

Phase 2: Site Investigation

The Bell Inn, Pinchbeck, Spalding

Allenby Commercial

M25-083

Solmek Ltd

12 Yarm Road
Stockton-on-Tees
TS18 3NA
Tel: 01642 607083

www.solmek.com

info@solmek.com

PHASE 2 SITE INVESTIGATION REPORT

THE BELL INN, PINCHBECK, SPALDING

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	2
2	INTRODUCTION	3
3	SITE DESCRIPTION	3
4	FIELDWORK.....	4
5	GROUND CONDITIONS	4
6	CONTAMINATION TESTING RESULTS	6
7	CONCEPTUAL MODEL AND CONTAMINATION ANALYSIS.....	9
8	GROUND GAS ASSESSMENT.....	14
9	GEOTECHNICAL TESTING AND ANALYSIS.....	14
TABLE 1: SUMMARY OF EXISTING FOUNDATIONS.....		5
TABLE 2: SUMMARY OF GROUNDWATER STRIKES		5
TABLE 3: SUMMARY OF INORGANIC CONTAMINATION TESTING RESULTS.....		7
TABLE 4: SUMMARY OF ORGANIC CONTAMINATION TESTING RESULTS		8
TABLE 5: CONCEPTUAL MODEL.....		10
TABLE 6: SUMMARY OF CBR TESTING RESULTS.....		15

APPENDICES

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

Revision	Date	Prepared By	Signed
Final	September 2025	L Richards Associate Director	
		Checked By	
		A Lowry Consultant	
		Approved By	
		R Woods Managing Director	

1 EXECUTIVE SUMMARY

Site Address	The Bell Inn, Pinchbeck, Spalding, PE11 3UB.
Proposed Development	The proposed development is outlined to be the construction of residential units comprising of eight, two-to-three-bedroom bungalows with associated parking, access road and soft landscaping. The existing Bell Inn on site is due to be converted into a retail unit with associated parking.
Fieldwork	• 4no cable percussive boreholes (CP01 to CP04 inclusive) to a depth of 15.45m below ground level (bgl) • Gas monitoring wells were installed in CP01, 03 & 04. • 2no hand excavated foundation exposure trial pits (FETP01 and 02) were carried out on the existing building. • 5no machine excavated trial pits (TP01 to TP05) • In-situ testing in the exploratory positions as California Bearing Ratio (CBR), Standard Penetration Tests (SPTs) and hand shear vanes. • Retrieval of samples for geotechnical and chemical testing.
Ground Conditions	• Topsoil was locally encountered to depths of between 0.10m (TP02) and 0.85mbgl (CP02), • Made ground was locally encountered to depths of between 0.30m (TP01) and 1.00mbgl (CP01). • Soft clay / silt with pockets of peat underlying made ground / topsoil to ~10m depth. • Firm to stiff clay encountered underlying soft cohesive deposits, proven to the base of the boreholes (15.45m). • Groundwater was encountered between 1.60m and 11.40mbgl.
Contamination Analysis	• Given the site's proposed land use, the levels of contamination recorded on site may 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. Damping down of site during dry windy conditions. • Suitable growing medium required for soft landscaped areas. • Controlled waters unlikely to be at risk. • With respect to utilities pH was elevated, precluding the use of copper pipes; as a minimum all services should be laid in clean trenches. • Sub surface concrete should be designed to DS-3 ACEC (Class AC-3). This assumes mobile groundwater conditions.
Geotechnical Analysis & Foundation Recommendations	• Consideration to be given to 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 Allenby Commercial, on land located at The Bell Inn, Pinchbeck, Spalding, PE11 3UB Figure 1).

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

- *Solmek Phase 1 Desk Study (M25-083) July 2025*

Reference should be made to the above reports for details of the site's history and environmental setting.

2.2 Scope of Works

The proposed development is outlined to be the construction of residential units comprising of eight, two-to-three-bedroom bungalows with associated parking, access road and soft landscaping. The existing Bell Inn on site is due to be converted into a retail unit with associated parking.

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 21st July 2025. The site is centred at Ordnance Survey Co-ordinates 524210, 325710 and covers an area of approximately 0.61Ha. 23060, 5623600.

The site is located on a parcel of land including the site of the former Bell Inn and the adjoining land to the

east.

The site is irregular in shape with a mostly flat and even topography with a very slightly decline eastward from the west of the site (Figure 2). The site mostly consists of open soft scaped land, however to the northwest there is a large derelict building (the former Bell Inn) with associated areas of tarmacked hard scaping which looked to formally be an associated car park. The building on site is a large two-storey building with a single-storey offshoot to the southeast. The building is showing signs of significant damage with trees rooting within the building and emerging from the roof. Furthermore, the structure looks to have potential to house potential asbestos containing materials such as roof cladding. Towards the entrance to along the sites northeastern border there are two service covers that look to house water and gas utilities, there are also several covers for drainage that surround the property.

A few mature deciduous and coniferous trees are located within the central northern portion of the site, with mature deciduous trees also bordering the site on all sides.

The site is not secure with parts of the border being open into neighbouring gardens. Other parts of the site are bordered by a combination of wooden and metal wire fencing as well as hedgerow and treeline.

4 FIELDWORK

The fieldwork was carried out on 21st July 2025. The extent of the investigation was:

- 4no cable percussive boreholes (CP01 to CP04 inclusive) to a depth of 15.45m below ground level (bgl).
- Gas monitoring wells were installed in CP01, 03 & 04.
- 2no hand excavated foundation exposure trial pits (FETP01 and 02) were carried out on the existing building.
- 5no machine excavated trial pits (TP01 to TP05)
- In-situ testing in the exploratory positions as California Bearing Ratio (CBR), Standard Penetration Tests (SPTs) and hand shear vanes.
- Retrieval of samples for geotechnical and chemical testing.

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

Descriptions of the strata encountered in the boreholes and trial pits together with details of sampling and groundwater are presented in Appendix B of this report. A plan showing the location of the boreholes and trial pits can be found in Appendix A (Figure 2).

5 GROUND CONDITIONS

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

5.1 Made Ground & Topsoil

Topsoil and made ground were encountered across the site to depths of approximately 0.30m to 2.40m below ground level (bgl).

Boreholes CP01 to CP04 and trial pits TP01 and TP03 to TP05 proved made ground comprising brown to yellowish grey sandy gravel or gravelly sand containing brick, tile, limestone, quartz and occasional cobbles. Localised inclusions of tarmac, paving slabs, dolomite, glass, plastic sheeting and metal fragments were noted. Foundation exposure pit FETP02 similarly recorded paving slab and brown gravelly sand to 0.40m bgl.

FETP01 and TP02 proved only natural topsoil with no significant made ground, consisting of brown slightly clayey, sandy material with minor brick or tile gravel and frequent roots, typically to depths of 0.30m to 0.80m bgl.

5.2 Existing Foundations

Three Foundation Exposure Pits were undertaken. Sketches are provided in Appendix B, whilst a summary is provided below in Table 1.

