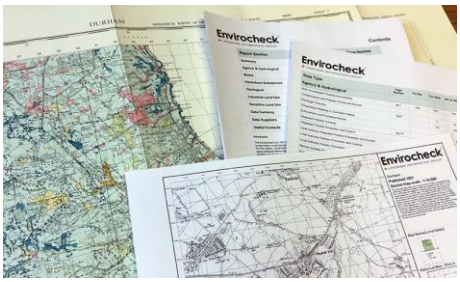



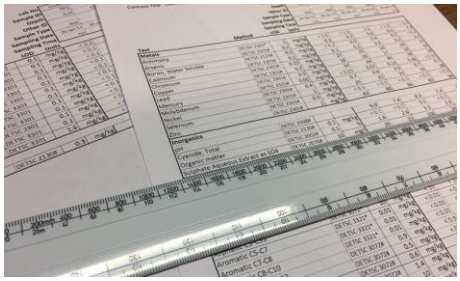

Phase 2: Site Investigation

Former Leisure Centre, Hinckley

Green4Planning

M25-040

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PHASE 2 SITE INVESTIGATION REPORT

FORMER LEISURE CENTRE, HINCKLEY

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY 2
2 INTRODUCTION 3
3 SITE DESCRIPTION 4
4 SUMMARY OF PREVIOUS WORKS 4
5 FIELDWORK 5
6 GROUND CONDITIONS 5
7 CONTAMINATION TESTING RESULTS 6
8 CONCEPTUAL MODEL AND CONTAMINATION ANALYSIS 9
9 GROUND GAS ASSESSMENT 13
10 GEOTECHNICAL TESTING AND ANALYSIS 14

TABLE 1: SUMMARY OF GROUNDWATER STRIKES 5
TABLE 2: SUMMARY OF INORGANIC CONTAMINATION TESTING RESULTS 7
TABLE 3: SUMMARY OF ORGANIC CONTAMINATION TESTING RESULTS 8
TABLE 4: CONCEPTUAL MODEL 10
TABLE 5: SUMMARY OF MONITORING WELL RESPONSE ZONES 14
TABLE 6: SUMMARY OF SAFE BEARING CAPACITES 14

APPENDICES

Appendix A: Drawings
Appendix B: Borehole & Trial Pit Logs
Appendix C: Contamination Laboratory Results
Appendix D: Notes on Limitations & Contamination Guidelines

Revision	Date	Prepared By	Signed
Interim	July 2025	A Crane *Engineering Geologist*	
		Checked By	
		L Richards *Associate Director*	
		Approved By	
		L Richards *Associate Director*	

1 EXECUTIVE SUMMARY

Site Address	The Former Hinckley Leasure Centre LE10 0BY
Proposed Development	The site is expected to be developed with new residential units including semidetached housing, apartments and a care home area. All units have associated parking and soft landscaping.
Fieldwork	• 5no small percussive boreholes (BH01 to BH05) drilled to a maximum of 5.45mbgl. • 2no cable percussive boreholes (CP01 & CP02) drilled to a maximum of 20.00mbgl. • 3no monitoring installations installed within BH01, BH03 and CP01.
Ground Conditions	• Made ground was generally uniform across the site and was encountered to a maximum depth of 2.80m bgl within CP01 located centrally within the site. • Proven to underlie the made ground deposits across the site, natural ground generally comprised of interbedded medium dense to very dense sand deposits and stiff to hard sandy to silty medium to high strength clays. • Groundwater was encountered at 4.60m bgl within CP01 and CP02.
Contamination Analysis	• Given the site's proposed residential land use, the levels of contamination recorded on site may not pose a risk to the current and future users of the site. • If any zones of odorous, brightly coloured or suspected contaminated ground or groundwater are encountered then work should cease in that area until the material has been investigated. The results of the investigation will therefore determine whether or not remediation will be required. • Made ground classed as posing a low risk with respect to construction workers. PPE for workers. • Controlled waters unlikely to be at risk. • With respect to utilities pH was elevated; as a minimum all services should be laid in clean trenches. • Sub surface concrete should be designed to DS-1 ACEC (Class AC-1). This assumes mobile groundwater conditions.
Geotechnical Analysis & Foundation Recommendations	• Maximum safe bearing capacity of 200kN/m^2 for strip foundations 0.60m wide founding on high strength clays at 2.00mbgl. • Locally foundations will need deepening to 3.00m bgl due to made ground depths. • Alternatively, consideration to be given to mini piled foundations. • Normal earthworks plant for excavations.

2 INTRODUCTION

2.1 Authorisation

The site investigation described in this report was carried out by Solmek to the instructions of Green4Planning on The Former Hinckley Leasure Centre LE10 0BY (Figure 1).

Sources of information, including previous work undertaken at the site, are detailed below:

- *Solmek Phase 1 Desk Study Report (S150127) February 2015*
- *Solmek Phase 2 Site Investigation Report (S150127/SI) April 2015*
- *Solmek Ground Gas Assessment Report (S150127/G) May 2015*
- *Solmek Phase 2 Site Investigation Report (S211027) December 2021*
- *Solmek Phase 1 Desk Study Report (M25-040) March 2025*

Reference should be made to the above reports for details of the site's history and environmental setting, the ground conditions encountered, and the results of historical contamination analysis.

2.2 Scope of Works

The site is expected to be developed with new residential units including semidetached housing, apartments and a care home area. All units have associated parking and soft landscaping. The proposed layout is shown as Figure 3.

The following steps may be required in the investigation and remediation of potentially contaminated land:

Phase 1: Desk Study
Phase 2: Intrusive Investigation
Phase 3: Remediation Statement
Phase 4: Validation Reports

Phases 1 and 2 are generally required in the redevelopment of most sites. Phases 3 and 4 are subject to the findings of the initial stages.

A geotechnical and environmental (Phase 2) investigation including a ground gas risk assessment was requested. The fieldwork and testing was generally carried out according to;

- BS 5930:2015+A1:2020 Code of Practice for Ground Investigations
- BS 10175:2011+A1:2013 Investigation of Potentially Contaminated Sites – Code of Practice.
- CIRIA C665:2007 Assessing Risks Posed by Hazardous Ground Gas to Buildings
- BS 8485:2015+A1:2019 Code of Practice for the Characterization and Remediation from Ground Gas in Affected Developments
- Rock and soil descriptions shall be in accordance with BS EN ISO 14689-1:2003, BS EN ISO 14688-1:2002 and BS EN ISO 14688-2:2004

This report forms part of a Stage 1 Risk Assessment (Generic Quantitative Risk Assessment) with respect to the Environment Agency's guidance document Environment Agency *Land Contamination Risk Management*, which replaced the now-withdrawn *Contaminated Land Report 11 – Model Procedures for the Management of Land Contamination (2004)*.

The information provided in this report is based on the investigation fieldwork and is subject to the comments and approval of the various regulatory authorities. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report. Solmek reserve the right to alter conclusions and recommendations should further information be available or provided. Any schematic representation or opinion of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance only and confirmation of intermediate ground conditions should be considered if deemed necessary.

3 SITE DESCRIPTION

A site inspection, as recommended in BS 5930 and BS 10175, was undertaken on the 25th March 2025 as part of a Phase 1 Desk Study. The site is centred at Ordnance Survey Co-ordinates 442350, 293810 and covers approximately 1.13Ha.

The site is irregular in shape, currently disused and derelict. Topography is stepped with three dipping planes across the site all of which are dipping southwards. The largest dipping angle is seen in the south of the site. The ground surface of the site comprises rumble of previously existing building. A section in the west of the site is noticed to be overgrown by shrubs. No trees or buildings were observed across the site.

The perimeter of the site is generally isolated by hedges, brick and metal fence in the east and the north of the site. The site has two entrance - the northeast entrance is pedestrian leading from the public pathway; the northwest is vehicle access from Merchant Road.

4 SUMMARY OF PREVIOUS WORKS

Two previous investigations have been conducted on site by Solmek. The first of which was carried out on the 2nd and 4th of February 2015, before the demolition of the leisure centre, and consisted of the following:

- Two cable percussive boreholes, drilled to a maximum depth of 20.00m below ground level (bgl)
- Five small percussive boreholes, drilled to maximum depths of 5.00m bgl.
- 50mm ground water and gas monitoring standpipes were installed within three of the boreholes.

The site investigation generally found ground conditions across the site to consist of made ground of clay fill in the area of the carpark and granular made ground in the soft landscaping areas, proven to depths of 2.00m bgl. Made ground across the site was found to be underlain by natural superficial deposits of interbedded firm to stiff clays and loose to medium dense sands. Groundwater was encountered between 3.60m and 4.00m bgl.

From contamination analysis, none of the three samples recorded significantly elevated levels of inorganic or organic contamination. Additionally, none of the samples were reported to contain asbestos.

At this stage 0.60m wide strip foundations were recommended; founding at 0.90m bgl on medium strength clays of medium volume change potential. A safe bearing capacity of 85kN/m^2 was given at this stage.

The subsequent gas monitoring programme returned a risk level of green (based off the NHBC Traffic Light System from CIRIA C665). Meaning no gas protection measures are required for future developments.

The second site investigation was conducted on the 25th and 26th of October 2021 following the demolition of the leisure centre. The investigation consisted of the following:

- Three cable percussive boreholes drilled to maximum depth of 15.00m bgl.
- Seven machine excavated trial pits to a maximum depth of 3.50mbgl.
- 50mm groundwater and gas monitoring standpipes within installed within all three cable percussive boreholes.

Ground conditions across the site were found to generally consist of granular made ground encountered to depths of 5.30m bgl. Made ground was found to be underlain by natural superficial deposits of firm to stiff, medium to high strength clays underlain by medium dense sands.

From the five samples recovered for testing, significantly elevated levels of arsenic and diabenze(a,h)anthracene were recorded across two of the samples. Furthermore, none of the samples were recorded to contain asbestos. At this stage in the investigation a basic clean cover system was recommended.

In terms of foundations, at this stage 0.60m wide strip foundations were recommended; founding on medium strength, medium volume change potential clays at a minimum depth of 0.90m bgl. A safe bearing capacity of 125kN/m^2 was given at this stage. A piled alternative was also recommended for heavily loaded developments.

5 FIELDWORK

The fieldwork was carried out on 30th June 2025. The extent of the investigation was:

- 2no cable percussive boreholes (CP01 & CP02) to a maximum depth of 20.00m bgl.
- 5no small percussive boreholes (BH01 to BH05 inclusive) to a maximum depth of 5.45m bgl.
- Gas monitoring wells were installed in CP01 and BH's 01 & 03.
- Insitu testing in the exploratory positions as Standard Penetration Tests (SPTs).
- Retrieval of samples for geotechnical and chemical testing.

