plan): TP3 (to full depth of 3.2 m bgl), TP5 (to full depth of 3.4 m bgl), TP6 (between 0.3 m and 1.5 m bgl), TP9 (between 0.2 m and 2.4 m bgl) and TP12 (between 0.3 m and 3.9 m bgl).

The made ground was generally described as orangish brown very sandy very gravelly CLAY and occasional partings of clayey very sandy gravel in places. Gravel was flints with a significant proportion of anthropogenic material including fragments of bricks, concrete, bituminous material, charcoal, ceramic, structured chalk, rare glass, slate and fragmented wood.

6.1.3 Variable cohesive and granular soils of the Glaciofluvial Deposits

This stratum was encountered at a depth of between 0.30 m and 3.90 m below ground level, the thickness of which was not proven. The soils generally comprised a granular soil described as medium dense yellowish/reddish brown silty fine to medium sand with variable gravel of angular to rounded fine to coarse flint, in places. Soft near ground level and firm to stiff at depth orangish brown clay was also encountered within these deposits.

6.1.4 Visual/olfactory evidence of soil contamination

No asbestos containing material was visually identified and no visual or olfactory contamination of concern was noted within the fill. PID results obtained from samples of suspected fill material were generally <0.1 ppm indicating an absence of significant concentrations of volatile petroleum hydrocarbons and other volatile organic compounds.

6.1.5 Groundwater encountered during intrusive works

Groundwater was not encountered during the investigation works to a maximum depth of 4 m bgl.

7. LABORATORY TEST RESULTS

The chemical soil testing results are presented in **Appendix E**.

7.1.1 Oral, dermal and inhalation exposure with impacted soil by future occupants/site users

As an initial assessment, the soil test results have been compared against the GAC for residential with home-grown produce end use, assuming the worst-case scenario, since the exact nature of the proposed development is unknown. The assessment is presented in **Appendix G**.

A soil organic matter (SOM) of 1% has been selected, assuming the worst-case scenario, as the soil organic matter has not been tested.

One sample obtained from the natural stratum (TP10) marginally exceeded the arsenic screening value of 37 mg/kg. The result was 43 mg/kg. However, none of the samples obtained from the made ground exceeded the arsenic screening value. Furthermore, the BGS Estimated Soil Chemistry Data (Landmark, November 2018) indicates that the site is underlain by a natural stratum with estimated arsenic concentrations between 15 and 25 mg/kg with some areas in the vicinity of the site with arsenic concentrations of between 35 and 45 mg/kg. Therefore, the slightly elevated arsenic concentration is considered to be naturally occurring within the underlying stratum.

The assessment also indicates that all samples obtained from the made ground exceeded the chromium VI screening value of 21 mg/kg. The results varied between 21 and 33 mg/kg. However, this is only a slight exceedance and considered not to be of concern. Also, total chromium (undifferentiated) has been tested. For chromium III (Cr III), the screening value of 9100 mg/kg could be adopted and therefore results are significantly below the adopted GAC.

7.1.2 Inhalation exposure of future occupants/site users to asbestos fibres

The visual inspection at the laboratory identified no materials suspected of potentially containing asbestos and the scheduled laboratory screening for asbestos found no detectable asbestos fibres within the samples of made ground.

7.1.3 Uptake of contaminants by vegetation potentially inhibiting plant growth (phytotoxicity)

The results have been compared with the GAC presented in **Appendix G** for this linkage. The results indicate that a relevant contaminant linkage is unlikely to exist associated with phytotoxic effects for future plant growth.

8. PRELIMINARY WASTE ASSESSMENT

Technical Guidance WM3 sets out requirements for waste sampling. It is a legal requirement to correctly assess and classify waste. The level of sampling should be proportionate to the volume of waste and its heterogeneity.

The classification of waste soil is a two-stage process, the first being an assessment of whether the soil is considered hazardous or not following the guidance within Technical Guidance WM3. For off-site disposal to landfill the results of Waste Acceptance Criteria (WAC) testing must then be reviewed to

establish if the soil is acceptable at the relevant class of landfill or requires pre-treatment to reduce specific hazardous properties.

The samples collected from shallow pits were tested for metals, asbestos, Polycyclic Aromatic Hydrocarbon (PAH), Total Petroleum Hydrocarbons (TPH) and BTEX. Envirolab, an RSK company, has developed a waste soils characterisation assessment tool (HASWASTE), which follows the guidance within Technical Guidance WM3. The analytical results have been assessed using this tool for off-site disposal of materials in the future. The results are presented in **Appendix H**.

The initial hazardous waste risk assessment indicates that none of the samples contain hazardous properties. Therefore, to determine whether waste might be classified as inert or non-hazardous, WAC testing will need to be undertaken.

9. GAPS AND UNCERTAINTIES

The area to the west-north of the suspected former sand pit was not accessible due to very dense vegetation, including shrubs and bushes, therefore the north-western boundary of the pit could not be established. In addition, the thickness of the made ground has not been proven in TP3 and TP5.

Although asbestos was not encountered during the site works and not found in made ground samples tested, asbestos containing material (ACM) could still be present in discrete locations.

10. CONCLUSIONS

The main feature of potential contamination on site identified from the findings of the desk study relate to the potential for made ground associated with the fill material used to infill the historical sand pit on site. It was recommended that an intrusive investigation was conducted to further investigate the nature and magnitude of the fill material.