TABLE 1: SUMMARY OF EXISTING FOUNDATIONS

Hole Reference	Footing	Top of Foundation (m below ground)	Outstand from Face of Wall (m)	Foundation Thickness (m)	Founding Strata
FETP01	Concrete	Not proven	Not proven	Not proven	Not proven
TP02	Concrete	0.40	>0.80m	Not proven	Not proven

5.3 Obstructions

FETP01 was terminated at 0.80mbgl due to the presence of a buried drain.

5.4 Natural Deposits

Proven to underlie the made ground deposits across the site, natural ground generally comprised very soft grey-blue silty clay, passing downwards into soft to firm bluish-grey silty clay with occasional peat beds.

Locally, very soft blue silt with beds of peat was recorded. At greater depth, firm brown slightly sandy, slightly gravelly clay with fine- to coarse-grained sand and angular to subrounded sandstone and mudstone gravel was proven to the full termination depth of 15.45mbgl in each of the cable percussive boreholes.

5.5 Groundwater

Groundwater strikes, where encountered, are presented on the exploratory logs (Appendix B) and are summarised below in Table 2:

TABLE 2: SUMMARY OF GROUNDWATER STRIKES

Exploratory Position	Depth Encountered (mbgl)	Depth after 20 minutes (mbgl)	Strata
TP03	1.60	-	CLAY/SILT
TP05	1.80	-	CLAY
CP03	3.2	-	SILT
CP01	3.30	2.96	CLAY/SILT
	9.50	9.69	CLAY
CP02	3.00	2.70	CLAY/SILT
	11.40	11.15	CLAY
CP04	3.00	2.34	CLAY
	11.00	10.82	CLAY

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.

6 CONTAMINATION TESTING RESULTS

The proposed development is outlined to be the construction of residential units comprising of eight, two-to-three-bedroom bungalows with associated parking, access road and soft landscaping. The existing Bell Inn on site is due to be converted into a retail unit with associated parking. 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.

6.1 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 generally open land throughout the site's history.

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

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

6.2 Contamination Testing and Rationale

To provide information upon the possibility of ground contamination five samples of made ground / topsoil and one sample of natural clay were selected for shallow contamination testing. A Low to Moderate 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:

- TP01 – 0.20-0.30m (Made ground – granular)
- TP03 – 0.20-0.30m (Topsoil)
- CP01 – 0.20-0.50m (Made ground – granular)
- CP02 – 0.20-0.50m (Topsoil)
- CP03 – 0.30-0.80m (Topsoil)
- CP04 – 0.40-0.70m (Natural clay)

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
- 6no Asbestos identification screenings
- 6no Speciated Polyaromatic Hydrocarbons (PAHs)
- 3no Total Petroleum Hydrocarbon Criteria Working Group fractions (TPHCWG)

6.3 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 3 & 4.

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	1	<0.1	0.4	190	0
Chromium	mg/kg	6	15	36	8600	0
Copper	mg/kg	6	12	29	68000	0
Lead	mg/kg	6	20	61	2300*	0
Mercury	mg/kg	1	<0.1	0.15	1100	0
Nickel	mg/kg	6	5.2	25	980	0
Zinc	mg/kg	6	35	110	730000	0
Semi metals and non metals						
Arsenic	mg/kg	6	7.6	19	640**	0
Boron	mg/kg	6	0.6	4.8	240000	0
Selenium	mg/kg	0	<0.2	-	12000	0
Inorganic chemicals						
Cyanide (Total)	mg/kg	0	<0.5	-	1580**	0
Sulphate (2:1 Water Soluble)	mg/l	6	24	1800	2000^	0
Other						
pH	pH	-	7.9	10.9	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						

6.4 Metals, Semi Metals and Non Metals

No samples indicated significant raised levels of contamination above the S4UL threshold values, based on the six samples tested.

6.5 Inorganic Chemicals

Soluble sulphates (potentially aggressive to foundation concrete) were recorded between 24 and 1800mg/l. None of the samples were elevated above levels affecting human health, however the samples of clay taken from CP02 (13.50-14.00m) and CP04 (5.00-5.50m) were raised above the BRE Special Digest 1 500mg/l limit for the sulphate classification of concrete.

The results of the pH testing were between 7.9 and 10.9. These pH levels are consistent with slightly alkaline to alkaline conditions.

6.6 Organic Chemicals

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

The average SOM recorded across the site was 3.38% therefore a SOM of 2.50% has been used to determine the S4UL thresholds. Table 4, 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 2.5% SOM	Number of Results Exceeding Threshold Value
TPH Aliphatic Fractions						
Aliphatic (C5-C6)	mg/kg	0	<1	-	5900	0
Aliphatic (C6-C8)	mg/kg	0	<1	-	17000	0
Aliphatic (C8-C10)	mg/kg	0	<1	-	4800	0
Aliphatic (C10-C12)	mg/kg	1	<1	2.56	23000	0
Aliphatic (C12-C16)	mg/kg	0	<1	-	82000	0
Aliphatic (C16-C21)	mg/kg	1	<1	58.38	1700000	0
Aliphatic (C21-C35)	mg/kg	0	<1	-	1700000	0
TPH Aromatic Fractions						
Aromatic (C5-C7)	mg/kg	0	<1	-	46000	0
Aromatic (C7-C8)	mg/kg	0	<1	-	110000	0
Aromatic (C8-C10)	mg/kg	0	<1	-	8100	0
Aromatic (C10-C12)	mg/kg	0	<1	-	28000	0
Aromatic (C12-C16)	mg/kg	1	<1	17.02	37000	0
Aromatic (C16-C21)	mg/kg	2	<1	226	28000	0
Aromatic (C21-C35)	mg/kg	3	1.85	320.4	28000	0
Speciated PAH						
Naphthalene	mg/kg	1	<0.1	0.33	460	0
Acenaphthylene	mg/kg	2	<0.1	1.9	97000	0
Acenaphthene	mg/kg	2	<0.1	1.4	97000	0
Fluorene	mg/kg	2	<0.1	3.1	68000	0
Phenanthrene	mg/kg	3	<0.1	16	22000	0
Anthracene	mg/kg	3	<0.1	6.5	540000	0
Fluoranthene	mg/kg	4	<0.1	44	23000	0
Pyrene	mg/kg	4	<0.1	49	54000	0
Benzo[a]anthracene	mg/kg	3	<0.1	26	170	0
Chrysene	mg/kg	3	<0.1	27	350	0
Benzo[b]fluoranthene	mg/kg	3	<0.1	24	44	0
Benzo[k]fluoranthene	mg/kg	2	<0.1	13	1200	0
Benzo[a]pyrene	mg/kg	3	<0.1	32	35	0
Benzo[g,h,i]perylene	mg/kg	3	<0.1	20	4000	0
Dibenz(a,h)Anthracene	mg/kg	2	<0.1	4.9	3.6	1
Indeno(1,2,3-c,d)Pyrene	mg/kg	3	<0.1	31	510	0
Total PAH	mg/kg	3	<2	300	1000*	0
Total Phenol	mg/kg	4	<0.3	0.6	1500	0
* EA Threshold Values						

From the six samples tested for organic determinants, one sample of granular made ground was found to contain significantly elevated dibenzo(ah)anthracene.