The boreholes were respectively backfilled with clean arisings and bentonite/installations upon completion.

A plan showing the location of the boreholes and trial pits can be found in Appendix A (Figure 2).

6 GROUND CONDITIONS

A summary of the ground conditions encountered is given below. The exploratory hole logs are presented in Appendix B.

6.1 Made Ground

Made ground was generally uniform across the site and was encountered to a maximum depth of 2.80m bgl within CP01 located centrally within the site.

Made ground generally consisted of granular deposits over clay deposits. Made ground was noted to contain brick, concrete, tile, charcoal, plastic and wood.

6.2 Obstructions

Locally within BH01 and BH03 cobbles of brick and concrete were noted.

Exploratory positions BH's 02, 04 were terminated early due to internal collapse of the borehole. Furthermore, BH05 was terminated early due to the presence of an inferred cobble/boulder.

6.3 Natural Deposits

Proven to underlie the made ground deposits across the site, natural ground generally comprised of interbedded medium dense to very dense sand deposits and stiff to hard sandy to silty medium to high strength clays.

6.4 Groundwater

Groundwater strikes, where encountered, are presented on the exploratory logs (Appendix B) and are summarised below in Table 1:

TABLE 1: SUMMARY OF GROUNDWATER STRIKES

Exploratory Position	Depth Encountered (mbgl)	Depth after 20 minutes (mbgl)	Strata
CP01	4.60	4.60	SAND
CP02	4.60	4.60	SAND

It should be noted the rapid rate of advancement of the exploratory holes may mask minor seepages and it should be borne in mind that water levels fluctuate with a number of influences including season, rainfall, dewatering and pumping activities. Therefore, water levels significantly higher than those found during this investigation may be encountered.

7 CONTAMINATION TESTING RESULTS

The proposed development of the site is to involve the construction of residential units with associated soft landscaping, parking and access roads. The chemical samples were generally retrieved in line with BS ISO 18400-105:2017 *Soil Quality. Sampling*. The chemical results are presented in Appendix C.

7.1 Site Characterisation

Within the Solmek Phase 1 Desk Study, a preliminary conceptual model was formed based on the information obtained. The initial risk was based on the site history which recorded multiple developments over the site's history.

An overall very low to high risk was provided for various receptors:

- Human Health – Moderate/Low
- Controlled Water – Moderate to Very Low
- Current Site Users (on-site workers/visitors) – Moderate/Low
- Vegetation – Moderate/Low
- Construction Materials – Moderate/Low

7.2 Contamination Testing and Rationale

To provide information upon the possibility of ground contamination five samples of made ground and one samples of natural clay were selected for shallow contamination testing. A Moderate to Low overall contamination risk was highlighted in the Phase 1 Desk Study due to previous land uses. This coupled with the end use being Residential with Home Grown Produce means that six samples are considered appropriate for testing. The samples selected are detailed below:

- BH01 – 0.10-0.60m (Made ground – granular)
- BH02 – 0.00-1.00m (Made ground – granular)
- BH03 – 3.00-4.00m (Natural Clay)
- BH04 – 0.00-1.00m (Made ground - granular)
- CP01 – 1.00-1.40m (Made ground - granular)
- CP02 – 2.00-2.50m (Made ground - granular)

The samples selected are considered to provide coverage of both the made ground and shallow natural strata from across the site that would be most likely to be exposed during future site works. The samples were tested for the following contaminant suites:

- 6no Metals, semi-metals, non-metals, inorganic determinants
- 3no Asbestos identification screenings
- 6no Speciated Polyaromatic Hydrocarbons (PAHs)
- 3no Total Petroleum Hydrocarbon Criteria Working Group fractions (TPHCWG)

Furthermore, another five samples of both made and natural ground were tested for pH and soluble sulphates to assess risk to construction materials. The samples selected are summarised below:

- BH01 – 3.20-4.00m (Natural clay)
- BH02 – 1.40-2.00m (Made ground – cohesive)
- BH03 – 1.00-2.00m (Natural clay)
- CP01 – 12.00-13.00m (Natural clay)
- CP02 – 4.00-4.50m (Natural clay)

7.3 Test Results

Based on the proposed development at the site, the test results have been compared to a series of Land Quality Management (LQM) Suitable for Use Levels (S4UL) based on a residential with home grown produce land use. These are the most up to date thresholds published in 2015.

The value for lead has been compared with the Category 4 Screening Level (March 2014) developed by Contaminated Land: Applications In Real Environments (CL:AIRE).

The test results are presented in Appendix C, and a summary is provided below in Tables 2 & 3.

TABLE 2: SUMMARY OF INORGANIC CONTAMINATION TESTING RESULTS

Determinand	Units	Number of Samples above Level of Detection	Minimum Recorded Level	Maximum Recorded Level	Residential with HGP Threshold Value	Number of Results Exceeding Threshold Value
Metals						
Cadmium	mg/kg	0	<0.1	0.1	11	0
Chromium	mg/kg	6	9.1	77	910	0
Copper	mg/kg	6	5.5	40	2400	0
Lead	mg/kg	6	5	44	200*	0
Mercury	mg/kg	0	<0.1	-	40	0
Nickel	mg/kg	6	5.6	42	180	0
Zinc	mg/kg	6	17	79	3700	0
Semi metals and non metals						
Arsenic	mg/kg	6	2.5	26	37**	0
Boron	mg/kg	4	<0.4	1.8	290	0
Selenium	mg/kg	0	<0.2	-	250	0
Inorganic chemicals						
Cyanide (Total)	mg/kg	0	<0.5	0.5	1.49**	0
Sulphate (2:1 Water Soluble)	mg/l	11	43	340	2000^	0
Other						
pH	pH	-	8.5	12.2	5.5^	0

* Category 4 Screening Levels, March 2014
** CLEA Software Version 1.06 (pH7 and 1%SOM)
^ EA Threshold Values
HGP Home Grown Produce

7.4 Metals, Semi Metals and Non Metals

None of the six samples tested indicated significant raised levels of contamination above the S4UL threshold values.

7.5 Inorganic Chemicals

Soluble sulphates (potentially aggressive to foundation concrete) were recorded between 43 and 340mg/l. None of the samples were elevated above levels affecting human health or the BRE Special Digest 1 500mg/l limit for the sulphate classification of concrete.

The results of the pH testing were between 8.5 and 12.2. These pH levels are consistent with alkaline conditions.

7.6 Organic Chemicals

The organic thresholds vary depending on the levels of soil organic matter (SOM).

The average SOM recorded across the site was 0.40% therefore a SOM of 1.00% has been used to determine the S4UL thresholds. Table 3, below, summarises the results.

TABLE 3: SUMMARY OF ORGANIC CONTAMINATION TESTING RESULTS

Determinand	Units	Number of Samples above Level of Detection	Minimum Recorded Level	Maximum Recorded Level	Residential with HGP Threshold Value at 1% SOM	Number of Results Exceeding Threshold Value
TPH Aliphatic Fractions						
Aliphatic (C5-C6)	mg/kg	0	<0.01	-	42	0
Aliphatic (C6-C8)	mg/kg	0	<0.01	-	100	0
Aliphatic (C8-C10)	mg/kg	0	<0.01	-	27	0
Aliphatic (C10-C12)	mg/kg	3	2.17	22.49	130	0
Aliphatic (C12-C16)	mg/kg	0	<1.20	-	110	0
Aliphatic (C16-C21)	mg/kg	0	<1.50	-	65000	0
Aliphatic (C21-C35)	mg/kg	2	<3.40	139.4	65000	0
Aliphatic (C35-C40)	mg/kg	2	<3.40	238.4	65000	0
TPH Aromatic Fractions						
Aromatic (C5-C7)	mg/kg	0	<0.01	-	70	0
Aromatic (C7-C8)	mg/kg	0	<0.01	-	130	0
Aromatic (C8-C10)	mg/kg	0	<0.01	-	34	0
Aromatic (C10-C12)	mg/kg	0	<0.90	-	74	0
Aromatic (C12-C16)	mg/kg	0	<0.50	-	140	0
Aromatic (C16-C21)	mg/kg	3	1.59	22.3	260	0
Aromatic (C21-C35)	mg/kg	2	<1.40	87.61	1100	0
Aromatic (C35-C40)	mg/kg	0	<1.40	-	1100	0
Speciated PAH						
Naphthalene	mg/kg	0	<0.1	-	2.3	0
Acenaphthylene	mg/kg	0	<0.1	-	170	0
Acenaphthene	mg/kg	0	<0.1	-	210	0
Fluorene	mg/kg	1	<0.1	0.11	170	0
Phenanthrene	mg/kg	3	<0.1	0.41	95	0
Anthracene	mg/kg	2	<0.1	0.23	2400	0
Fluoranthene	mg/kg	4	<0.1	0.58	280	0
Pyrene	mg/kg	3	<0.1	0.8	620	0
Benzo[a]anthracene	mg/kg	2	<0.1	0.43	7.2	0
Chrysene	mg/kg	1	<0.1	0.3	15	0
Benzo[b]fluoranthene	mg/kg	1	<0.1	0.37	2.6	0
Benzo[k]fluoranthene	mg/kg	1	<0.1	0.11	77	0
Benzo[a]pyrene	mg/kg	1	<0.1	0.64	2.2	0
Benzo[g,h,i]perylene	mg/kg	0	<0.1	-	27	0
Dibenz(a,h)Anthracene	mg/kg	0	<0.1	-	0.24	0
Indeno(1,2,3-c,d)Pyrene	mg/kg	0	<0.1	-	320	0
Total PAH	mg/kg	1	<2	3.5	50*	0
Total Phenol	mg/kg	0	<0.3	-	280	0
* EA Threshold Values						

None of the six samples tested indicated raised levels of contamination above the S4UL threshold values.

7.7 Asbestos

From the three samples subject to asbestos screening, asbestos fibres were recorded in none.

7.8 Environmental Protection Act 1990: Part 2A Revised Statutory Guidance (April 2012)

This revised document explains how the Local Authority should decide if land, based on a legal interpretation, is contaminated. The document replaces the previous guidance given in Annex 3 of DEFRA Circular 01/2006, issued in accordance with section 78YA of the 1990 Environmental Protection Act.

The main objectives of the Part 2A regime are to “identify and remove unacceptable risks to human health and the environment” and to “seek to ensure that contaminated land is made suitable for its current use”. Part 2A uses a risk based approach to defining contaminated land whereby the “risk” is interpreted as “the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land” and

by “the scale and seriousness of such harm or pollution if it did occur”.