The ground conditions encountered during the site investigation carried out on 3 December 2018 were generally in line with the initial conceptual site model. The former sand pit, recorded on historic maps appears to have been located in the western corner of the site. Suspected infilled material was identified in 5 trial pits below the topsoil. The proven depths of the former sand pit varied between 1.5 m bgl (TP6) and 3.9 m bgl (TP12). The fill material was generally described as orangish brown very sandy very gravelly clay and occasional partings of clayey very sandy gravel in places. Gravel was flints with a significant proportion of anthropogenic material including fragments of bricks, concrete, bituminous material, charcoal, ceramic, structured chalk, rare glass, slate and fragmented wood.

Variable cohesive and granular soils of the Glaciofluvial Deposits were encountered below the topsoil at a depth of between 0.3 m to 0.4 m bgl or below the made ground in the area of the suspected former sand pit at a depth of between 1.4 m and 3.9 m bgl.

Groundwater was not encountered to a depth of 4mbgl.

No asbestos containing material was visually identified and no visual or olfactory contamination of concern was noted within the fill. No asbestos has been found in made ground samples tested.

Generally, the results of the GQRA indicate that relevant pollutant linkages are not present.

The marginally elevated arsenic concentration in the sample obtained from the superficial deposits is considered to be naturally occurring within the underlying stratum. No exceedances of arsenic were indicated in made ground samples. Marginal exceedances in chromium indicated in made ground samples were considered not to be of concern.

The initial hazardous waste risk assessment indicates that none of the samples contain hazardous properties therefore waste might be classified as inert or non-hazardous (subject to WAC testing).

In terms of any future development, it is likely that any proposed buildings in the location of the former sand pit may need to give consideration to a piled foundation solution.

Should a redevelopment option be pursued, then further site investigation will be required across the rest of the site, and possibly to greater depths depending on the exact scheme proposed.

Yours faithfully
For RSK Environment Ltd



Louisa Willmott
Graduate Geo-Environmental Engineer



Sylwia Mianowska
Graduate Geo-Environmental Engineer



David Anchor
Director

Figures

- | | |
|----------|--------------------------------|
| Figure 1 | Site location plan |
| Figure 2 | Exploratory hole location plan |
| Figure 3 | Cross-section SW-NE/S-N |

Appendices

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| Appendix A | RSK Service Constraints |
| Appendix B | Landmark report |
| Appendix C | Utility service plans |
| Appendix D | Exploratory hole records |
| Appendix E | Laboratory certificates for soil analysis |
| Appendix F | Generic assessment criteria for human health |
| Appendix G | GQRA data screening tables |
| Appendix H | WM3 assessment |
| Appendix I | Photographic Log |

FIGURES



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Client

MARTIN GRANT HOMES

Project Title

LONDON ROAD,
HITCHIN

Drawing Title

SITE LOCATION PLAN

Rev	Drawn	Date	Checked	Date	Approved	Date
01	ASC	03.01.19	SM	03.01.19	SM	03.01.19
Dimensions		Scale		Original Size		
m		1:50,000		A4		