No other samples indicated raised levels of contamination above the S4UL threshold values, based on the six samples tested.

6.7 Asbestos

No asbestos fibres were recorded within any of the 6no samples subject to screening.

6.8 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 E for additional notes on contamination guidelines.

7 CONCEPTUAL MODEL AND CONTAMINATION ANALYSIS

The contamination conceptual model in Table 5 identifies the potential pollution linkages present on site based on source – pathway – receptor relationships.

TABLE 5: CONCEPTUAL MODEL

Source	Pathway	Receptor	Risk Rating	Comments
Asphyxiating or explosive ground gases - Made ground - Burial ground immediately south of the site - Possible tanks from historic petrol station immediately southwest	Ground gas migration - Migration through permeable soils - Inhalation	Future site users Adult & infant residents	Moderate	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 - Slightly elevated PAH within the granular made groundNo other significantly elevated organic determinants - No significantly elevated inorganic determinants - No asbestos recorded	- Inhalation - Dust ingestion - Dermal contact	Future site users Adult & infant residents	Low	Where made ground is to remain in soft landscaped/garden areas a cover layer of 600mm should be incorporated into the design of such areas.
		Users during development Construction workers	Low	Mitigation measures required during construction. Consideration to be given to Health and Safety Executive: <i>Protection of Workers and the General Public During the Development of Contaminated Land</i> .
	- Inhalation - Dust ingestion	Users of surrounding sites Transient adult workers	Low	Potential low risk during remediation/construction from dust generation. Consideration to be given to dust suppression, in line with BRE: <i>The Control of Dust and Emissions from Construction and Demolition, Best Practice Guidance</i> .
	Leaching of mobilised contaminants	Drift geology Unproductive strata	Very Low	The low permeability and the low sensitivity aquifer is not considered to be a sensitive receptor.
		Solid geology Unproductive strata	Very Low	The low permeability and the low sensitivity aquifer is not considered to be a sensitive receptor.
	- Drainage - Lateral migration - Accumulation of contaminated sediment	Surface water features Drainage ditch located on eastern border of site	Low	The surface water is unlikely to be impacted by the low contamination levels recorded.
Areas of phytotoxic contamination	Uptake via roots and leaf surfaces	Vegetation Soft landscaping proposed	Low	Topsoil re-testing required once stockpiled to assess its suitability for re-use in soft landscaped areas.
Areas of contamination above service fabric or BRE Special Digest 1 thresholds - Elevated pH - Elevated sulphates	Direct contact	Construction Materials Concrete	Moderate	Mitigation through use of sulphate resistant concrete.
		Construction Materials Service Fabric	Moderate	Copper piping to be avoided and prudent to lay any service within a clean bedding.

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

7.1 Users of the Site Once Development is Complete

The users of the site, particularly construction workers, 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 volatiles 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 3 and 4).

- The levels of contaminants across the site are generally low with exceedances limited to significantly elevated PAH within the granular made ground

The proposed development is outlined to be the construction of residential units comprising of eight, two-to-three-bedroom bungalows with associated parking, access road and soft landscaping. The existing Bell Inn on site is due to be converted into a retail unit with associated parking.

Based on the shallow soil contamination testing, it is considered that the levels of contamination may pose a risk to future users of the site, as soft landscaping and gardens are proposed in the final development. This pollutant linkage however will be severed as long as all contaminated areas are covered either by buildings, hardstanding, or a clean cover system.

During the initial site strip, proposed soft landscaped areas should be excavated to 0.60mbgl or natural ground (whichever is the shallowest). Any deleterious materials encountered (i.e. ash, slag, brick rubble and concrete) should be removed and placed beneath areas of permanent hardcover. If material is to be moved either elsewhere on site or removed from site, consideration should be given to carrying out these works in accordance with the CL:AIRE Definition of Waste: Code of Practice, and a Materials Management Plan may be required.

7.2 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 volatiles compounds, inadvertent soil ingestion and contact with contaminated groundwater.

Slightly raised levels of some PAHs in the made ground were detected. It is considered that such levels of contamination may pose a risk to construction workers and users of surrounding sites, however S4ULs assume long term exposure to contamination and therefore relate primarily to chronic health risks. The risk of short-term acute exposure (e.g. to construction workers) falls under the *Health and Safety at Work Act: 1974* and underlying regulations, such as the *Control of Substances Hazardous to Health (COSHH, 2002)* Regulations. The levels of contamination and the associated risks to site workers should be considered under the *Construction Design and Management (CDM, 2015)* regulations during the planning of works and the preparation of the designers and contractors Health and Safety Plans and Method Statements.

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 should be provided and used for any vehicle entering or leaving site to prevent cross contamination.

Although asbestos was 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*.

7.3 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 six samples tested.

Where made ground remains on site a cover layer of 600mm, as detailed above should be incorporated into the design of soft landscaping and garden areas.

It may be possible to re-use the natural soils and the topsoil in this cover layer. These materials should be carefully stockpiled separately and re-tested prior to re-use.

7.4 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.

7.4.1 Hydrogeological Context

From the site investigation undertaken, ground conditions broadly comprise thin made ground or topsoil over drift deposits comprising silty clays (low permeability). The drift deposits are designated as an unproductive stratum by the Environment Agency. The underlying bedrock is also designated as an unproductive stratum by the EA.

The nearest surface water feature is a drainage ditch which immediately bounds the site.

With respect to groundwater, during the fieldwork shallow strikes were noted between 1.60m and 11.40mbgl.

No groundwater or surface water abstractions are noted within 1km of the site.

7.4.2 Contamination Context

Slightly elevated PAH contamination was recorded in one shallow sample based on the six soil samples tested.

7.4.3 Hydrogeological Risk Assessment

The only groundwater encountered during the intrusive investigation is likely to be perched, sitting above the low permeability clays and silts. 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 or surface water receptors.

7.5 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.

7.5.1 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-3 ACEC (Class AC-3) requirements for concrete protection. This assumes mobile groundwater conditions.

7.5.2 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 slightly alkaline to alkaline pH (7.9 to 10.9) were recorded across the site.

The concentrations of the selected determinants should be compared to the pipe material selection table in Appendix E, 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.

7.6 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

7.7 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, Waste Classification has not been requested by the client. Waste classification, in line with the aforementioned EA guidance, would be needed to classify the material as Hazardous or Non-Hazardous Waste. WAC testing would then be required to determine the suitability of the material for the relevant landfill.

8 GROUND GAS ASSESSMENT

The proposed development is outlined to be the construction of residential units comprising of eight, two-to-three-bedroom bungalows with associated parking, access road and soft landscaping. The existing Bell Inn on site is due to be converted into a retail unit with associated parking.

Ground gases such as carbon dioxide (CO₂), methane (CH₄), 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 (CP01, CP03 & CP04) 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 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) and Hand Shear Vanes were undertaken at regular intervals during drilling/excavation. The geotechnical results are presented in Appendix D.