For a relevant risk to exist a contaminant, pathway and receptor linkage must be present before the land can be considered to be contaminated. The document explains that *“for a risk to exist there must be contaminants present in, on or under the land in a form and quantity that poses a hazard, and one or more pathways by which they might significantly harm people, the environment, or property; or significantly pollute controlled waters.”*

A conceptual model is used to develop and communicate the risks associated with a particular site.

To determine if land is contaminated the local authority use various categories from 1 to 4. Categories 1 and 2 include “land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health.” Categories 3 and 4 “encompass land which is not capable of being determined on such grounds”.

See Appendix D for additional notes on contamination guidelines.

8 CONCEPTUAL MODEL AND CONTAMINATION ANALYSIS

The contamination conceptual model in Table 4 identifies the potential pollution linkages present on site based on source – pathway – receptor relationships.

TABLE 4: CONCEPTUAL MODEL

Source	Pathway	Receptor	Risk Rating	Comments
Asphyxiating or explosive ground gases • Made ground (2.80m bgl) • Not in a Radon Affected Area	**Ground gas migration** • Migration through permeable soils • Inhalation	**Future site users** • Adult & infant residents	Moderate /Low	Gas monitoring in progress, source risk rating subject to change.
		Users during development • Construction workers	Low	
Areas of contamination hazardous to human health (Residential Thresholds) • 6no samples tested • No significantly elevated organic determinants • No significantly elevated inorganic determinants • No asbestos	• Inhalation • Dust ingestion • Dermal contact	**Future site users** • Adult & infant residents	Low	No significantly elevated contamination recorded from soil analysis.
		Users during development • Construction workers	Low	No significantly elevated contamination recorded from soil analysis. However, as good practice consideration to be given to Health and Safety Executive: *Protection of Workers and the General Public During the Development of Contaminated Land.*
	• Inhalation • Dust ingestion	**Users of surrounding sites** • Transient adult workers	Low	Low risk during remediation/construction from dust generation. However, as good practice, consideration to be given to dust suppression, in line with BRE: *The Control of Dust and Emissions from Construction and Demolition, Best Practice Guidance.*
	• Leaching of mobilised contaminants	**Drift geology** • Secondary – Undifferentiated	Low	Limited availability of contaminants recorded from soil analysis unlike to affect this medium to low sensitivity aquifer.
		Solid geology • Secondary Aquifer - A	Low	Limited availability of contaminants recorded from soil analysis unlike to affect this medium sensitivity aquifer.
	• Drainage • Lateral migration • Accumulation of contaminated sediment	**Surface water features** • River 461m northwest	Very Low	Very limited potential for contamination from site to reach surface water, either via surface runoff or groundwater movement.
Areas of phytotoxic contamination • No phytotoxic contamination	• Uptake via roots and leaf surfaces	**Vegetation** • Gardens proposed	Low	No phototoxic levels of contamination recorded from soil analysis.
Areas of contamination above service fabric or BRE Special Digest 1 thresholds • Elevated pH	• Direct contact	**Construction Materials** • Concrete	Moderate /Low	Mitigation through use of sulphate resistant concrete where in contact with made ground. Concrete to be designed to class DS-1 ACEC (AC-1), assuming mobile groundwater conditions.
		Construction Materials • Service Fabric	Moderate /Low	Copper piping to be avoided and prudent to lay any service within a clean bedding.

In general terms, construction materials are **potentially most** at risk as pollution linkages may be present for each of these receptors. Users of the site, users of the surrounding sites, vegetation, construction workers and controlled waters re considered to be at **potentially less** of a risk.

Mitigation measures to reduce the risks identified for each receptor are discussed in the following sections.

8.1 Users of the Site Once Development is Complete

The users of the site, particularly residents, are likely to be exposed to contaminants present in the soils beneath the site during redevelopment work. **Potential** exposure pathways include dermal absorption after contact with contaminated ground, inhalation of soil or dust, inhalation of volatised compounds, and inadvertent soil ingestion.

To establish if the levels of contaminants present on site may pose a risk to the health of the future users of the site the results of the contamination testing have been compared to a series of LQM S4UL thresholds based on commercial end use (see Tables 2 & 3).

The levels of contaminants across the site are generally low with no significant exceedances recorded from the six samples tested.

8.2 Construction Workers and Users of Surrounding Sites

Short term human exposure to contaminants present in soils can occur via several pathways during the construction and ground works phase of the development. These include dermal absorption after contact with contaminated ground, inhalation of soil or dust (including windblown dust), inhalation of volatised compounds, inadvertent soil ingestion and contact with contaminated groundwater.

As good practice, full PPE must be employed in accordance with Health and Safety Executive*: Protection of Workers and the General Public During the Development of Contaminated Land* and safeguards should be taken to limit dust during ground works, and access to the public should be restricted. Construction workers should use gloves as a precaution when handling any fill materials. Provision of suitable hygiene facilities are needed for site workers. Wheel washers could be provided and used for any vehicle entering or leaving site to prevent cross contamination.

Although asbestos or other forms of contamination were not detected from the soil samples subjected to testing within this investigation, the possibility still exists that asbestos containing materials may still be present on site and currently lie undetected. It is therefore advised that a 'watching brief' is undertaken during the initial site strip and any excavation works and advice sought if asbestos is found or suspected.

During dry weather, any excavations may require clean water to be sprinkled at shallow depth to prevent excess dust escaping to off-site receptors. Monitoring of dust concentrations during construction should be given careful consideration to ensure occupational exposure levels are not exceeded. Works should be undertaken in line with BRE: *The Control of Dust and Emissions from Construction and Demolition, Best Practice Guidance*.

8.3 Vegetation

Plants can be affected by soil contamination in a number of ways resulting in growth inhibition, nutrient deficiencies and yellowing of leaves. Contaminants are taken up by plants through the roots and through foliage. Contaminants identified as being highly phytotoxic include boron, cadmium, copper, nickel, and zinc.

To establish if the levels of contaminants present on site may pose a risk to vegetation the results of the contamination testing have been compared to a series of threshold values published in *Code of Good Agricultural Practice for the Protection of Soil*. No concentrations of the phytotoxic determinants are shown as elevated from the four samples tested.

8.4 Ground and Surface Water

The principal pathway by which soil contamination may reach the water environment is through a slow seepage or leaching to groundwater or surface water. The potential for contaminants to migrate along such pathways is dependent on the chemical and physical characteristics of the contaminants and the local

hydrogeology.

8.4.1 *Hydrogeological Context*

From the site investigation undertaken, ground conditions broadly comprise deep made ground (2.80m bgl) over drift deposits comprising stiff to hard clays (low permeability) with interbedded sands (moderate to high permeability). The drift deposits are designated as a Secondary Aquifer – undifferentiated by the Environment Agency.

The published geology indicates the site is underlain by solid geology of the Mercia Mudstone Formation, which is designated as a Secondary Aquifer - A by the Environment Agency, but is not within a Source Protection Zone. Rockhead was not proven during the intrusive investigation.

The nearest surface water feature is Battling Brook, located 461m northwest of the site.

With respect to groundwater, during the fieldwork shallow strikes were noted a 4.60m bgl within the natural sand.

The groundwater flow onsite is likely to be northwest, towards Battling Brook.

A number of groundwater and surface water abstractions are located within 1km of the site. The nearest is a groundwater abstraction located 200m west of the site.

8.4.2 *Contamination Context*

No significant contamination was recorded based on the six soil samples tested.

8.4.3 *Hydrogeological Risk Assessment*

Due to the generally low contamination found across the site, the aquifer designations beneath the site, and the distance to surface waters, the development is considered to represent a low risk to groundwater and surface water receptors.

8.5 Construction Materials

Materials at risk from potential soil contamination include inorganic matrices such as cement and concrete and also organic material; e.g. plastics and rubbers. Acid ground conditions and elevated levels of sulphates can accelerate the corrosion of building materials. Plastics and rubbers are generally used for piping and service ducts and are potentially attacked by a range of chemicals, most of which are organic, particularly petroleum-based substances. Drinking water supplies can be tainted by substances that can penetrate piping and water companies enforce stringent threshold values.

8.5.1 *Concrete Classification*

BRE Special Digest One: *Concrete in Aggressive Ground*: 2005 3rd Edition has been used to assess the risks posed to underground concrete and to establish the design measures required to mitigate the risks. The results of the pH and water-soluble sulphate tests (when converted to total potential sulphate) fall into Class DS-1 ACEC (Class AC-1) requirements for concrete protection. This assumes mobile groundwater conditions.

8.5.2 *Water Supply Pipes Material Selection*

The levels of potential contaminants should be compared to thresholds supplied in the UK Water Industry Research (UKWIR) publication *Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites* (January 2011). A Brownfield Site is defined in the document as “Land or premises that have previously been used or developed that may be vacant or derelict”. It should be noted that Brownfield sites may not be contaminated. The guidance does not apply to Greenfield Sites however water companies may have their own assessment criteria which should be checked by the developer.

Based on the samples tested during the site investigation, levels of acidic to alkaline pH (8.5 to 12.2) were recorded across the site at depths of between 0.00mbgl and 13.00mbgl within the made ground and natural

samples.

The concentrations of the selected determinants should be compared to the pipe material selection table in Appendix D, and consultation with the appropriate utility supply company is required to identify the most suitable service fabric. However, the pH levels may preclude the use of copper pipes depending on the depth of proposed service corridors.

8.6 Unexpected Contamination

If during the initial site strip or subsequent ongoing construction activities, any zones of odorous, brightly coloured or suspected contaminated ground, or suspected Asbestos Containing Materials (ACMs) are encountered, then the following procedure should be followed:

- Stop work in the affected area
- Contact Solmek and provide pictures of the affected area
- Solmek can visit site to investigate the material and provide guidance
- If required – Solmek can sample and test the material
- Once test results are returned, this will determine whether or not remediation will be required

8.7 Waste Classification

During the site strip and construction activities, material may be required to be removed from site. Any such material would require classification, in line with Environment Agency Technical Guidance *Waste Classification: Guidance on the classification and assessment of waste* (2015). This would classify the material as either Non-Hazardous or Hazardous Waste.

Once the material has been classified, determining the suitable landfill for disposal is governed by landfill directive Waste Acceptance Criteria (WAC) testing, with landfills categorized as Inert Waste, Stable Non-Reactive Hazardous Waste and Hazardous Waste.

If waste classification and/or WAC testing are not undertaken, material taken off site may be subject to WAC testing by the appropriate waste disposal company. The decision on whether or not to accept waste, or whether further testing is required, is at the discretion of the waste disposal company.