Project Number

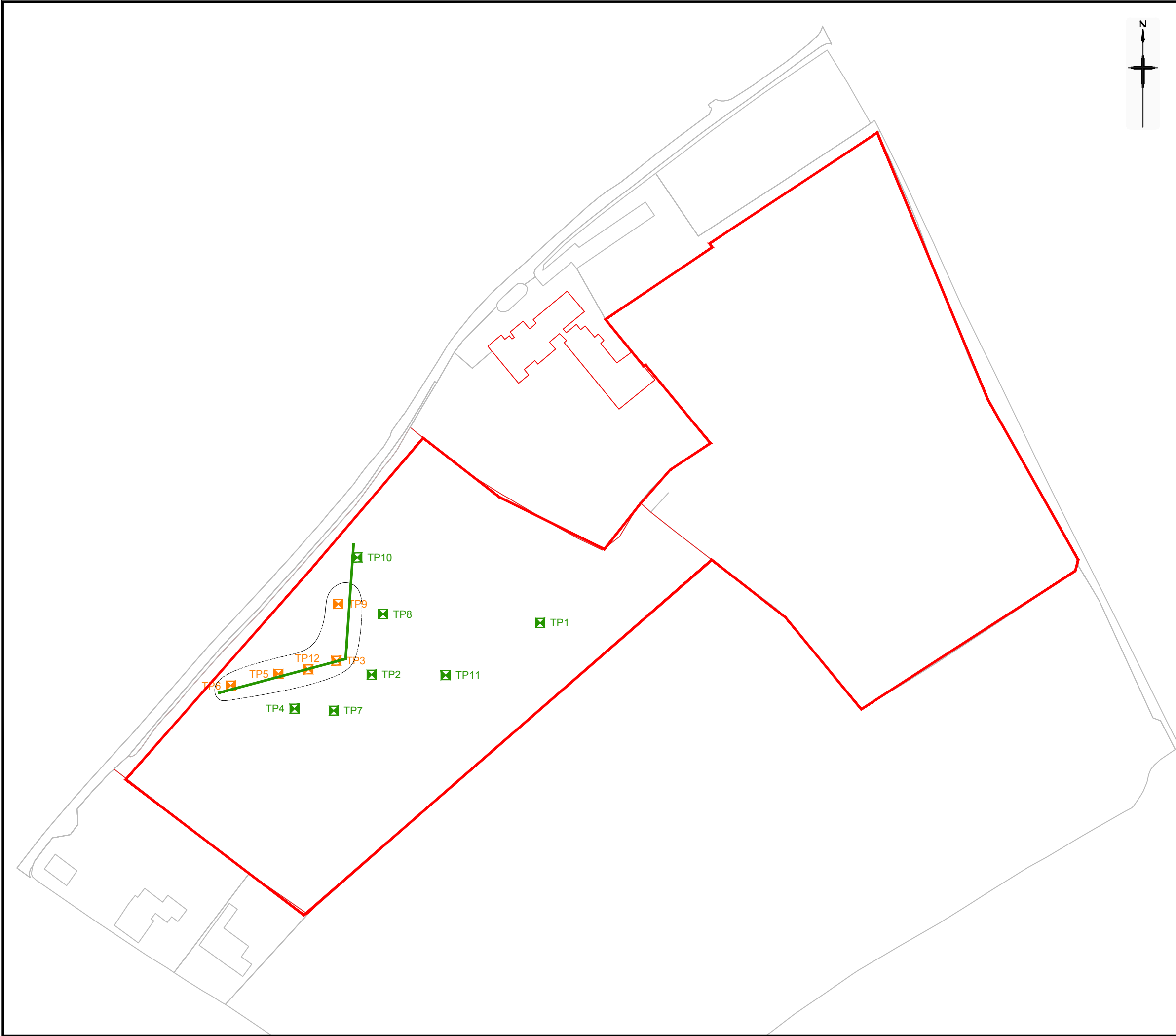
1920378 - L01

Drawing File

1920378 - SLP.dwg

Drawing Number

FIGURE 1



LEGEND

- Site Boundary
- Section Line (See Figure 3)
- Area of Infilled Material Encountered
- Trial Pit Location
- Trial Pit Location with Suspected Infilled Material Encountered

Rev.	Date	Amendment	Drawn	Chkd.	Appd.



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Client
MARTIN GRANT HOMES LTD

Project Title
**LONDON ROAD,
HITCHIN**

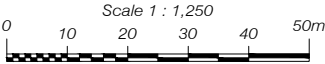
Drawing Title
**EXPLORATORY HOLE
LOCATION PLAN**

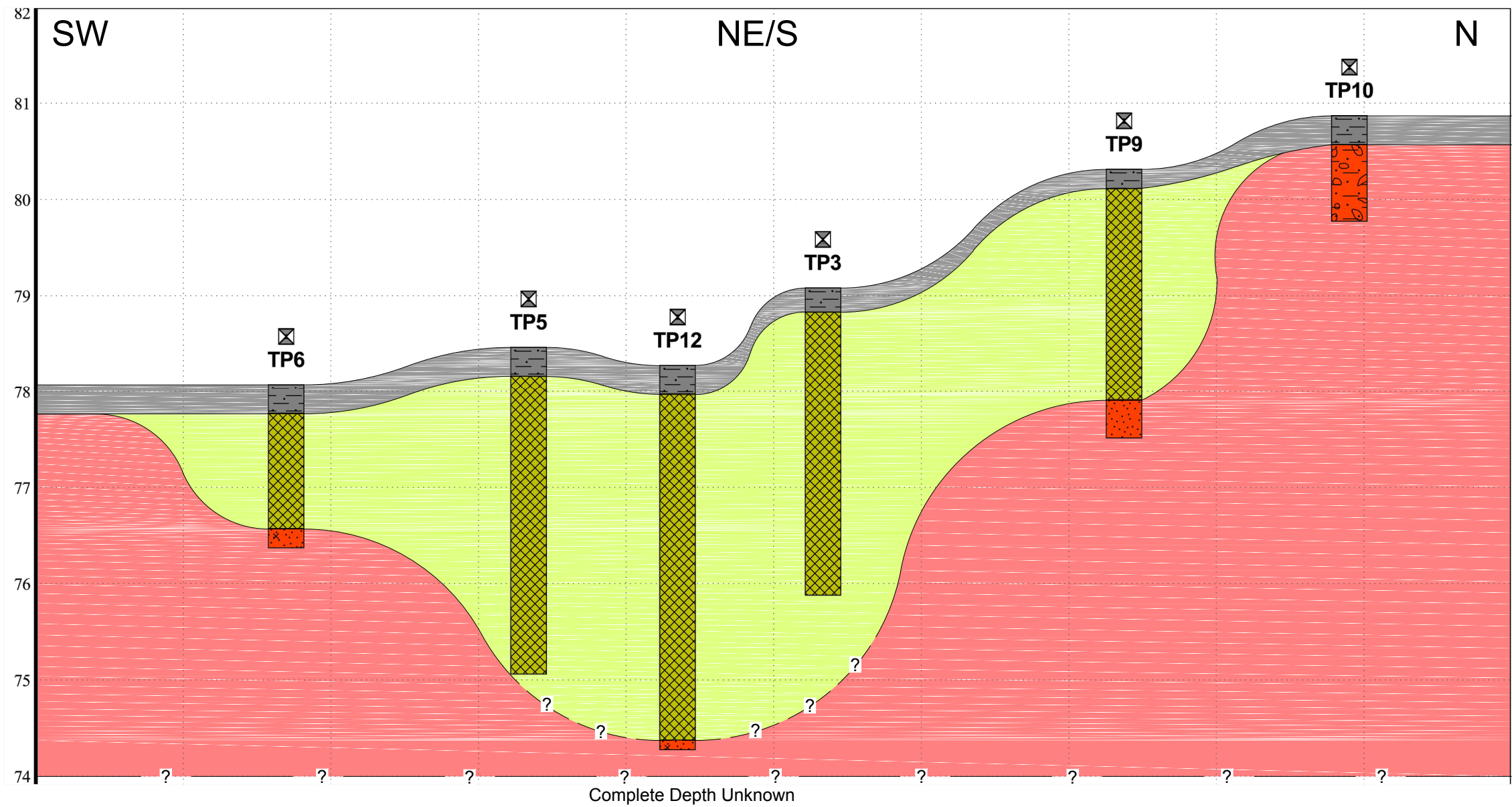
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ASC	03.01.19	SM	03.01.19	SM	03.01.19