9.1 Strength and Density

9.1.1 SPT N Values

Standard Penetration Tests (SPTs) were undertaken at regular depth intervals within the cable percussive boreholes CP01 to CP04.

In the upper soft and very soft silty clays, N-values were typically 1–3, indicating very low to low strength. Through the intermediate soft to firm bluish-grey silty clays, values generally increased to 4–10, reflecting a low to medium strength condition. Within the lower firm brown slightly sandy, slightly gravelly clay, N-values rose further, ranging up to >20, which is indicative of stiff cohesive soils of high strength.

9.1.2 Hand Shear Vanes

Hand shear vane testing within the natural cohesive deposits returned results ranging 15kPa to 91kPa, which are indicative of very low to high strength conditions.

9.2 Moisture Contents

Six samples recovered from the boreholes and trial pits have been subject to moisture content tests to determine the moisture profile at depths of between 0.60 and 13.50mbgl. Moisture levels were between 21% and 56%.

9.3 Atterberg Limit Determinations

Six Atterberg Limit Determination tests were carried out on samples of cohesive material to classify the fine grained soils. The results were compared to the Casagrande Chart published in BS 5930 and showed the samples to generally be clay of intermediate to high plasticity.

The Plasticity Indices ranged from 21 to 36 with moisture contents recorded above and below the corresponding plastic limits. The cohesive material can be assessed as having a medium shrinkage potential in relation to NHBC Guidance Chapter 4.2.

9.4 Particle Size Distribution and Sedimentation Testing

One sample was subject to Particle Size Distribution (PSD) testing in accordance with BS1377 Part 2 to aid soil descriptions. The results have been used to prepare precise soil descriptions in accordance with BS5930:2015 Section 6 and are presented in Appendix D.

9.5 pH and Sulphate Results

Twelve samples of from the boreholes and trial pits were tested for acidity and soluble sulphate content to assess whether the material may be potentially aggressive to building fabric. The results of the testing for pH ranged from 7.9 to 10.9 indicating slightly alkaline to alkaline conditions. Soluble sulphates were recorded at levels ranging from 24mg/l to 1800mg/l.

9.6 CBR Tests

CBR testing was undertaken within the natural clay in the trial pits. The in-situ CBR results are detailed below in Table 6.

TABLE 6: SUMMARY OF CBR TESTING RESULTS

Trial Pit	0.60mbgl result (%)
TP01 (0.30m)	4.0
TP02 (0.10m)	7.0
TP03 (0.50m)	6.0
TP04 (0.45m)	10
TP05 (0.30m)	6.0

9.7 Foundations

9.7.1 Piled Foundations

Due to the depths of low strength natural clay and silt deposits with peat horizons a piled foundation solution will be required.

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 and very soft to soft alluvial silt deposits. 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.

9.7.2 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.

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

9.7.3 Ground Slabs

Made ground and soft clay/silt deposits are in excess of 600mm and a suspended reinforced ground slab or piled slab will be required.

9.7.4 Roads/Parking/Hard Standing etc

CBR testing has been carried out, the details of which are presented in Table 5.

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.

Where softened natural clay deposits are present at formation level a CBR of <2% should be expected.

9.8 Excavation

Based on the nature of the ground conditions encountered, excavations should be within the capacity of normal earthworks plant although breaking out of relict foundations and other obstructions should be anticipated. Stability of excavations will be poor in the made ground but should improve slightly 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".

9.9 Groundwater

Groundwater was encountered between 1.60mbgl and 11.40mbgl, as referenced in Table 2.

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.

SOLMEK

APPENDIX A



12-16 Yarm Road, Stockton on Tees, TS18 3NA
Tel: 01642 607083 Email: info@solmek.com

Figure Title

Site Location Plan

Project Number

M25-083

Project Name

The Bell Inn, Pinchbeck, Spalding

Client

Allenby Commercial

Date

September 2025

DRG Number

Figure 1

Scale

1:5000 @ A4 [DO NOT SCALE]

Legend Key
 Project Bounds - Project Bounds



12-16 Yarm Road, Stockton on Tees, TS18 3NA
Tel: 01642 607083 Email: info@solmek.com

Figure Title

Exploratory Hole Location Plan

Project Number

M25-083

Project Name

The Bell Inn, Pinchbeck, Spalding

Client

Allenby Commercial

Date

September 2025

DRG Number

Figure 2

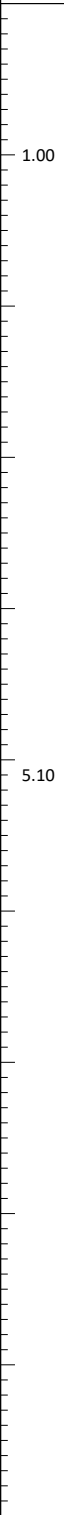
Scale

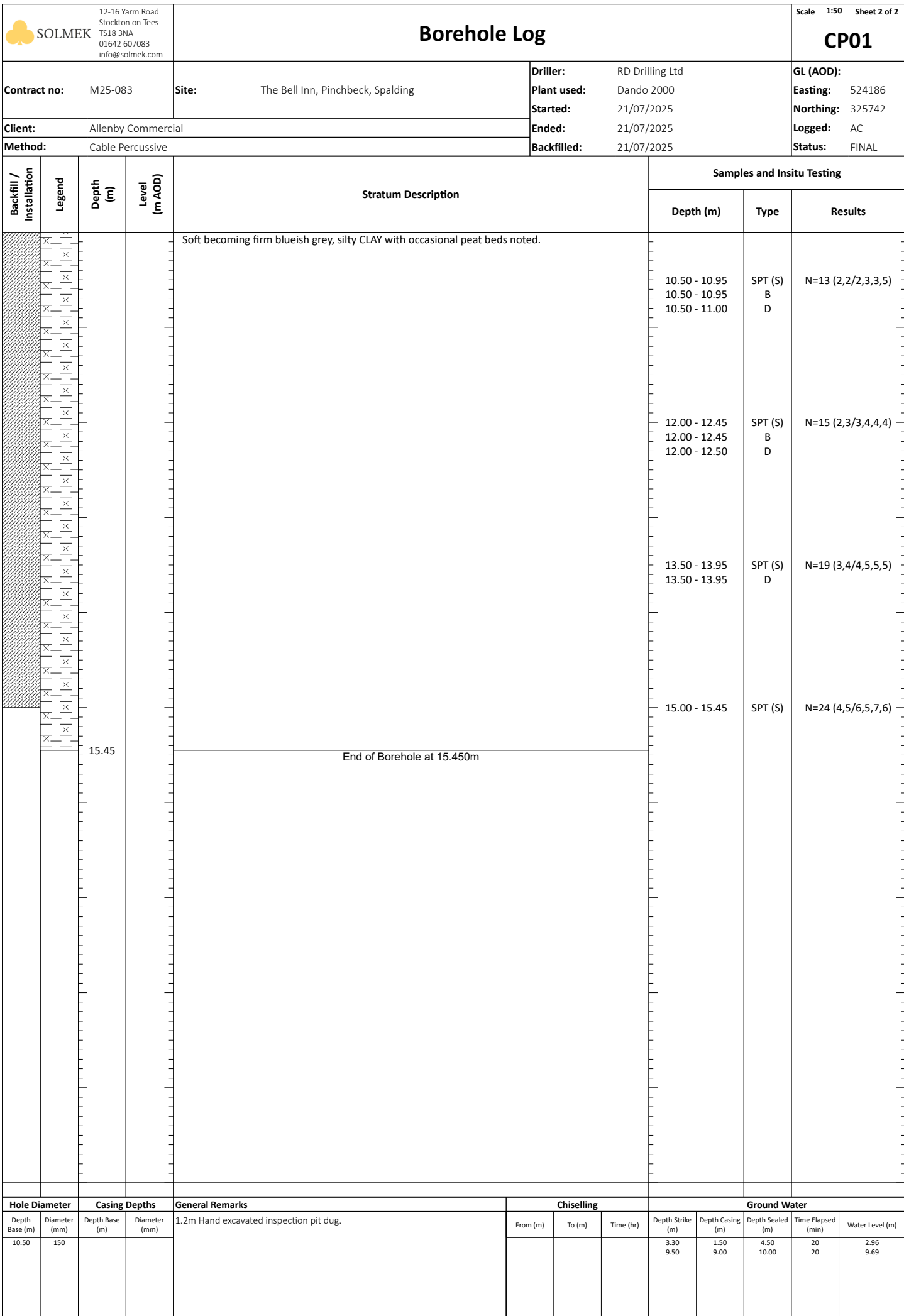
1:1000 @ A4 [DO NOT SCALE]