For this project, WAC testing was requested. We are still awaiting the results of the testing. This report will be updated with the results of the testing and reissued.

9 GROUND GAS ASSESSMENT

The proposed development includes the construction of residential housing.

Ground gases such as carbon dioxide (CO_2), methane (CH_4), carbon monoxide (CO) and volatile organic compounds (VOCs) can be classed as a form of contamination where there is a potential risk to human health.

For this report, gas monitoring is via measuring emissions from three standpipes (BH01, BH03 & CP01) that were installed during the sitework. The gas monitoring will consist of six visits over a period of three months. The gas monitoring results will be presented as an addendum to this report.

9.1 Monitoring Wells and Response Zones

During the site investigation works, gas/groundwater monitoring wells were installed within five boreholes. The response zones are briefly summarised below in Table 5.

TABLE 5: SUMMARY OF MONITORING WELL RESPONSE ZONES

Borehole	Pipework	Installation Depth (mbgl)	Response zone of slotted pipework (mbgl)	Response Zone Stratum
BH01	50mm HDPE pipe	3.00	2.00-3.00	NATURAL CLAY
BH03	50mm HDPE pipe	3.00	1.50-3.00	NATURAL CLAY/SAND
CP01	50mm HDPE pipe	2.00	1.00-2.00	MADE GROUND

10 GEOTECHNICAL TESTING AND ANALYSIS

Samples taken from the boreholes and trial pits underwent a series of geotechnical tests at a UKAS accredited laboratory to aid foundation design and soil description. In addition, in-situ Standard Penetration Tests (SPTs) were undertaken at regular intervals during drilling. The geotechnical results are presented in Appendix D.

We are still awaiting results from the geotechnical laboratory testing. This report will be updated an reissued upon receiving the results.

10.1 Strength and Density

10.1.1 *SPT N Values*

Standard Penetration Tests undertaken within the natural granular deposits yielded N values of between 19 and 50+ (refusal), indicative medium dense to very dense deposits.

Standard Penetration Tests undertaken within the natural cohesive deposits yielded N values of between 12 and 50+ (refusal). These N values can be correlated to provide approximate shear strengths, with these results indicating medium to very high strength deposits.

10.2 Foundations

10.2.1 *Conventional Foundations upon Cohesive Deposits*

It should be assumed that cohesive deposits on site are of high volume change potential. Foundations should therefore be placed at a minimum depth of 1.0m below original or finished ground level, whichever is the lower.

Locally, foundations will require deepening to 3.00m bgl due to made ground depths. All deepened sections should be adequately stepped, in accordance with NHBC Standards Chapter 4.4.

A series of safe bearing capacities have been calculated for strip foundations 0.60m wide, founding at depths between 1.00m and 3.00m bgl. The results are summarised below in Table 6:

TABLE 6: SUMMARY OF SAFE BEARING CAPACITES

Depth (m bgl)	Foundation Width (m)	Strata	Shear Strength (kN/m^2)	Safe Bearing Capacity (kN/m^2)	Settlement (mm)
1.20	0.60	Stiff Medium Strength CLAY	60	120	<25
2.00	0.60	Very stiff High Strength CLAY	100	200	<25
3.00	0.60	Very stiff High Strength CLAY	75	160	<25

It should be recognised that clay rich soils can deteriorate fairly rapidly on exposure, particularly in periods of wet weather and frost. It would be prudent to protect all exposed soils in foundation excavations with a concrete blinding layer, particularly if they are likely to remain open for extended period of time.

10.2.2 *Piled Foundations*

Given the depth of made ground across the site, consideration could be given to piled foundations. Information provided in this report should be made available to a competent piling contractor who can design appropriate foundations in accordance with Section 7: Pile foundations of BS EN 1997 – 1:2004 which applies to end-bearing piles, friction piles, tension piles and transversely loaded piles installed by driving, by jacking, and by screwing or boring. The piling contractor will need to take into consideration the possible effects of negative skin friction from made ground. Allowance should be made for breaking through known and unknown buried obstructions.

The precise method of pile installation and the applicability of proprietary systems, diameters and depths required would need to be determined by a specialist piling contractor.

10.2.3 *General Foundation Comments*

It is recommended that an adequate drainage system for surface water be installed by a competent contractor in order to prevent surface water ponding or collecting during and post construction, which may in turn lead to deterioration of the founding stratum.

Prior to placing foundation concrete, obvious soft or loose spots should be removed and replaced with suitably recompacted hardcore or lean mix concrete. In addition, all excavations should be inspected to ensure that they fully penetrate areas of disturbed ground.

Further advice should be sought from Solmek if unexpected ground conditions are encountered during redevelopment.

10.2.4 *Ground Slabs*

Made ground is in excess of 600mm and a suspended reinforced ground slab or precast concrete floor should therefore be used. However, if the made ground was removed from beneath the foot print of the building and a blanket of compacted inert granular fill was placed in accordance with an engineering specification, ground bearing slabs may be possible, if applicable.

10.2.5 *Roads and Parking*

Where granular made ground is recompacted a CBR of at least 5% however should be achievable, however this should be verified by insitu CBR testing on site and confirmed with the adopting authority.

10.3 Excavation

Based on the nature of the ground conditions encountered, excavations should be within the capacity of normal earthworks plant although breaking out of obstructions should be anticipated. Stability of excavations will be poor in the made ground but should improve in the natural clay. Excavation sides should be designed, constructed and supported in accordance with the recommendations given in CIRIA Report No. 97: “Trenching Practice”.

10.4 Groundwater

Groundwater was encountered at 4.60m bgl, as referenced in Table 1.

It should be noted the rapid rate of advancement of the exploratory holes may mask minor seepages and it should be borne in mind that water levels fluctuate with a number of influences including season, rainfall, dewatering and pumping activities. Therefore, water levels significantly higher than those found during this investigation may be encountered. Significant dewatering may be required based on the groundwater encountered during the intrusive investigation.

APPENDIX A

SOLMEK

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Figure Title	
Site Location Plan	
Project Number	
M25-040	
Project Name	
Former Leisure Centre, Hinckley	
Client	
Green4Planning	
Date	
July 2025	
DRG Number	
Figure 1	
Scale	
1:8500	@ A4 [DO NOT SCALE]

Legend Key

Project Bounds - Project Bounds

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Figure Title

Location Plan

Project Number

M25-040

Project Name

Former Leisure Centre, Hinckley

Client

Green4Planning

Date

July 2025

DRG Number

Figure 2

Scale

1:1000 @ A4 [DO NOT SCALE]

Legend Key

- Locations By Type - Empty
- Locations By Type - BH
- Locations By Type - CP
- Project Bounds - Project Bounds

Title
Proposed Development Plan

Project
Former Leisure Centre, Hinckley

Client
Green4Planning

Date
July 2025

Fig No.
Figure 3

Scale
Do Not Scale

NOTES:

Red line boundary not inclusive of the entire site. To include areas of planning consent.

N

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APPENDIX B

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Borehole Log

Scale 1:50 Sheet 1 of 1

BH01

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling
				Plant used:	Mini Rig
				Started:	30/06/2025
Client:	Green4Planning			**Ended:**	30/06/2025
Method:	Mini Percussive			**Backfilled:**	30/06/2025

GL (AOD):	
Easting:	442344
Northing:	293799
Logged:	EC
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
		0.20		MADE GROUND. Yellowish grey slightly silty sandy gravel of moderate cobble content. Fine to coarse sand. Gravels fine to coarse, composed of subangular to angular brick, concrete and tile. Small to medium angular cobbles of brick and concrete. Occasional wood and plastic present.	0.10 - 0.60	B+ES	
		0.80		MADE GROUND. Reddish brown sandy gravel. Fine to coarse sand. Gravels fine to coarse angular to subangular concrete, brick, and tile. Occasional wood and plastic present.			
				MADE GROUND. Brown sandy gravelly clay. Fine to coarse sand. Gravels fine to coarse angular to subangular concrete, brick, tile, and mudstone. Occasional plastic present.	1.20 - 1.65	SPT (S)	N=12 (4,3/3,3,3,3)
		1.65			1.60 - 2.00	B + D	
				Very Stiff brown slightly sandy, slightly gravelly, high strength CLAY. Fine to coarse sand. Gravels fine to coarse subangular to subrounded sandstone and mudstone.	2.00 - 2.45	SPT (S)	N=20 (3,4/4,4,6,6)
G					3.00 - 3.45	SPT (S)	N=20 (3,4/4,5,5,6)
		3.20		Hard brown mottled black slightly sandy, slightly gravelly high strength CLAY. Fine to coarse sand. Gravels fine to medium, rounded sandstone.	3.20 - 4.00	B + D	
					4.00 - 4.45	SPT (S)	N=40 (5,8/7,9,10,14)
		4.45		End of Borehole at 4.450m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. No groundwater encountered.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

Scale 1:50 Sheet 1 of 1

BH02

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling
				Plant used:	Mini Rig
				Started:	30/06/2025
Client:	Green4Planning			**Ended:**	30/06/2025
Method:	Mini Percussive			**Backfilled:**	30/06/2025

GL (AOD):	
Easting:	442326
Northing:	293806
Logged:	EC
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				MADE GROUND. Reddish brown sandy gravel. Fine to coarse sand. Gravels fine to coarse, angular to subangular concrete, brick, and tile. Frequent wood and plastic present.	0.00 - 1.00	B+ES	
		1.00		MADE GROUND. Reddish brown gravelly sand. Fine to coarse sand. Gravels fine to coarse angular to subangular brick, tile, concrete, and sandstone.	1.20 - 1.65	SPT (S)	N=48 (8,11/10,14,12,12)
		1.40		MADE GROUND. Brown sandy gravelly clay. Fine to coarse sand. Gravels fine to coarse, angular to subangular brick, concrete, tile, and sandstone.	1.40 - 2.00	B + D	
					2.00 - 2.45	SPT (S)	N=32 (6,8/8,8,9,7)
		2.45		End of Borehole at 2.450m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
				1.2m Hand excavated inspection pit dug. No groundwater encountered. Collapse at 2.00m.								