Scale	Orig Size	Dimensions
1:1250	A3	m

Project No.	Drawing File
1920378 - L01	1920378 (L01) Fig 2.dwg

Drawing No.	Rev.
FIGURE 2	P1





LEGEND

- Topsoil
- Made Ground (Suspected Infilled Sand Pit)
- Glaciofluvial Deposits

Rev.	Date	Amendment	Drawn	Chkd.	Appd.

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Client

MARTIN GRANT HOMES

Project Title

HITCHIN,
LONDON ROAD

Drawing Title

GEOLOGICAL
CROSS SECTION
PLAN

Drawn	Date	Checked	Date	Approved	Date
ASC	03.01.19	SM	03.01.19	SM	03.01.19
Scale	Orig Size		Dimensions		
NTS	A3		m		
Project No.			Drawing File		
1920378 - L01			1920378 (L01) Fig 3.dwg		
Drawing No.					Rev.
FIGURE 3					P1

APPENDIX A

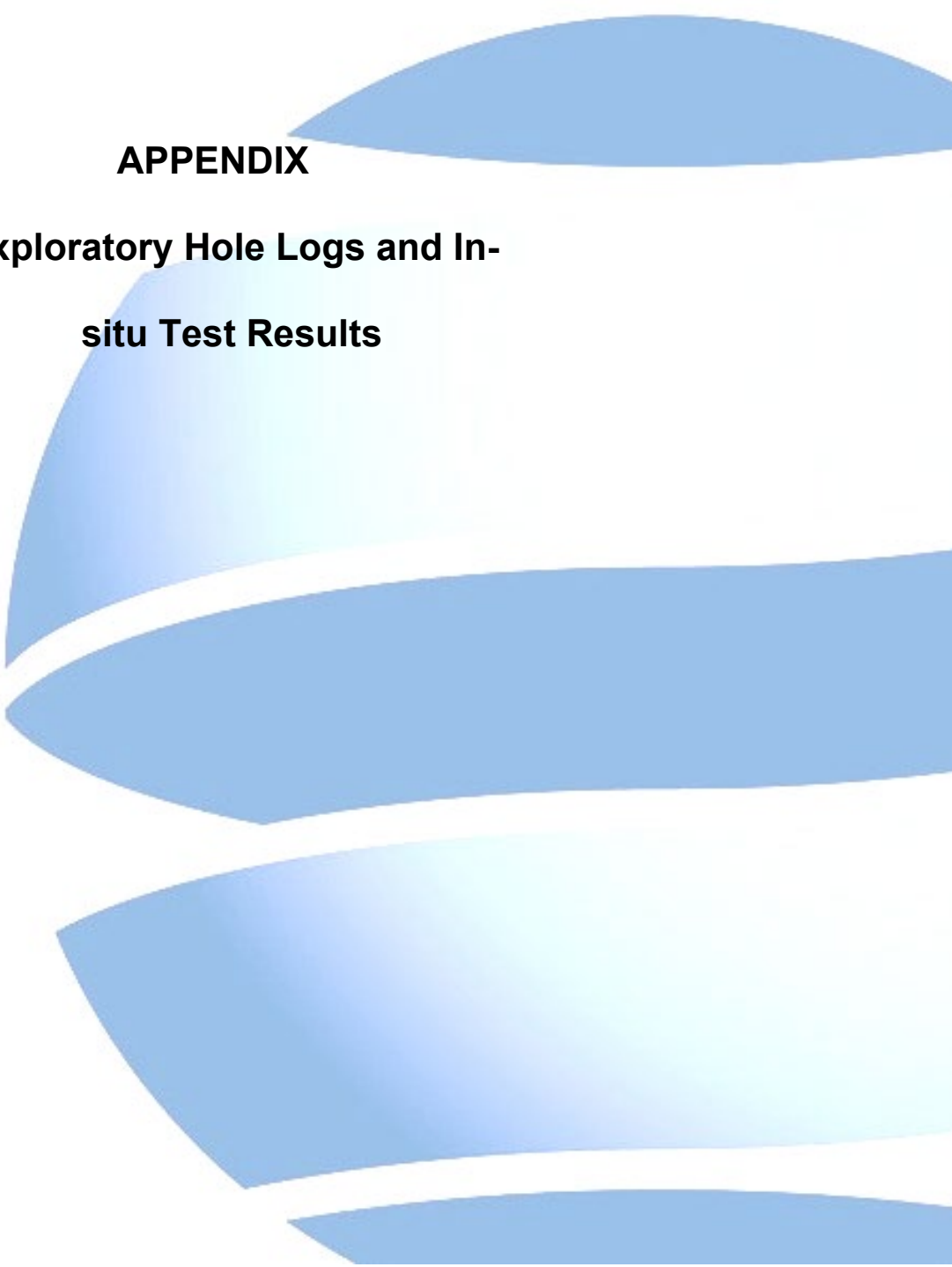
SERVICE CONSTRAINTS

1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for Martin Grant Homes Ltd (the "client") in accordance with the terms of a contract [RSK Group Standard Terms and Conditions] RSK and the "client", dated 21 November 2018. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.
2. Other than that, expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
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4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, invasive plants, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials, unless specifically identified in the Services.
7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a visual inspection of the site together with RSK's interpretation of information, including documentation, obtained from third parties and from the client on the history and usage of the site, unless specifically identified in the Services or accreditation system (such as UKAS ISO 17020:2012 clause 7.1.6):
 - a. the Services were based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely
 - b. the Services were limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the visual inspection
 - c. the Services did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services.

RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the

doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.

8. The intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined locations based on the known historic / operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the properties of the materials adjacent and local conditions, together with the position of any current structures and underground utilities and facilities, and natural and other activities on-site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.
9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on-site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.



APPENDIX