Legend Key

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

APPENDIX B

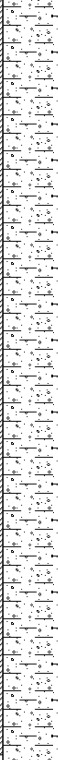
12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com Borehole Log				Scale 1:50 Sheet 1 of 2								
Contract no: M25-083		Site: The Bell Inn, Pinchbeck, Spalding		Driller: RD Drilling Ltd		GL (AOD):						
Client: Allenby Commercial				Plant used: Dando 2000		Easting: 524186						
Method: Cable Percussive				Started: 21/07/2025		Northing: 325742						
				Ended: 21/07/2025		Logged: AC						
				Backfilled: 21/07/2025		Status: FINAL						
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing							
					Depth (m)	Type	Results					
				MADE GROUND: Yellowish grey sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, subrounded to angular of limestone, quartz and brick. Small to large cobbles, subrounded to angular of brick and limestone.	0.20 - 0.50	ES						
				Very soft grey blue silty CLAY.	1.20 - 1.65 1.20 - 1.65 1.20 - 1.70	SPT (S) B D	N=3 (1,0/0,1,1,1)					
					2.00 - 2.45 2.00 - 2.45 2.00 - 2.50	SPT (S) B D	N=2 (1,1/1,0,0,1)					
					3.00 - 3.45 3.00 - 3.45 3.00 - 3.50	SPT (S) B D	N=1 (1,0/0,1,0,0)					
					4.00 - 4.45 4.00 - 4.45 4.00 - 4.50	SPT (S) B D	N=3 (1,1/1,1,0,1)					
					5.00 - 5.45 5.00 - 5.45 5.00 - 5.50	SPT (S) B D	N=4 (1,1/1,1,1,1)					
				Soft becoming firm blueish grey, silty CLAY with occasional peat beds noted.	6.00 - 6.45 6.00 - 6.45 6.00 - 6.50	SPT (S) B D	N=6 (1,1/1,1,2,2)					
					7.50 - 7.95 7.50 - 7.95 7.50 - 8.00	SPT (S) B D	N=7 (1,1/1,2,2,2)					
					9.00 - 9.45 9.00 - 9.45 9.00 - 9.50	SPT (S) B D	N=12 (1,2/2,3,3,4)					
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)
10.50	150								3.30 9.50	1.50 9.00	4.50 10.00	20 20

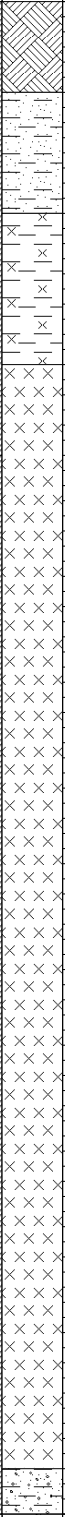


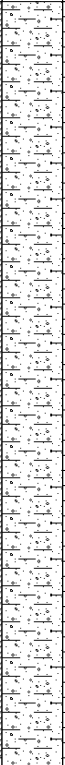
Contract no: M25-083	Site: The Bell Inn, Pinchbeck, Spalding	Driller: RD Drilling Ltd	GL (AOD):
		Plant used: Dando 2000	Easting: 524223
		Started: 22/07/2025	Northing: 325748
Client: Allenby Commercial		Ended: 22/07/2025	Logged: AC
Method: Cable Percussive		Backfilled: 22/07/2025	Status: FINAL

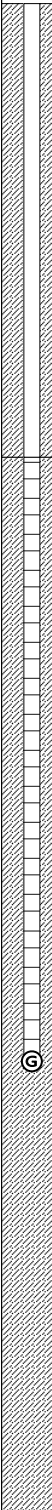
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing			
					Depth (m)	Type	Results	
				Brown slightly clayey, sandy, slightly gravelly TOPSOIL. Sand is fine to coarse. Gravel is fine to coarse, subangular of brick and tile.	0.20 - 0.50	ES	N=6 (1,1/1,2,2,1)	
				Very soft grey blue silty sandy CLAY.	1.20 - 1.65 1.20 - 1.65 1.20 - 1.70	SPT (S) B D		
					2.00 - 2.45 2.00 - 2.45 2.00 - 2.50	SPT (S) B D		N=1 (1,1/0,0,1,0)
					3.00 - 3.45 3.00 - 3.45 3.00 - 3.50	SPT (S) B D		N=2 (1,0/0,0,1,1)
					Soft becoming firm blueish grey, silty CLAY with occasional peat beds noted.	4.00 - 4.45 4.00 - 4.45 4.00 - 4.50		SPT (S) B D
					5.00 - 5.45 5.00 - 5.45 5.00 - 5.50	SPT (S) B D		N=2 (1,1/1,0,0,1)
					6.00 - 6.45 6.00 - 6.45 6.00 - 6.50	SPT (S) B D	N=5 (1,1/1,1,1,2)	
					7.50 - 7.95 7.50 - 7.95 7.50 - 8.00	SPT (S) B D	N=7 (1,1/1,2,2,2)	
					9.00 - 9.45 9.00 - 9.45 9.00 - 9.50	SPT (S) B D	N=8 (2,2/2,2,2,2)	
					Firm brown slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone.			