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Borehole Log

Scale 1:50 Sheet 1 of 1

BH03

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling
				Plant used:	Mini Rig
				Started:	30/06/2025
Client:	Green4Planning			**Ended:**	30/06/2025
Method:	Mini Percussive			**Backfilled:**	30/06/2025

GL (AOD):	
Easting:	442322
Northing:	293791
Logged:	EC
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				MADE GROUND. Yellowish grey slightly silty sandy gravel of moderate cobble content. Fine to coarse sand. Gravels fine to coarse, composed of subangular to angular brick, concrete and tile. Small to medium angular cobbles of brick and concrete. Occasional wood and plastic present.			
		0.50		MADE GROUND. Brown sandy gravelly clay. Fine to coarse sand. Gravels fine to coarse angular to subrounded sandstone, occasional brick, limestone, charcoal and chert.	0.50 - 1.00	B+ES	
		1.00		Very Stiff brown gravelly medium to high strength CLAY. Gravels fine to medium, subangular to rounded chalk, sandstone, mudstone, carbonised organic matter and chert.	1.00 - 2.00	B+ES	
					1.20 - 1.65	SPT (S)	N=12 (3,3/3,3,3,3)
					2.00 - 2.45	SPT (S)	N=22 (4,5/5,6,6,5)
		2.80		Medium dense red slightly clayey slightly gravelly SAND. Fine to coarse sand. Gravels fine to medium subangular to subrounded sandstone and mudstone.			
G		3.00		Very Stiff reddish brown slightly gravelly high strength CLAY. Gravels fine to medium, rounded sandstone.	3.00 - 3.45	SPT (S)	N=23 (4,4/4,6,6,7)
					3.00 - 4.00	B+ES	
					4.00 - 4.45	SPT (S)	N=12 (3,3/3,3,3,3)
		4.30		Medium dense red slighlty clayey slightly gravelly SAND. Gravels fine subrounded to rounded sandstone and mudstone.	4.30 - 5.00	B + D	
					5.00 - 5.45	SPT (S)	N=19 (4,4/5,5,5,4)
		5.45		End of Borehole at 5.450m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. No groundwater encountered.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Borehole Log

Scale 1:50 Sheet 1 of 1

BH04

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling
				Plant used:	Mini Rig
				Started:	30/06/2025
Client:	Green4Planning			**Ended:**	30/06/2025
Method:	Mini Percussive			**Backfilled:**	30/06/2025

GL (AOD):	
Easting:	442328
Northing:	293768
Logged:	EC
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				MADE GROUND: Brownish grey slightly silty, slightly gravelly sand. Fine to coarse sand. Gravels fine to coarse angular to subangular brick, concrete, tile, sandstone, and mudstone.	0.00 - 1.00	B+ES	
					1.20 - 1.65	SPT (S)	N=25 (5,6/6,7,6,6)
		1.80		MADE GROUND. Brown slightly sandy, gravelly clay. Fine to coarse sand. Gravels fine to coarse, angular to subrounded chert, sandstone, and brick.	2.00 - 2.45	SPT (S)	N=22 (4,5/6,6,5,5)
		2.45		End of Borehole at 2.450m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)		From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
				1.2m Hand excavated inspection pit dug. No groundwater encountered. Collapse at 2.00m.								

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Borehole Log

Scale 1:50 Sheet 1 of 1

BH05

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling
				Plant used:	Mini Rig
				Started:	30/06/2025
Client:	Green4Planning			**Ended:**	30/06/2025
Method:	Mini Percussive			**Backfilled:**	30/06/2025

GL (AOD):	
Easting:	442349
Northing:	293777
Logged:	EC
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				MADE GROUND. Reddish brown sandy gravel. Gravels fine to coarse angular to subangular brick, tile, concrete, and mudstone. Frequent plastic.	0.00 - 0.90	B+ES	
		0.90		MADE GROUND. Greyish brown sandy gravelly clay. Fine to corse sand. Gravels fine to coarse angular to subangular sandstone, brick, mudstone, and diorite.	1.20 - 1.65	SPT (S)	N=50+ (5,5/8,8,15,25)
		1.65		End of Borehole at 1.650m			

Hole Diameter		Casing Depths		General Remarks	Chiselling			Ground Water				
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug. No groundwater encountered.	From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)

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Cable Percussive Log

Scale 1:50 Sheet 1 of 2

CP01

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling Ltd
				Plant used:	Dando 2000
				Started:	30/06/2025
Client:	Green4Planning			**Ended:**	30/06/2025
Method:	Cable Percussive			**Backfilled:**	30/06/2025

GL (AOD):	
Easting:	442334
Northing:	293783
Logged:	EC
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				MADE GROUND: Brown sandy gravel. Fine to coarse sand. Gravels fine to coarse angular to subangular brick, tile, concrete, and sandstone. Occasional plastic and wood present.	0.20 - 0.30	ES	
		1.00		MADE GROUND: Brown clayey sandy gravel. Fine to coarse sand. Gravels fine to coarse angular to subangular brick, concrete, tile, sandstone, and mudstone.	1.00 - 1.40	B+ES	
					1.20 - 1.65	SPT (C)	N=16 (3,3/4,3,4,5)
					2.00 - 2.45	SPT (C)	N=17 (2,3/4,5,4,4)
					2.00 - 2.45	B+ES	
		2.80		Stiff reddish brown slightly sandy gravelly high strength CLAY. Fine to coarse sand. Gravels fine to medium, angular to subangular sandstone and mudstone.	3.00 - 3.45	SPT (C)	N=15 (2,3/3,4,4,4)
					3.00 - 3.45	B + D	
					4.00 - 4.45	SPT (C)	N=25 (3,4/6,6,7,6)
					4.00 - 4.45	B + D	
		4.60		Medium dense reddish brown fine to coarse SAND.			
					5.00 - 5.45	SPT (C)	N=25 (2,3/4,6,7,8)
					5.00 - 5.45	B + D	
		6.00		Dense reddish brown fine to coarse SAND.	6.00 - 6.45	SPT (C)	N=31 (4,6/6,7,9,9)
					6.00 - 6.45	B + D	
					7.50 - 7.95	SPT (C)	N=40 (3,6/8,10,10,12)
					7.50 - 7.95	B + D	
					9.00 - 9.45	SPT (C)	N=48 (5,7/9,11,13,15)
					9.00 - 9.45	B + D	

Hole Diameter

Depth Base (m)	Diameter (mm)
20.00	150

Casing Depths

Depth Base (m)	Diameter (mm)
13.50	150

General Remarks

1.2m Hand excavated inspection pit dug.
Groundwater encountered at 4.60m.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.60	4.50	5.00	20	4.60

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Cable Percussive Log

Scale 1:50 Sheet 2 of 2

CP01

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling Ltd
				Plant used:	Dando 2000
				Started:	30/06/2025
Client:	Green4Planning			**Ended:**	30/06/2025
Method:	Cable Percussive			**Backfilled:**	30/06/2025

GL (AOD):
Easting: 442334
Northing: 293783
Logged: EC
Status: FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				Dense reddish brown fine to coarse SAND.			
		10.50		Very dense reddish brown fine to coarse SAND.	10.50 - 10.95	SPT (C)	N=50+ (5,7/9,12,14,15)
					10.50 - 10.95	B + D	
		11.90		Hard greyish brown slightly silty very high strength CLAY.	12.00 - 12.45	SPT (C)	N=47 (4,5/10,9,13,15)
					12.00 - 13.00	B + D	
					13.50 - 13.95	SPT (C)	N=31 (3,4/6,7,8,10)
					13.50 - 13.95	B + D	80 blows [NR]
					13.50 - 13.95	U	
					15.00 - 15.45	SPT (C)	N=50+ (5,6/9,12,14,15)
					15.00 - 15.45	B + D	
		16.10		Very dense grey silty fine to coarse SAND.	16.50 - 16.95	SPT (C)	N=50+
		16.60		Hard greyish brown slightly silty very high strength CLAY.	16.50 - 16.95	B + D	(5,6/11,14,15,10)
					17.00 - 17.45	B + D	
					18.00 - 18.45	SPT (C)	N=50+ (4,7/10,12,16,12)
					19.50 - 19.95	SPT (C)	N=50+ (7,8/12,10,14,14)
		20.00		End of Borehole at 20.000m			

Hole Diameter

Depth Base (m)	Diameter (mm)
20.00	150

Casing Depths

Depth Base (m)	Diameter (mm)
13.50	150

General Remarks

1.2m Hand excavated inspection pit dug.
Groundwater encountered at 4.60m.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.60	4.50	5.00	20	4.60

SOLMEK
12-16 Yarm Road
Stockton on Tees
TS18 3NA
01642 607083
info@solmek.com

Cable Percussive Log

Scale 1:50 Sheet 1 of 2

CP02

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling Ltd
				Plant used:	Dando 2000
				Started:	01/07/2025
Client:	Green4Planning			**Ended:**	01/07/2025
Method:	Cable Percussive			**Backfilled:**	01/07/2025

GL (AOD):	
Easting:	442361
Northing:	293800
Logged:	EC
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				MADE GROUND: Reddish brown sandy gravel. Fine to coarse sand. Gravels fine to coarse angular to subangular brick, concrete, tile, and sandstone. Frequent plastic and wood present.	0.20 - 0.30	B+ES	
					1.20 - 1.65	SPT (C)	N=21 (4,4/4,5,6,6)
					1.20 - 1.65	B+ES	
		1.70		MADE GROUND: Brown clayey sandy gravel. Fine to coarse sand. Gravels fine to coarse angular to subangular brick, concrete, tile, and sandstone. Occasional plastic and wood present.	2.00 - 2.45	SPT (C)	N=18 (3,4/5,4,5,4)
					2.00 - 2.50	B+ES	
		2.60		Stiff reddish brown slightly sandy high strength CLAY.	3.00 - 3.45	U	45 blows [450mm]
					4.00 - 4.45	SPT (C)	N=24 (3,3/5,6,6,7)
					4.00 - 4.50	B + D	
		4.60		Medium dense fine to coarse SAND.	5.00 - 5.45	SPT (C)	N=23 (2,4/5,5,6,7)
					5.00 - 5.45	B + D	
					6.00 - 6.45	SPT (C)	N=25 (3,4/4,6,7,8)
					6.00 - 6.45	B + D	
		7.50		Very dense reddish brown fine to coarse sand.	7.50 - 7.95	SPT (C)	N=49 (6,9/9,11,14,15)
					7.50 - 7.95	B + D	
					9.00 - 9.45	SPT (C)	N=46 (4,8/9,10,13,14)
					9.00 - 9.45	B + D	

Hole Diameter

Depth Base (m)	Diameter (mm)
20.00	150

Casing Depths

Depth Base (m)	Diameter (mm)
12.50	150

General Remarks

1.2m Hand excavated inspection pit dug.
Groundwater encountered at 4.60m.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.60	4.50	5.00	20	4.60