Exploratory Hole Logs and In- situ Test Results

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net				Borehole Log				Borehole No. WS1 Sheet 1 of 1		
Project Name: Mill Lane				Project No. GE23305		Co-ords:		Hole Type WLS		
Location: Hitchin				Level:		Scale 1:30				
Client: Martin Grant Homes				Dates: 30/10/2025		Logged By HN				
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.45	ES	N=81 (10,9/81 for 275mm)	0.30		Grass over brown slightly gravelly silt. Gravel comprises fine to medium sub angular to rounded flint and chert. TOPSOIL Orangish brown very gravelly slightly sandy silt. Sand is fine. Gravel comprises fine to coarse sub angular to sub rounded flint and chert. Occasional brick. MADE GROUND Very dense orangish brown silty sandy slightly clayey GRAVEL. Sand is coarse. Gravel comprises mostly coarse some medium to fine angular to sub rounded flint and chert. Occasional fine to medium gravel sized pockets of fine sand. GLACIOFLUVIAL DEPOSITS	1		
		1.00	SPT		0.50					
					1.30		End of Borehole at 1.30m	2		
								3		
								4		
								5		
								6		
Dynamic Sampling Run Details		Water Strike Details (mbgl)		Remarks					 Status FINAL	
Depth Top	Depth Base	Diameter	Depth Strike	Rose To	Dynamic from 1.30m					

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log			Borehole No. WS2 Sheet 1 of 1				
Project Name: Mill Lane		Project No. GE23305		Co-ords:		Hole Type WLS			
Location: Hitchin				Level:		Scale 1:30			
Client: Martin Grant Homes				Dates: 30/10/2025		Logged By HN			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30			Grass over brown slightly sandy silt. Sand is fine. Frequent large rootlets. TOPSOIL	1
		0.45	ES		0.60			Brown sandy slightly clayey gravelly SILT. Sand is fine to coarse. Gravel comprises fine to coarse sub angular to sub rounded flint and chert. Occasional rootlets. GLACIOFLUVIAL DEPOSITS	
		1.00	SPT	N=24 (4,4/6,7,7,4)	1.10			Orangish brown silty sandy slightly clayey GRAVEL. Sand is coarse. Gravel comprises mostly coarse some fine to medium sub angular to subrounded flint and chert. GLACIOFLUVIAL DEPOSITS	
		1.30	D					Very stiff orangish brown sandy CLAY with frequent fine to coarse gravel sized pockets/lenses of sand. Sand is coarse. GLACIOFLUVIAL DEPOSITS	
		1.60	D		1.82				
		2.00 2.00	B SPT	N=15 (4,4/4,3,4,4)				Medium dense yellow fine SAND. GLACIOFLUVIAL DEPOSITS	
		3.00	SPT	N=13 (2,1/3,3,3,4)					
					4.00				4
							End of Borehole at 4.00m		5
									6
Dynamic Sampling Run Details		Water Strike Details (mbgl)		Remarks					 Status FINAL
Depth Top	Depth Base	Diameter	Depth Strike						



www.gesl.net

Borehole Log

Borehole No.