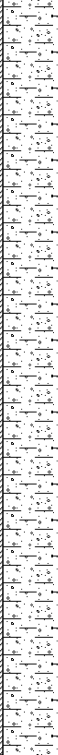
[illegible]

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Borehole Log					Scale 1:50 Sheet 2 of 2							
Contract no: M25-083		Site: The Bell Inn, Pinchbeck, Spalding			Driller: RD Drilling Ltd Plant used: Dando 2000 Started: 22/07/2025		GL (AOD): Easting: 524223 Northing: 325748							
Client: Allenby Commercial					Ended: 22/07/2025		Logged: AC							
Method: Cable Percussive					Backfilled: 22/07/2025		Status: FINAL							
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing									
					Depth (m)	Type	Results							
		15.45		Firm brown slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone.	10.50 - 10.95	SPT (S) B D	N=11 (2,3/3,2,3,3)							
					10.50 - 10.95									
					10.50 - 11.00									
										12.00 - 12.45	SPT (S) B D	N=15 (3,3/3,4,4,4)		
										12.00 - 12.45				
										12.00 - 12.50				
										12.50 - 12.95	SPT (S)	N=18 (4,4/4,4,5,5)		
										13.50 - 13.95	SPT (S) B D	N=18 (4,5/5,4,4,5)		
										13.50 - 13.95				
										13.50 - 14.00				
					15.00 - 15.45	SPT (S)	N=18 (5,5/4,5,5,4)							
				End of Borehole at 15.450m										
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.			From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
10.50	150									3.00 11.40	2.50 10.50	4.00 11.90	20 20	2.70 11.15

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Borehole Log					Scale 1:50 Sheet 1 of 2		CP03	
Contract no: M25-083		Site: The Bell Inn, Pinchbeck, Spalding			Driller: RD Drilling Ltd		GL (AOD):		Easting: 524246	
Client: Allenby Commercial		Plant used: Dando 2000			Started: 22/07/2025		Northing: 325678		Logged: AC	
Method: Cable Percussive		Ended: 23/07/2025			Backfilled: 23/07/2025		Status: FINAL			
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing					
					Depth (m)	Type	Results			
		0.60		Brown slightly clayey, sandy, slightly gravelly TOPSOIL. Sand is fine to coarse. Gravel is fine to coarse, subangular of brick and tile.	0.30 - 0.80	ES				
				Soft brown sandy CLAY. Sand is fine to coarse.						
		1.40		Very soft grey blue silty CLAY.	1.20 - 1.65 1.20 - 1.65 1.20 - 1.70	SPT (S) B D	N=5 (1,1/2,2,1,0)			
		2.40		Very soft blue SILT with beds of peat.	2.00 - 2.45 2.00 - 2.45 2.00 - 2.50	SPT (S) B D	N=2 (1,0/1,0,0,1)			
					3.00 - 3.45 3.00 - 3.45 3.00 - 3.50	SPT (S) B D	N=2 (0,0/1,0,0,1)			
					4.00 - 4.45 4.00 - 4.45	SPT (S) D	N=2 (1,1/0,1,1,0)			
					5.00 - 5.45 5.00 - 5.45	SPT (S) D	N=3 (1,1/1,0,1,1)			
					6.00 - 6.45 6.00 - 6.45	SPT (S) D	N=4 (1,1/1,1,1,1)			
					7.50 - 7.95 7.50 - 7.95	SPT (S) D	N=6 (1,1/1,1,2,2)			
					9.00 - 9.45 9.00 - 9.45	SPT (S) D	N=8 (1,1/2,2,2,2)			
		9.70		Firm brown slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone.						
Hole Diameter		Casing Depths		General Remarks			Chiselling			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	1.2m Hand excavated inspection pit dug.			From (m)	To (m)	Time (hr)	
10.50	150									
							3.20 11.80	3.00 10.50	4.60 12.30	

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Borehole Log					Scale 1:50 Sheet 2 of 2							
Contract no: M25-083		Site: The Bell Inn, Pinchbeck, Spalding			Driller: RD Drilling Ltd Plant used: Dando 2000 Started: 22/07/2025		GL (AOD): Easting: 524246 Northing: 325678							
Client: Allenby Commercial					Ended: 23/07/2025		Logged: AC							
Method: Cable Percussive					Backfilled: 23/07/2025		Status: FINAL							
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing									
					Depth (m)	Type	Results							
		15.45		Firm brown slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone.	10.50 - 10.95	SPT (S) B D	N=9 (2,2/2,2,3)							
					10.50 - 10.95									
					10.50 - 11.00									
										12.00 - 12.45	SPT (S) D	N=13 (2,3/3,3,3,4)		
					12.00 - 12.45									
					13.50 - 13.95	SPT (S) D	N=17 (3,3/4,4,4,5)							
					13.50 - 13.95									
					15.00 - 15.45	SPT (S)	N=20 (5,4/5,6,5,4)							
				End of Borehole at 15.450m										
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.			From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
10.50	150									3.20 11.80	3.00 10.50	4.60 12.30		

 SOLMEK 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com				Borehole Log						Scale 1:50 Sheet 1 of 2		CP04		
Contract no: M25-083				Site: The Bell Inn, Pinchbeck, Spalding				Driller: RD Drilling Ltd				GL (AOD):		
								Plant used: Dando 2000				Easting: 524223		
Client: Allenby Commercial								Started: 23/07/2025				Northing: 325669		
Method: Cable Percussive								Ended: 23/07/2025				Logged: AC		
								Backfilled: 23/07/2025				Status: FINAL		
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing									
					Depth (m)		Type	Results						
		0.60		Brown slightly clayey, sandy, slightly gravelly TOPSOIL. Sand is fine to coarse. Gravel is fine to coarse, subangular of brick and tile.	0.40 - 0.70		ES							
		1.30		Soft brown to blueish green CLAY.										
				Very soft blue grey silty CLAY.	1.20 - 1.65 1.20 - 1.65 1.20 - 1.70	SPT (S) B D	N=5 (1,2/2,1,1,1)							
					2.00 - 2.45 2.00 - 2.45	SPT (S) D	N=2 (1,0/0,1,1,0)							
					3.00 - 3.45 3.00 - 3.45 3.00 - 3.50	SPT (S) B D	N=1 (1,0/0,0,1,0)							
					4.00 - 4.45 4.00 - 4.45	SPT (S) D	N=2 (1,1/1,0,0,1)							
					5.00 - 5.45 5.00 - 5.45 5.00 - 5.50	SPT (S) B D	N=2 (1,1/0,0,1,1)							
					6.00 - 6.45 6.00 - 6.45	SPT (S) D	N=4 (1,1/1,1,1,1)							
					7.50 - 7.95 7.50 - 7.95 7.50 - 8.00	SPT (S) B D	N=6 (1,1/1,1,2,2)							
		8.70		Very soft blue SILT with beds of peat.										
		9.90		Firm brown slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone.	9.00 - 9.45 9.00 - 9.45 9.00 - 9.50		SPT (S) B D	N=8 (1,2/2,2,2,2)						
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.			From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
10.50	150									3.00 11.00	2.50 10.60	4.40 11.00	20 20	2.34 10.82