SOLMEK
12-16 Yarm Road
Stockton on Tees
TS18 3NA
01642 607083
info@solmek.com

Cable Percussive Log

Scale 1:50 Sheet 2 of 2

CP02

Contract no:	M25-040	**Site:**	Former Leisure Centre, Hinckley	**Driller:**	L&A Drilling Ltd
				Plant used:	Dando 2000
				Started:	01/07/2025
Client:	Green4Planning			**Ended:**	01/07/2025
Method:	Cable Percussive			**Backfilled:**	01/07/2025

GL (AOD):	
Easting:	442361
Northing:	293800
Logged:	EC
Status:	FINAL

Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing		
					Depth (m)	Type	Results
				Very dense reddish brown fine to coarse sand.	10.50 - 10.95	SPT (C)	N=49
					10.50 - 10.95	B + D	(5,7/10,10,13,16)
		11.00		Hard greyish brown slightly silty very high strength CLAY.			
					12.00 - 12.45	SPT (C)	N=46 (4,6/9,10,13,14)
					12.00 - 12.45	B + D	90 blows [NR]
					12.00 - 12.45	U	
					13.50 - 13.95	SPT (C)	N=50+
					13.50 - 13.95	B + D	(5,6/10,11,13,16)
					15.00 - 15.45	SPT (C)	N=50+ (7,8/11,11,13,15)
					16.50 - 16.95	SPT (C)	N=50+ (6,9/10,12,13,15)
					18.00 - 18.45	SPT (C)	N=50+ (8,8/11,12,12,15)
					19.50 - 19.95	SPT (C)	N=50+ (9,11/10,10,14,16)
		20.00		End of Borehole at 20.000m			

Hole Diameter

Depth Base (m)	Diameter (mm)
20.00	150

Casing Depths

Depth Base (m)	Diameter (mm)
12.50	150

General Remarks

1.2m Hand excavated inspection pit dug.
Groundwater encountered at 4.60m.

Chiselling

From (m)	To (m)	Time (hr)

Ground Water

Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
4.60	4.50	5.00	20	4.60

APPENDIX C

Certificate of Analysis

Certificate Number	25-15732	*Issued:*	21-Jul-25

Client SOLMEK
Unit 3
Prospect House
Chesterfield
S43 3QE

Our Reference	25-15732
Client Reference ~	M25-040
Order No ~	MID0708
Contract Title ~	Former Leisure Centre, Hinckley
Description	11 Soil samples.
Date Received	10-Jul-25
Date Started	10-Jul-25
Date Completed	21-Jul-25
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Louise Cook
Contracts Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 25-15732
Client Ref ~ M25-040
Contract Title ~ Former Leisure Centre, Hinckley

				Deviating	Deviating	Deviating	Deviating	Deviating	Deviating	Deviating
			Lab No	2536811	2536812	2536813	2536814	2536815	2536816	2536817
			Sample ID ~	BH01	BH02	CP01	CP02	BH04	BH03	CP02
			Depth ~	0.10-0.60	0.00-1.00	1.00-1.40	2.00-2.50	0.00-1.00	3.00-4.00	4.00-4.50
			Other ID ~							
			Sample Type ~	ES	ES	ES	ES	ES	ES	D
			Sampling Date ~	01/07/2025	01/07/2025	01/07/2025	01/07/2025	01/07/2025	01/07/2025	01/07/2025
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg	3.1	2.5	5.8	9.5	26	5.8	
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	1.8	0.3	0.6	0.5	0.4	0.8	
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	0.1	0.1	
Chromium	DETSC 2301#	0.15	mg/kg	9.1	14	39	16	77	17	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Copper	DETSC 2301#	0.2	mg/kg	6.2	5.5	16	34	40	18	
Lead	DETSC 2301#	0.3	mg/kg	11	5.0	11	44	14	8.2	
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Nickel	DETSC 2301#	1	mg/kg	5.6	8.6	25	23	42	19	
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Zinc	DETSC 2301#	1	mg/kg	17	18	53	51	79	41	
Inorganics										
pH	DETSC 2008#		pH	11.2	12.2	11.7	11.3	12.2	9.2	9.7
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	< 0.1	
Organic matter	DETSC 2002#	0.1	%	0.9	0.1	0.5	0.3	0.3	0.3	
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	270	43	170	180	60	64	66
Petroleum Hydrocarbons										
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01				
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01				
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01				
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	22.49	2.17	2.56				
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 12.00	< 1.20	< 1.20				
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 15.00	< 1.50	< 1.50				
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	139.4	9.88	< 3.40				
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	238.4	5.36	< 3.40				
Aliphatic C5-C40: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg	429.6	17.41	< 10.00				
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01				
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01				
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01				
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 9.00	< 0.90	< 0.90				
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	< 5.00	< 0.50	< 0.50				
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	22.30	1.59	1.78				
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg	87.61	9.53	< 1.40				
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 14.00	< 1.40	< 1.40				
Aromatic C5-C40: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg	140.3	11.12	< 10.00				
TPH Ali/Aro C5-C40: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg	569.9	28.52	< 10.00				
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluorene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	

Summary of Chemical Analysis
Soil Samples

Our Ref 25-15732
Client Ref ~ M25-040
Contract Title ~ Former Leisure Centre, Hinckley

				Deviating	Deviating	Deviating	Deviating	Deviating	Deviating	Deviating
			Lab No	2536811	2536812	2536813	2536814	2536815	2536816	2536817
			Sample ID ~	BH01	BH02	CP01	CP02	BH04	BH03	CP02
			Depth ~	0.10-0.60	0.00-1.00	1.00-1.40	2.00-2.50	0.00-1.00	3.00-4.00	4.00-4.50
			Other ID ~							
			Sample Type ~	ES	ES	ES	ES	ES	ES	D
			Sampling Date ~	01/07/2025	01/07/2025	01/07/2025	01/07/2025	01/07/2025	01/07/2025	01/07/2025
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Phenanthrene	DETSC 3301	0.1	mg/kg	0.21	< 0.10	0.41	0.35	< 0.10	< 0.10	
Anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	0.23	0.13	< 0.10	< 0.10	
Fluoranthene	DETSC 3301	0.1	mg/kg	0.58	< 0.10	0.37	0.47	0.12	< 0.10	
Pyrene	DETSC 3301	0.1	mg/kg	0.80	< 0.10	0.30	0.48	< 0.10	< 0.10	
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.43	< 0.10	< 0.10	0.22	< 0.10	< 0.10	
Chrysene	DETSC 3301	0.1	mg/kg	0.30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.37	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	0.64	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
PAH 16 Total	DETSC 3301	1.6	mg/kg	3.5	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	

Summary of Chemical Analysis
Soil Samples

Our Ref 25-15732
Client Ref ~ M25-040
Contract Title ~ Former Leisure Centre, Hinckley

	Deviating	Deviating	Deviating	Deviating
Lab No	2536818	2536819	2536820	2536821
Sample ID ~	CP01	BH01	BH03	BH02
Depth ~	12.00-13.00	3.20-4.00	1.00-2.00	1.40-2.00
Other ID ~				
Sample Type ~	D	D	D	D
Sampling Date ~	01/07/2025	01/07/2025	01/07/2025	01/07/2025
Sampling Time ~	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg				
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg				
Cadmium	DETSC 2301#	0.1	mg/kg				
Chromium	DETSC 2301#	0.15	mg/kg				
Chromium, Hexavalent	DETSC 2204*	1	mg/kg				
Copper	DETSC 2301#	0.2	mg/kg				
Lead	DETSC 2301#	0.3	mg/kg				
Mercury	DETSC 2325#	0.05	mg/kg				
Nickel	DETSC 2301#	1	mg/kg				
Selenium	DETSC 2301#	0.5	mg/kg				
Zinc	DETSC 2301#	1	mg/kg				
Inorganics							
pH	DETSC 2008#		pH	8.5	9.4	8.7	9.8
Cyanide, Free	DETSC 2130#	0.1	mg/kg				
Organic matter	DETSC 2002#	0.1	%				
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	280	61	120	340
Petroleum Hydrocarbons							
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg				
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg				
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg				
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg				
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg				
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg				
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg				
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg				
Aliphatic C5-C40: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg				
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg				
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg				
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg				
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg				
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg				
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg				
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg				
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg				
Aromatic C5-C40: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg				
TPH Ali/Aro C5-C40: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg				
PAHs							
Naphthalene	DETSC 3301	0.1	mg/kg				
Acenaphthylene	DETSC 3301	0.1	mg/kg				
Acenaphthene	DETSC 3301	0.1	mg/kg				
Fluorene	DETSC 3301	0.1	mg/kg				

Summary of Chemical Analysis
Soil Samples

Our Ref 25-15732
Client Ref ~ M25-040
Contract Title ~ Former Leisure Centre, Hinckley

	Deviating	Deviating	Deviating	Deviating
Lab No	2536818	2536819	2536820	2536821
Sample ID ~	CP01	BH01	BH03	BH02
Depth ~	12.00-13.00	3.20-4.00	1.00-2.00	1.40-2.00
Other ID ~				
Sample Type ~	D	D	D	D
Sampling Date ~	01/07/2025	01/07/2025	01/07/2025	01/07/2025
Sampling Time ~	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Phenanthrene	DETSC 3301	0.1	mg/kg				
Anthracene	DETSC 3301	0.1	mg/kg				
Fluoranthene	DETSC 3301	0.1	mg/kg				
Pyrene	DETSC 3301	0.1	mg/kg				
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg				
Chrysene	DETSC 3301	0.1	mg/kg				
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg				
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg				
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg				
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg				
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg				
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg				
PAH 16 Total	DETSC 3301	1.6	mg/kg				
Phenols							
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg				

Summary of Asbestos Analysis
Soil Samples

Our Ref 25-15732
Client Ref ~ M25-040
Contract Title ~ Former Leisure Centre, Hinckley

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2536811	BH01 0.10-0.60	SOIL	NAD	none	Pierce Booth
2536812	BH02 0.00-1.00	SOIL	NAD	none	Pierce Booth
2536813	CP01 1.00-1.40	SOIL	NAD	none	Pierce Booth

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 25-15732
Client Ref ~ M25-040
Contract ~ Former Leisure Centre, Hinckley