WS3

Sheet 1 of 1

Project Name: Mill Lane

Project No.
GE23305

Co-ords:

Hole Type	WLS
-----------	-----

Location: Hitchin

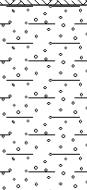
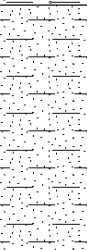
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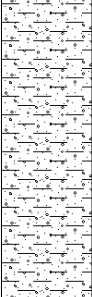
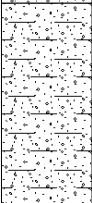
Scale
1:30

Client: Martin Grant Homes

Dates: 30/10/2025

Logged By
HN

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.45	ES	N=74 (13,12/14,17,22,21)	0.25			Brown slightly gravelly silt with frequent rootlets. TOPSOIL	1	
		1.00	SPT				Orangish brown silty sandy slightly clayey GRAVEL. Sand is coarse. Gravel comprises fine to coarse sub angular to subrounded flint and chert. Occasional rootlets. GLACIOFLUVIAL DEPOSITS			
		1.30	D				Very dense orangish brown clayey SAND with bands of gravel. Sand is coarse. Gravel comprises fine to coarse sub angular to subrounded flint and chert. GLACIOFLUVIAL DEPOSITS			
		1.90 2.00	D SPT	N=67 (12,11/19,17,15,16)	2.00			End of Borehole at 2.00m		2
									3	
									4	
									5	
									6	
Dynamic Sampling Run Details		Water Strike Details (mbgl)		Remarks						
Depth Top	Depth Base	Diameter	Depth Strike							Rose To
					Terminated at 2.00m due to refusal					
										
						Status FINAL				

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net				Borehole Log				Borehole No. WS4 Sheet 1 of 1	
Project Name: Mill Lane				Project No. GE23305		Co-ords:		Hole Type WLS	
Location: Hitchin				Level:		Scale 1:30			
Client: Martin Grant Homes				Dates: 30/10/2025		Logged By HN			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30			Grass over brown silt. Frequent rootlets. TOPSOIL	
		0.50	ES					Stiff orangish brown gravelly silty slightly sandy CLAY with occasional fine to medium gravel sized pockets of yellow clay. Sand is coarse. Gravel comprises fine to coarse sub angular to sub rounded flint and chert. Occasional rootlets. GLACIOFLUVIAL DEPOSITS	1
		1.00	SPT	N=29 (5,5/7,7,7,8)					
		1.30	D		1.50				
		1.90	D					Very dense orangish brown gravelly slightly clayey coarse sand with occasional fine to medium gravel sized pockets/lenses of clay. Becoming gravelly with depth. Gravel comprises fine to medium angular to sub rounded flint and chert. GLACIOFLUVIAL DEPOSITS	2
		2.00	SPT	N=80 (14,14/80 for 275mm)				Large root 70x20x20mm	
					2.30				
					2.40			Orangish brown coarse SAND. GLACIOFLUVIAL DEPOSITS	
								End of Borehole at 2.40m	
									3
									4
									5
									6
Dynamic Sampling Run Details		Water Strike Details (mbgl)		Remarks					
Depth Top	Depth Base	Diameter	Depth Strike	Rose To	Terminated at 2.40 due to refusal.				


Status
FINAL

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log			Borehole No. WS5 Sheet 1 of 1	
Project Name: Mill Lane		Project No. GE23305		Co-ords:		Hole Type WLS
Location: Hitchin				Level:		Scale 1:30
Client: Martin Grant Homes				Dates: 30/10/2025		Logged By HN

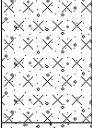
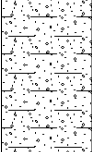
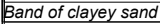
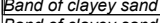
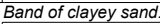
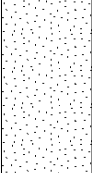
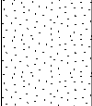
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Grass over dark brown gravelly clayey silt. Gravel comprises fine to coarse sub angular to sub rounded flint and chert. TOPSOIL		
		0.50							
		0.70					Orangish brown silty sandy slightly clayey GRAVEL. Sand is coarse. Gravel comprises fine to coarse sub angular to subrounded flint and chert. GLACIOFLUVIAL DEPOSITS		
		0.80	ES						
		1.00	SPT	N=37 (8,7/10,8,9,10)			Yellowish brown slightly gravelly clayey SAND. Sand is fine to coarse. Gravel comprises fine to coarse sub angular to subrounded flint and chert. GLACIOFLUVIAL DEPOSITS	1	
		1.20	D				Dense becoming medium dense orangish brown very gravelly clayey SAND with bands of fine sand. Sand is coarse. Gravel comprises fine to coarse sub angular to subrounded flint and chert. GLACIOFLUVIAL DEPOSITS <i>Band of yellowish brown fine sand</i>		
		1.80	D						
		2.00	SPT	N=30 (9,8/8,7,7,8)				2	
		2.70	D				<i>Band of orangish brown fine sand</i>		
		3.00	B						
		3.00	SPT	N=25 (6,6/6,6,6,7)			<i>Band of orangish brown fine sand</i>	3	
		4.00	SPT	N=10 (3,3/3,2,2,3)	4.00		End of Borehole at 4.00m	4	
								5	
								6	

Dynamic Sampling Run Details			Water Strike Details (mbgl)		Remarks
Depth Top	Depth Base	Diameter	Depth Strike	Rose To	



Status
FINAL

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL www.gesl.net		Borehole Log			Borehole No. WS6 Sheet 1 of 1	
Project Name: Mill Lane		Project No. GE23305		Co-ords:		Hole Type WLS
Location: Hitchin				Level:		Scale 1:30
Client: Martin Grant Homes				Dates: 30/10/2025		Logged By HN