 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 607083 info@solmek.com		Borehole Log					Scale 1:50 Sheet 2 of 2							
Contract no: M25-083		Site: The Bell Inn, Pinchbeck, Spalding			Driller: RD Drilling Ltd		GL (AOD):							
					Plant used: Dando 2000		Easting: 524223							
Client: Allenby Commercial					Started: 23/07/2025		Northing: 325669							
Method: Cable Percussive					Ended: 23/07/2025		Logged: AC							
					Backfilled: 23/07/2025		Status: FINAL							
Backfill / Installation	Legend	Depth (m)	Level (m AOD)	Stratum Description	Samples and Insitu Testing									
					Depth (m)	Type	Results							
		15.45		Firm brown slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of sandstone and mudstone.	10.50 - 10.95	SPT (S) D	N=10 (2,2/2,2,3,3)							
					10.50 - 10.95									
					12.00 - 12.45									
					12.00 - 12.45									
					13.50 - 13.95	SPT (S) D	N=18 (3,4/4,4,5,5)							
					13.50 - 13.95									
					15.00 - 15.45	SPT (S)	N=21 (4,4/5,4,6,6)							
					15.00 - 15.45									
				End of Borehole at 15.450m										
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.			From (m)	To (m)	Time (hr)	Depth Strike (m)	Depth Casing (m)	Depth Sealed (m)	Time Elapsed (min)	Water Level (m)
10.50	150									3.00 11.00	2.50 10.60	4.40 11.00	20 20	2.34 10.82

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No FETP01 Sheet 1 of 1	
Project Name: The Bell Inn, Pinchbeck, Spalding				Project No. M25-083		Co-ords: 524173E - 325749N Level:		Date 21/07/2025	
Plant Used: 3T Excavator				Client: Allenby Commercial		Dimensions (m): 0.90		Scale 1:26	
		Depth 0.80				Logged AC			
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
				0.80			Brown sandy, slightly gravelly TOPSOIL. Sand is fine to coarse. Gravel is fine to coarse, angular of limestone.		
							End of Pit at 0.800m		
							1		
							2		
							3		
							4		
							5		
Remarks: No groundwater encountered. TP Terminated due to presence of drain at 0.80m.									
Stability: Pit wall unstable.									



TrialPit No
FETP02
Sheet 1 of 1

Date
21/07/2025

Scale
1:26

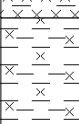
Logged
AC

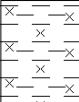
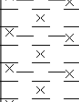
- 1
- 2
- 3
- 4
- 5

Stability: Pit wall stable.

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No TP01 Sheet 1 of 1	
Project Name: The Bell Inn, Pinchbeck, Spalding				Project No. M25-083		Co-ords: 524209E - 325738N Level:		Date 21/07/2025	
Plant Used: 3T Excavator				Dimensions (m):		0.60 2.00		Scale 1:26	
Client: Allenby Commercial				Depth 2.00		Logged AC			
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.20 - 0.30	ES		0.18			MADE GROUND: Tarmac.		
	0.30	HV	23kPa	0.30			MADE GROUND: Yellowish grey sandy gravel. Sand is fine to coarse. Gravel is fine to coarse, subrounded to angular of limestone, quartz and brick. Small to large cobbles, subrounded to angular of brick and limestone.		
	0.30	HV	38kPa				Soft brown very sandy, very gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular of coal and quartz with occasional roots.		
	0.30	CBR	4.0%				Soft to firm brown silty sandy CLAY. Sand is fine to coarse.		
	0.60	HV	30kPa	0.61					
	0.60	HV	76kPa						
	0.70 - 0.80	B							
									
	1.10 - 1.20	B		1.08			Very soft greyish brown sandy SILT.		
									
			2.00			End of Pit at 2.000m			
Remarks: No groundwater encountered.									
Stability: Pit wall stable.									

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No TP02 Sheet 1 of 1	
Project Name: The Bell Inn, Pinchbeck, Spalding				Project No. M25-083		Co-ords: 524216E - 325721N Level:		Date 21/07/2025	
Plant Used: 3T Excavator				Dimensions (m):		1.50		Scale 1:26	
Client: Allenby Commercial				Depth 0.30		0.90		Logged AC	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10	CBR	7.0%	0.10			Dark brown slightly clayey, sandy TOPSOIL. Sand is fine to coarse. Frequent roots.		
	0.15	HV	152kPa	Stiff greyish brown silty sandy CLAY.					
	0.15	HV	58kPa	0.30			End of Pit at 0.300m		
									1
									2
									3
									4
									5
Remarks: No groundwater encountered. Terminated due to possible service.									
Stability: Pit wall stable.									

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No TP03 Sheet 1 of 1	
Project Name: The Bell Inn, Pinchbeck, Spalding				Project No. M25-083		Co-ords: 524222E - 325707N Level:		Date 21/07/2025	
Plant Used: 3T Excavator				Dimensions (m): 1.20 0.60				Scale 1:26	
Client: Allenby Commercial				Depth 2.00		Logged AC			
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.20 - 0.30	ES					Brown slightly clayey, sandy, slightly gravelly TOPSOIL. Sand is fine to coarse. Gravel is fine to coarse, subangular of brick and tile.		
	0.50	CBR	6.0%	0.50			Brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of quartz.		
	0.75 - 0.85	B		0.75			Firm brown mottled grey slightly sandy silty CLAY.		
	0.75	HV	46kPa	0.90			Soft to firm brownish grey CLAY/SILT.		
	0.75	HV	91kPa						
	0.90 - 1.10	B							
	0.90	HV	38kPa						
	0.90	HV	76kPa						
	1.60	HV	15kPa	1.60			Very soft brownish grey silty CLAY.		
	1.60	HV	8kPa						
1.80	HV	23kPa							
1.80	HV	53kPa							
			2.00			End of Pit at 2.000m			
1 2 3 4 5									
Remarks: Groundwater encountered at 1.60m.									
Stability: Pit wall stable.									

 SOLMEK Solmek Ltd 12-16 Yarm Road Stockton on Tees TS18 3NA Tel: 01642 607083 Email: info@solmek.com				Trial Pit Log				TrialPit No TP04 Sheet 1 of 1	
Project Name: The Bell Inn, Pinchbeck, Spalding				Project No. M25-083		Co-ords: 524227E - 325694N Level:		Date 21/07/2025	
Plant Used: 3T Excavator				Dimensions (m): 1.20 0.60				Scale 1:26	
Client: Allenby Commercial				Depth 2.00		Logged AC			
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.45	HV	213kPa	0.45			Brown slightly clayey, sandy, slightly gravelly TOPSOIL. Sand is fine to coarse. Gravel is fine to coarse, subangular of brick and tile.		
	0.45	HV	91kPa				Stiff brown sandy CLAY.		
	0.45	CBR	10%						
	1.10	HV	27kPa	1.00			Soft to firm brown mottled silty CLAY.		
	1.10	HV	61kPa						
	1.50	HV	15kPa	1.40			Soft blue grey silty CLAY.		
	1.50	HV	30kPa						
				2.00			End of Pit at 2.000m		

Remarks: No groundwater encountered.