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2536811	BH01 0.10-0.60 SOIL	01/07/25	GJ 250ml, GJ 60ml, PT 1L x2	pH + Conductivity (7 days)	
2536812	BH02 0.00-1.00 SOIL	01/07/25	GJ 250ml, GJ 60ml, PT 1L x2	pH + Conductivity (7 days)	
2536813	CP01 1.00-1.40 SOIL	01/07/25	GJ 250ml, GJ 60ml, PT 1L x2	pH + Conductivity (7 days)	
2536814	CP02 2.00-2.50 SOIL	01/07/25	GJ 250ml, GJ 60ml, PT 1L x2	pH + Conductivity (7 days)	
2536815	BH04 0.00-1.00 SOIL	01/07/25	GJ 250ml, GJ 60ml, PT 1L x2	pH + Conductivity (7 days)	
2536816	BH03 3.00-4.00 SOIL	01/07/25	GJ 250ml, GJ 60ml, PT 1L x2	pH + Conductivity (7 days)	
2536817	CP02 4.00-4.50 SOIL	01/07/25	PT 1L	pH + Conductivity (7 days)	
2536818	CP01 12.00-13.00 SOIL	01/07/25	PT 1L	pH + Conductivity (7 days)	
2536819	BH01 3.20-4.00 SOIL	01/07/25	PT 1L	pH + Conductivity (7 days)	
2536820	BH03 1.00-2.00 SOIL	01/07/25	PT 1L	pH + Conductivity (7 days)	
2536821	BH02 1.40-2.00 SOIL	01/07/25	PT 1L	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub
Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic >EC10-EC12	EH_2D_AL
Aliphatic >EC12-EC16	EH_2D_AL
Aliphatic >EC16-EC21	EH_2D_AL
Aliphatic >EC21-EC35	EH_2D_AL
Aliphatic >EC35-EC40	EH_2D_AL
Aliphatic C5-C40	EH_2D+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic >EC10-EC12	EH_2D_AR
Aromatic >EC12-EC16	EH_2D_AR
Aromatic >EC16-EC21	EH_2D_AR
Aromatic >EC21-EC35	EH_2D_AR
Aromatic >EC35-EC40	EH_2D_AR
Aromatic C5-C40	EH_2D+HS_1D_AR
TPH Ali/Aro C5-C40	EH_2D+HS_1D_Total

Key:

~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
# -MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report Ver 25.07.17

APPENDIX D

SOLMEK NOTES ON CONTAMINATION GUIDANCE (REF: VERSION 1/2025)

UK BACKGROUND

Environmental Protection Act 1990: Part 2A Revised Statutory Guidance (April 2012)

This revised document explains how the Local Authority should decide if land, based on a legal interpretation, is contaminated. The document replaces the previous guidance given in Annex 3 of DEFRA Circular 01/2006, issued in accordance with section 78YA of the 1990 Environmental Protection Act.

The main objectives of the Part 2A regime are to *"identify and remove unacceptable risks to human health and the environment" and* to *"seek to ensure that contaminated land is made suitable for its current use".*

Part 2A uses a risk based approach to defining contaminated land whereby the "risk" is interpreted as *"the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land"* and by *"the scale and seriousness of such harm or pollution if it did occur".*

For a relevant risk to exist a contaminant, pathway and receptor linkage must be present before the land can be considered to be contaminated. The document explains that *"for a risk to exist there must be contaminants present in, on or under the land in a form and quantity that poses a hazard, and one or more pathways by which they might significantly harm people, the environment, or property; or significantly pollute controlled waters."*

A conceptual model is used to develop and communicate the risks associated with a particular site.

To determine if land is contaminated the local authority use various categories from 1 to 4. Categories 1 and 2 include *"land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health."*

Categories 3 and 4 *"encompass land which is not capable of being determined on such grounds".*

PRELIMINARY CONCEPTUAL MODEL

Preliminary Conceptual Models are undertaken in accordance with CIRIA C552. The Preliminary Conceptual Model assesses the consequence and the likelihood of a risk being realised to provide a risk classification, using the tables detailed below.

CONSEQUENCE OF RISK BEING REALISED (Based on C552 CIRIA, 2001)

Classification	Definition	Example
Severe	Short-term (acute) risk to human health, the environment, an element of the development or other aspect with is likely to result in *significant harm*, damage or both.	High concentrations of cyanide on the surface of an informal recreational area. Major spills of contaminants from site into controlled water. High concentrations of explosive gas in the subsurface environment that have a clear unobstructed pathway into buildings.
Moderate	Chronic damage to human health, a plausible chance that an event will occur, although the timeline is not immediate to be in the short-term.	Appreciable concentration of contamination that over the longer-term will cause significant harm i.e. high lead concentration in topsoil. Shallow mine workings that are potentially unstable but may remain in a satisfactory or stable conditions for a number of years.
Mild	Low level pollution of non-sensitive water, a feasible hazardous scenario although the timeline of such occurring can probably be considered in 10's of years.	The effect of high sulphate concentrations on structural concrete. Pollution of non-classified groundwater.
Minor	Harm, although not necessarily significant to human health, or with respect to other aspects of the development, which are considered implausible in terms of occurrence, or will have little consequential impact.	The presence of contaminants at such low concentrations that protective equipment is required during site works. Any damage to structures is minimal and will not be structural in characteristics.

PROBABILITY OF RISK BEING REALISED (C552 CIRIA, 2001)

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

RISK CLASSIFICATION MATRIX (C552 CIRIA, 2001)

Risk = Probability x Consequence		Consequence			
		Severe	Moderate	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

HUMAN RECEPTORS

Human exposure to contaminants present in soils can occur via several pathways. Direct exposure pathways include dermal absorption after contact with contaminated ground, inhalation of soil or dust, inhalation of volatised compounds, and inadvertent soil ingestion (or deliberate soil ingestion in the case of some children). Other indirect pathways include human ingestion of plants grown in contaminated soil or contaminated ground or surface water. Contaminants associated with wind blown dust can affect humans on surrounding sites.

VEGETATION

Plants can be affected by soil contamination in a number of ways resulting in growth inhibition, nutrient deficiencies and yellowing of leaves. Contaminants are taken up by plants through the roots and through foliage. Contaminants identified as being highly phytotoxic include boron, cadmium, copper, lead, nickel, and zinc.

To establish if the levels of contaminants present on a site may pose a risk to vegetation the results of the contamination testing are compared to a series of threshold values published in 'Code of Good Agricultural Practice for the Protection of Soil'.

GROUNDWATER AND SURFACE WATER RECEPTORS

The principal pathway by which soil contamination may reach the water environment is through a slow seepage or leaching to groundwater or surface water. The potential for contaminants to migrate along such pathways is dependent on the chemical and physical characteristics of the contaminants and the local hydrogeology. Surface watercourses may also accumulate contamination as contaminated sediments are deposited within the water body.

Where the site investigated overlies major/principal aquifers (and in some cases minor/secondary aquifers depending on certain conditions), groundwater Source Protection Zones and areas in close proximity to groundwater abstractions, contamination test results have been compared with the Water Supply (Water Quality) Regulations 1989 and The Water Supply (Water Quality) Regulations 2000.

Should a surface water receptor, such as a fresh water environment (river, canal, stream, lake etc), or marine environment be considered sensitive in relation to a site, then test results are compared with DEFRA & SEPA Environmental Quality Standards (2004). Many of the Environmental Quality Standards are hardness ($CaCO_3$) depended. Where no hardness values are available, Solmek assume conservative values (of between 0 and 50mg/l).

In the absence of vulnerable ground and surface water environments, Solmek may compare any test results with the Environment Agency Leachate Quality Threshold Values.

DETAILED QUANTITATIVE RISK ASSESSMENT (DQRA)

In line with Environment Agency's guidance document Environment Agency *Land Contamination Risk Management*, which replaced the now-withdrawn *Contaminated Land Report 11 – Model Procedures for the Management of Land Contamination (2004)*, a DQRA for groundwater/human health may be required following a Phase 2 investigation and before the preparation of a Phase 3 Remediation Strategy. For human health DQRA, a site specific assessment criteria is undertaken using CLEA Software Version 1.06. For groundwater DQRA, the Environment Agency Remedial Targets Worksheet Version 3.1 is used.

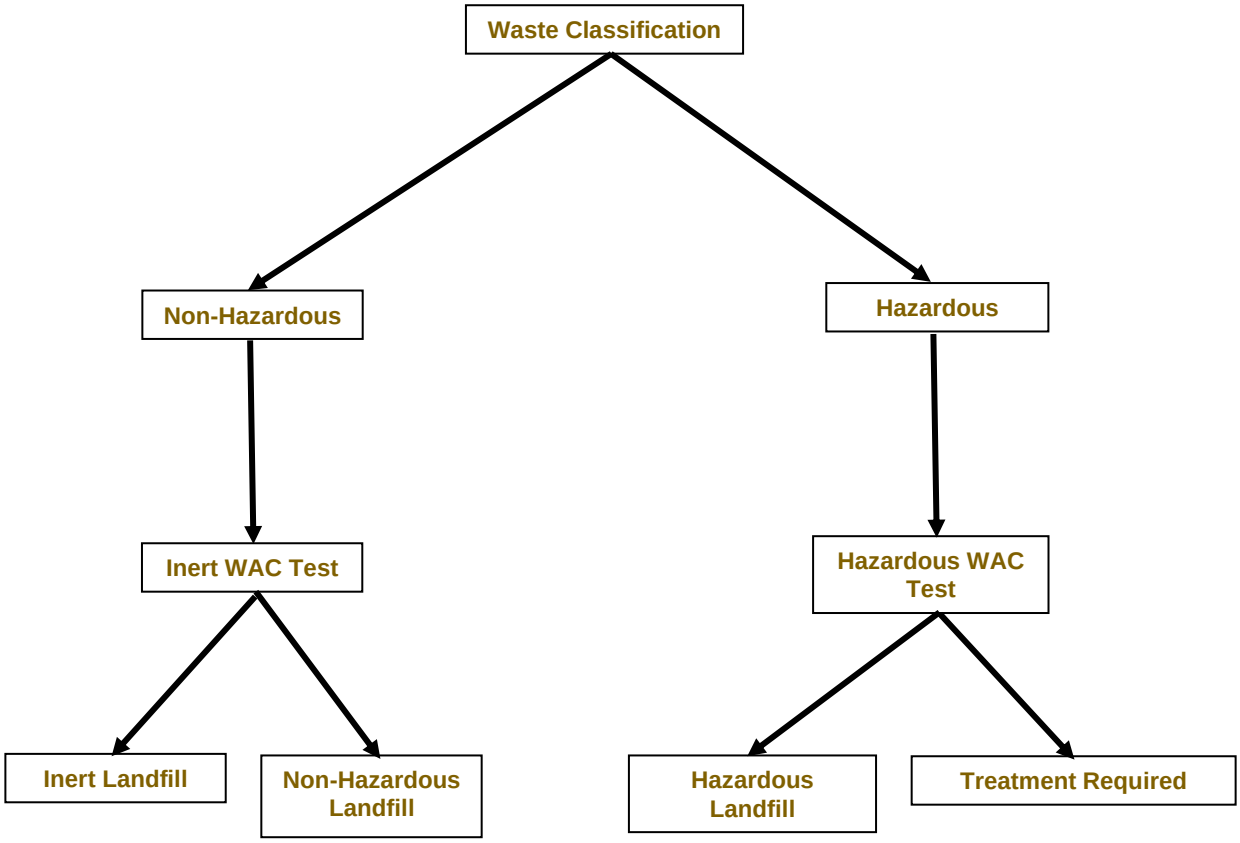
WASTE CLASSIFICATION AND WASTE ACCEPTANCE CRITERIA

During the site strip and construction activities, material may be required to be removed from site. Any such material would require classification, in line with Environment Agency Technical Guidance *Waste Classification: Guidance on the classification and assessment of waste (2015)*. This would classify the material as either Non-Hazardous or Hazardous Waste.