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30			Grass over brown silt. Frequent rootlets TOPSOIL	1 2 3 4 5 6
					0.80			Orangish brown sandy gravelly SILT. Gravel comprises fine to coarse sub rounded to sub angular flint and chert. Sand is fine. GLACIOFLUVIAL DEPOSITS	
		1.00	SPT	N=35 (6,6/8,9,9,9)	1.50			Dense orangish brown gravelly slightly clayey SAND with occasional fine to medium gravel sized pockets of yellow clay. Sand is coarse. Gravel comprises fine to coarse angular to sub rounded flint and chert. GLACIOFLUVIAL DEPOSITS	
		1.50	ES D		1.70			Orangish brown coarse SAND. GLACIOFLUVIAL DEPOSITS	
		1.90			D SPT		N=5 (2,1/1,2,1,1)	2.00	
		2.00		Band of clayey sand					
				Band of clayey sand					
				Gravel band					
				Band of clayey sand.					
		2.80		Loose yellow fine SAND GLACIOFLUVIAL DEPOSITS					
3.50	B		3.50		Medium dense white mottled orange coarse SAND with occasional medium gravel sized pockets of clay. GLACIOFLUVIAL DEPOSITS				
4.00	SPT	N=18 (4,3/5,4,4,5)	4.00	End of Borehole at 4.00m					

Dynamic Sampling Run Details			Water Strike Details (mbgl)		Remarks
Depth Top	Depth Base	Diameter	Depth Strike	Rose To	



Status
FINAL

APPENDIX

**Ground Gas and
Groundwater Monitoring
Results**

Project: Mill Lane, Hitchin
 Ref: GE23305
 Client: Martin Grant Homes



Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS2	07/11/25	0	0.2	0.2	20.7	0.0	0.1	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/11/25	10	0.2	1.1	20.7	0.0	0.1	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/11/25	20	0.2	1.1	20.3	0.0	0.1	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/11/25	30	0.2	1.2	20.1	0.0	0.1	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/11/25	60	0.2	1.3	19.9	0.0	0.1	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/11/25	90	0.2	1.4	19.8	0.0	0.1	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/11/25	120	0.2	1.4	19.8	0.0	0.1	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	07/11/25	180	0.2	1.4	19.8	0.0	0.1	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/11/25	0	0.2	0.3	20.8	0.0	0.2	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/11/25	10	0.2	1.2	2.6	0.0	0.2	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/11/25	20	0.2	1.2	20.0	0.0	0.2	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/11/25	30	0.2	1.2	19.7	0.0	0.2	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/11/25	60	0.2	1.2	19.6	0.0	0.2	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/11/25	90	0.2	1.1	19.7	0.0	0.2	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/11/25	120	0.2	1.1	19.8	0.0	0.2	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	07/11/25	180	0.2	1.1	19.8	0.0	0.2	995	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/11/25	0	0.2	0.2	21.2	0.0	0.2	996	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/11/25	10	0.2	1.3	20.9	0.0	0.2	996	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/11/25	20	0.2	1.3	20.4	0.0	0.2	996	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/11/25	30	0.2	1.3	20.2	0.0	0.2	996	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/11/25	60	0.2	1.4	20.1	0.0	0.2	996	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/11/25	90	0.2	1.4	20.1	0.0	0.2	996	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/11/25	120	0.2	1.4	20.1	0.0	0.2	996	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	07/11/25	180	0.2	1.4	20.1	0.0	0.2	996	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	20/11/25	0	0.3	0.3	21.1	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	20/11/25	10	0.4	1.4	21.0	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	20/11/25	20	0.4	1.4	20.7	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	20/11/25	30	0.4	1.4	20.5	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	20/11/25	60	0.4	1.5	20.3	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	20/11/25	90	0.4	1.5	20.3	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	20/11/25	120	0.3	1.5	20.3	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	20/11/25	180	0.3	1.5	20.3	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	20/11/25	0	0.3	0.2	21.1	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	20/11/25	10	0.3	0.9	21.1	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	20/11/25	20	0.3	0.9	20.8	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	20/11/25	30	0.3	0.9	20.7	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	20/11/25	60	0.3	0.9	20.6	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	20/11/25	90	0.3	0.9	20.6	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	20/11/25	120	0.3	1.0	20.6	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	20/11/25	180	0.3	1.0	20.5	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	20/11/25	0	0.3	0.2	21.1	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	20/11/25	10	0.3	0.9	21.0	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	20/11/25	20	0.3	0.9	20.8	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	20/11/25	30	0.3	0.9	20.8	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	20/11/25	60	0.3	0.9	20.7	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: Mill Lane, Hitchin
Ref: GE23305
Client: Martin Grant Homes



Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS6	20/11/25	90	0.3	0.9	20.7	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	20/11/25	120	0.3	0.9	20.7	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	20/11/25	180	0.3	0.9	20.7	0.0	0.0	1004	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	12/12/25	0	0.4	0.2	21.0	0.1	0.0	1006	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	12/12/25	10	0.4	1.1	20.8	0.1	0.0	1006	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	12/12/25	20	0.4	1.1	20.6	0.1	0.0	1006	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	12/12/25	30	0.4	1.1	20.5	0.1	0.0	1006	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	12/12/25	60	0.4	1.2	20.5	0.1	0.0	1006	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	12/12/25	90	0.4	1.2	20.5	0.1	0.0	1006	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	12/12/25	120	0.4	1.2	20.5	0.1	0.0	1006	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	12/12/25	180	0.4	1.2	20.5	0.1	0.0	1006	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	12/12/25	0	0.4	0.2	20.9	0.1	0.1	1007	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	12/12/25	10	0.5	0.2	20.9	0.1	0.1	1007	Dry	0.001	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	12/12/25	20	0.5	0.7	20.6	0.1	0.1	1007	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	12/12/25	30	0.5	0.7	20.5	0.1	0.1	1007	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	12/12/25	60	0.5	0.6	20.5	0.1	0.1	1007	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	12/12/25	90	0.5	0.6	20.6	0.1	0.1	1007	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	12/12/25	120	0.5	0.5	20.6	0.1	0.1	1007	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	12/12/25	180	0.5	0.4	20.8	0.1	0.1	1007	Dry	0.001	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	12/12/25	0	0.4	0.2	21.0	0.1	0.0	1007	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	12/12/25	10	0.4	0.9	21.0	0.1	0.0	1007	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	12/12/25	20	0.4	0.9	20.7	0.1	0.0	1007	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	12/12/25	30	0.4	0.9	20.6	0.1	0.0	1007	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	12/12/25	60	0.4	0.9	20.5	0.1	0.0	1007	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	12/12/25	90	0.4	0.9	20.5	0.1	0.0	1007	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	12/12/25	120	0.5	0.9	20.5	0.1	0.0	1007	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	12/12/25	180	0.4	0.9	20.4	0.1	0.0	1007	Dry	0.000	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	22/12/25	0	0.6	0.2	20.8	0.1	0.0	998	Dry	0.001	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	22/12/25	10	0.6	0.8	20.8	0.1	0.0	998	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	22/12/25	20	0.6	0.8	20.6	0.1	0.0	998	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	22/12/25	30	0.6	0.9	20.5	0.1	0.0	998	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	22/12/25	60	0.6	1.1	20.4	0.1	0.0	998	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	22/12/25	90	0.6	1.2	20.4	0.1	0.0	998	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	22/12/25	120	0.6	1.2	20.4	0.1	0.0	998	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS2	22/12/25	180	0.7	1.1	20.4	0.1	0.0	998	Dry	0.001	0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	22/12/25	0	0.5	0.2	20.8	0.0	0.0	998	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	22/12/25	10	0.5	1.4	20.6	0.0	0.0	998	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	22/12/25	20	0.5	1.4	20.0	0.0	0.0	998	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	22/12/25	30	0.6	1.4	19.7	0.0	0.0	998	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	22/12/25	60	0.5	1.3	19.7	0.0	0.0	998	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	22/12/25	90	0.5	1.2	19.8	0.0	0.0	998	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	22/12/25	120	0.5	1.2	20.0	0.0	0.0	998	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS5	22/12/25	180	0.5	0.9	20.3	0.0	0.0	998	Dry	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	22/12/25	0	0.5	0.2	20.7	-0.1	0.0	999	Dry	-0.001	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	22/12/25	10	0.4	1.2	20.7	-0.1	0.0	999	Dry	0.000	-0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: Mill Lane, Hitchin
 Ref: GE23305
 Client: Martin Grant Homes



Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
WS6	22/12/25	20	0.5	1.2	20.3	-0.1	0.0	999	Dry	-0.001	-0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	22/12/25	30	0.5	1.2	20.2	-0.1	0.0	999	Dry	-0.001	-0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	22/12/25	60	0.5	1.2	20.1	-0.1	0.0	999	Dry	-0.001	-0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	22/12/25	90	0.5	1.1	20.2	-0.1	0.0	999	Dry	-0.001	-0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	22/12/25	120	0.4	1.0	20.2	-0.1	0.0	999	Dry	0.000	-0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
WS6	22/12/25	180	0.4	0.9	20.3	-0.1	0.0	999	Dry	0.000	-0.001	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0								0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0								0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0								0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0								0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0								0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0								0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN

Project: Mill Lane, Hitchin
Ref: GE23305
Client: Martin Grant Homes



Location	Date	Time (sec)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Flow (l/hr)	VOC (ppm)	Pressure (mb)	GWL (m bgl)	GSV/Qhgs		Characteristic Situation		CS1 Limiting Value Check			NHBC			
										CH ₄	CO ₂	BS8485 & C665		Flow	CH ₄	CO ₂	CH ₄		CO ₂	
												CH ₄	CO ₂				GSV	Conc.	GSV	Conc.
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	0				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	10				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	20				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	30				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	60				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	90				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	120				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
-	-	180				-	-	-	-	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
Max values			0.7	1.5	21.2	0.1	0.2	1007.0	0.0	0.001	0.002	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
Min Vaules			0.2	0.2	2.6	-0.1	0.0	995.0	0.0	0.000	0.000	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN
BH Flow LoD check			0.7	1.5	21.2	0.1	-	-	-	0.001	0.002	CS1	CS1	NO	NO	NO	GREEN	GREEN	GREEN	GREEN