Once the material has been classified, determining the suitable landfill for disposal is governed by landfill directive Waste Acceptance Criteria (WAC) testing, with landfills categorized as Inert Waste, Stable Non-Reactive Hazardous Waste and Hazardous Waste. The WAC testing relates to materials that are to be exported from a site/development to landfill, and do not directly relate to human health specifically. The testing results are generally presented as certificates which can be used by site owners/contractors etc, which should be presented to the accepting waste facility or waste contractor.

If waste classification and/or WAC testing are not undertaken, material taken off site may be subject to WAC testing by the appropriate waste disposal company. The decision on whether or not to accept waste, or whether further testing is required, is at the discretion of the waste disposal company.

The below flow chart provides further information on the waste classification process.



CONSTRUCTION MATERIALS

Materials at risk from possible soil contaminants include inorganic matrices such as cement and concrete and also organic material such as plastics and rubbers. Acid ground conditions and high levels of sulphates can accelerate the corrosion of building materials. Where pH and soluble sulphate analysis has been undertaken, Solmek compare the test results with the guidelines presented within BRE Special Digest 1, 2005 (3rd Edition) 'Concrete in Aggressive Ground'. Plastics and rubbers are generally used for piping and service ducts and are potentially attacked by a range of chemicals, most of which are organic, particularly petroleum based substances. Drinking water supplies can be tainted by substances that can penetrate piping and water companies enforce stringent threshold values.

The levels of potential contaminants should be compared to thresholds supplied in the UK Water Industry Research (UKWIR) publication "Guidance for the selection of Water Supply Pipes to be used in Brownfield Sites" (January 2011). A Brownfield Site is defined in the document as "Land or premises that have not previously been used or developed that may be vacant or derelict". It should be noted that Brownfield sites may not be contaminated. The guidance does not apply to Greenfield Sites however water companies may have their own assessment criteria which should be checked by the developer. The table below outlines the pipe material selection threshold concentrations.

	Pipe Material (Threshold concentrations in mg/kg)					
Parameter group	**PE**	**PVC**	**Barrier pipe (PE-AL-PE)**	**Wrapped Steel**	**Wrapped Ductile Iron**	**Copper**
Extended VOC suite by purge and trap or head space and GC-MS with TIC	0.5	0.125	Pass	Pass	Pass	Pass
+ BTEX + MTBE	0.1	0.03	Pass	Pass	Pass	Pass
SVOCs TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic C5-C10)	2	1.4	Pass	Pass	Pass	Pass
+ Phenols	2	0.4	Pass	Pass	Pass	Pass
+ Cresols and chlorinated phenols	2	0.04	Pass	Pass	Pass	Pass
Mineral oil C11-C20	10	Pass	Pass	Pass	Pass	Pass
Mineral oil C21-C40	500	Pass	Pass	Pass	Pass	Pass
Corrosive (Conductivity, Redox and pH)	Pass	Pass	Pass	Corrosive if pH <7 and conductivity >400µS/cm	Corrosive if pH <5, Eh not neutral and conductivity >400µS/cm	Corrosive if pH <5 or >8 and Eh positive
Specific suite identified as relevant following site investigation						
Ethers	0.5	1	Pass	Pass	Pass	Pass
Nitrobenzene	0.5	0.4	Pass	Pass	Pass	Pass
Ketones	0.5	0.02	Pass	Pass	Pass	Pass
Aldehydes	0.5	0.02	Pass	Pass	Pass	Pass
Amines	Fail	Pass	Pass	Pass	Pass	Pass

REQUIREMENTS OF PARTIES WITHIN THE DEVELOPMENT PROCESS

Interested parties involved in the development process may use the data in different ways and there may be varying views and interpretation of the factual data. Local Authority staff may have a view on contamination and human health and the wider environment. The Environment Agency are concerned principally with the protection of Controlled waters. Building insurers, funders and purchasers may be primarily concerned with issues of potential commercial blight. Purchasers are also not always fully informed, and perceptions on issues associated with risk can affect the decision to purchase. Developers and construction organisations will focus on financial aspects of dealing with the contamination in the context of the development and construction programme.

RISKS & LIABILITIES FROM CONTAMINATION

In simple terms, risks associated with contamination may be considered in terms of 1) statutory risks and 2) development related risks. If contamination is severe or forms a potential hazard based on its potential to affect groundwater, surface water or human health, a statutory risk may be present, and as such, if the risk is not reduced, criminal proceedings may be instigated by a government body or local authority.

If the contamination is less severe or not considered to be mobile, it may be considered a commercial liability which could, in theory remain untreated, but which may at a later date affect the value of the property, or, with changing legislation, become a statutory risk. Commercial liabilities could give rise to civil proceedings by third parties if there are grounds for action.

♣Solmek conditions of offer, notes on limitations & basis for contract (ref: version1/2025)

These conditions accompany our tender and supercede any previous conditions issued. Solmek will prepare a report solely for the use of the Client (the party invoiced) and its agent(s). No reliance should be placed on the contents of this report, in whole or in part by 3rd parties. The report, its content and format and associated data are copyright, and the property of Solmek. Photocopying of part or all of the contents, transfer or reproduction of any kind is forbidden without written permission from Solmek. A charge may be levied against such approval, the same to be made at the discretion of Solmek.

Solmek cannot be held liable and do not warrant, or otherwise guarantee the validity of information provided by third parties and subsequently used in our reports. Solmek are not responsible for the action negligent of otherwise of subcontractors or third parties.

Site investigation is a process of sampling. The scope and size of an investigation may be considered proportional to levels of confidence regarding the ground and groundwater conditions. The exploratory holes undertaken investigate only a small volume of the ground in relation to the overall size of the site, and can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions as encountered within each of the exploratory holes. There may be different ground conditions elsewhere on the site which have not been identified by this investigation and which therefore have not been taken into account in this report. Reports are generally subject to the comments of the local authority and Environment Agency. The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that mobile contamination, ground gas levels and groundwater levels may vary owing to seasonal, tidal and/or weather related effects. Solmek cannot be held liable for any unrecorded or unforeseen obstructions between exploratory boreholes and trial pits. This includes instances where previous structures on the site (buried man made structures) or the presence of boulder clay (cobbles and/or boulder obstructions) have been anticipated. All types of piling operations should make allowance for obstructions within the construction budget to accommodate this. Unrecorded ancient mining may occur anywhere where seams that have been worked and influence the rock and soil above. Dissolution cavities can occur where gypsum or chalk is present. Rotary drilling is the recommended technique to prove the integrity of the rock.

Where the scope of the investigation is limited via access to information, time constraints, equipment limitations, testing, interpretation or by the client or his agents budgetary constraints, elements not set out in the proposal and excluded from the report are deemed to be omitted from the scope of the investigation.

Desk studies are generally prepared in accordance with RICS guidelines. Environmental site investigations are generally undertaken as 'exploratory investigations' in accordance with the definitions provided in paragraph 5.4 of BS 10175:2011 in order to confirm the conceptual assumptions. You are advised to familiarize yourself with the typical scope of such an investigation. No pumping of water will be undertaken unless a licence or facilities/equipment have been arranged by others.

Where the type, number or/and depth of exploratory hole is specified by others, Solmek cannot and will not be responsible for any subsequent shortfall or inadequacy in data, and any consequent shortfall in interpretation of environmental and geotechnical aspects which may be required at a later date in order to facilitate the design of permanent or temporary works.

All information acquired by Solmek in the course of investigation is the property of Solmek, and, only also becomes the joint property of the Client only on the complete settlement of all invoices relating to the project. Solmek reserve the right to use the information in commercial tendering and marketing, unless the Client expressly wishes otherwise in writing. The quoted rates do not include VAT, and payment terms are 30 days from dispatch of invoice from our offices. Quotes are subject to a site visit.

We have allowed for 1 mobilisation and normal working hours unless otherwise stated. The scope of the investigation may be reviewed following the desk study and/or fieldwork. The presence or otherwise of Japanese Knotweed or other invasive plants can be difficult to identify especially during winter months. If Japanese Knotweed or other invasive species are suspect, it should be confirmed by an ecologist. We have not allowed for acquiring services information, and cannot be responsible for damage to underground services or pipes not shown to us or not clearly shown on plans. Costs incurred will be passed on to you, and in commissioning Solmek you understand and accept that you/your agent have a contractual relationship with Solmek & you accept this. Our rates assume unobstructed, reasonably level and firm access to the exploratory positions and adequate clear working areas and headroom. We have priced on the basis that you or your client have the necessary permissions, wayleaves and approvals to access land. All boreholes and pits are backfilled with arisings except where gas monitoring pipes are installed with stopcock covers. Solmek are not responsible for any uneven surfaces as a result of siteworks and rutting and backfilled excavations may require re-levelling and/or making good by others after fieldwork is complete, and Solmek has not allowed for this. No price has been provided or requested for a return visit to remove pipework and covers. Hourly rates apply to consultancy only and do not include expenses unless otherwise shown. If warranties are required, legal costs incurred will be passed on to you assuming Solmek agree to complete such warranties, modified or otherwise and you understand and agree to pay all costs.

We reserve the right to pursue full payment of the invoice prior to release of any information including reports. We advise you/your client that we may elect to pursue our statutory rights under late payment legislation, and will apply 8% to the base rate for unreasonably late payments. Solmek are exempt from the CIS Scheme. Solmek offer to undertake work only in strict accordance with conditions covered by our current insurances, which are available for inspection. Solmek are not responsible for acts, negligent or otherwise of subcontractors and as a matter of policy cannot indemnify any other parties. Professional indemnity Insurance is limited to ten times the invoice net total except where stated otherwise by Solmek. Solmek give notice that consequential loss as a direct or indirect result of Solmek's activities or omission of the same are excluded.