Stability: Pit wall stable.

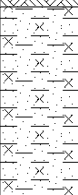
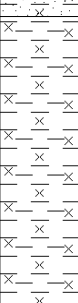


TrialPit No
TP05
Sheet 1 of 1

Date
21/07/2025

Scale
1:26

Logged
AC

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.30	HV HV CBR	27kPa 61kPa 6.0%	0.30			Brown slightly clayey sandy TOPSOIL. Frequent roots.	1
	0.30					Soft to firm brown, gravelly sandy, silty CLAY.		
	0.30							
	1.00	HV HV	30kPa 61kPa	1.00			Soft to firm blueish grey locally brown silty CLAY.	
	1.00							
	1.80	HV HV	24kPa 46kPa	2.00			End of Pit at 2.000m	2
	1.80							
								4
								5

Remarks:	Groundwater encountered at 1.80m.
----------	-----------------------------------

Stability: Pit wall stable.

APPENDIX C

Certificate of Analysis

Certificate Number 25-17135

Issued: 06-Aug-25

Client SOLMEK
Unit 3
Prospect House
Chesterfield
S43 3QE

Our Reference 25-17135

Client Reference ~ M25-083

Order No ~ MID-0730

Contract Title ~ The Bell Inn, Pinchbeck

Description 12 Soil samples.

Date Received 25-Jul-25

Date Started 25-Jul-25

Date Completed 06-Aug-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



Reyhan Irfan
Operations Manager



2139

Sample Deviations present. See Deviation Table Section for details.

Summary of Chemical Analysis

Matrix Descriptions

Our Ref 25-17135

Client Ref ~ M25-083

Contract Title ~ The Bell Inn, Pinchbeck

Sample ID	Depth	Lab No	Completed	Matrix Description
TP01	0.20-0.30	2544828	06/08/2025	Brown very gravelly, sandy CLAY
TP03	0.20-0.30	2544829	06/08/2025	Brown sandy CLAY
CP01	0.20-0.50	2544830	06/08/2025	Brown very gravelly, sandy CLAY
CP02	0.20-0.50	2544831	06/08/2025	Brown sandy CLAY
CP03	0.30-0.80	2544832	06/08/2025	Brown sandy CLAY
CP04	0.40-0.70	2544833	06/08/2025	Brown sandy CLAY
TP01	0.70-0.80	2544834	06/08/2025	Brown sandy CLAY
TP03	0.20-0.30	2544835	06/08/2025	Brown sandy CLAY
CP01	3.00-3.50	2544836	06/08/2025	Brown sandy CLAY
CP02	13.50-14.00	2544837	06/08/2025	Brown sandy CLAY
CP03	10.50-11.00	2544838	06/08/2025	Brown sandy CLAY
CP04	5.00-5.50	2544839	06/08/2025	Brown sandy CLAY

Summary of Chemical Analysis

Soil Samples

Our Ref 25-17135

Client Ref ~ M25-083

Contract Title ~ The Bell Inn, Pinchbeck

Lab No	2544828	2544829	2544830	2544831	2544832	2544833
Sample ID ~	TP01	TP03	CP01	CP02	CP03	CP04
Depth ~	0.20-0.30	0.20-0.30	0.20-0.50	0.20-0.50	0.30-0.80	0.40-0.70
Other ID ~						
Sample Type ~	ES	ES	ES	ES	ES	ES
Sampling Date ~	23/07/2025	23/07/2025	23/07/2025	23/07/2025	23/07/2025	23/07/2025
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	7.6	10	8.1	11	11	19
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.6	1.1	1.3	4.8	2.7	2.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.1	0.1	< 0.1	0.1	0.1
Chromium	DETSC 2301#	0.15	mg/kg	36	16	15	19	21	23
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	12	21	18	29	21	18
Lead	DETSC 2301#	0.3	mg/kg	61	36	20	35	46	26
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.07	< 0.05	0.15	0.06	< 0.05
Nickel	DETSC 2301#	1	mg/kg	7.9	15	5.2	17	19	25
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	110	81	35	63	99	87
Inorganics									
pH	DETSC 2008#		pH	10.9	8.3	9.9	8.0	7.9	8.0
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Organic matter	DETSC 2002#	0.1	%	4.4	3.2	4.0	4.0	3.0	1.7
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	100	36	200	86	34	47
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		< 1.50	< 30.00			2.56
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg		< 1.20	< 24.00			< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg		< 1.50	58.38			< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg		< 3.40	< 3.40			< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg		< 3.40	< 68.00			< 3.40
Aliphatic C5-C40: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg		< 10.00	190.2			< 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		< 0.90	< 18.00			< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg		< 0.50	17.02			< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg		< 0.60	226.0			1.61
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg		1.85	320.4			11.10
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg		< 1.40	< 28.00			< 1.40
Aromatic C5-C40: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg		< 10.00	613.1			12.71
TPH Ali/Aro C5-C40: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg		< 10.00	803.3			12.71
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	0.10	< 0.10	0.33	< 0.10	< 0.10	< 0.10
Acenaphthylene	DETSC 3301	0.1	mg/kg	0.32	< 0.10	1.9	< 0.10	< 0.10	< 0.10
Acenaphthene	DETSC 3301	0.1	mg/kg	0.17	< 0.10	1.4	< 0.10	< 0.10	< 0.10
Fluorene	DETSC 3301	0.1	mg/kg	0.41	< 0.10	3.1	< 0.10	< 0.10	< 0.10

Summary of Chemical Analysis Soil Samples

Our Ref 25-17135

Client Ref ~ M25-083

Contract Title ~ The Bell Inn, Pinchbeck

Lab No	2544828	2544829	2544830	2544831	2544832	2544833
Sample ID ~	TP01	TP03	CP01	CP02	CP03	CP04
Depth ~	0.20-0.30	0.20-0.30	0.20-0.50	0.20-0.50	0.30-0.80	0.40-0.70
Other ID ~						
Sample Type ~	ES	ES	ES	ES	ES	ES
Sampling Date ~	23/07/2025	23/07/2025	23/07/2025	23/07/2025	23/07/2025	23/07/2025
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Phenanthrene	DETSC 3301	0.1	mg/kg	2.4	< 0.10	16	< 0.10	< 0.10	0.39
Anthracene	DETSC 3301	0.1	mg/kg	1.2	< 0.10	6.5	< 0.10	< 0.10	0.13
Fluoranthene	DETSC 3301	0.1	mg/kg	11	0.26	44	< 0.10	< 0.10	0.90
Pyrene	DETSC 3301	0.1	mg/kg	11	0.13	49	< 0.10	< 0.10	0.76
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	7.2	< 0.10	26	< 0.10	< 0.10	0.44
Chrysene	DETSC 3301	0.1	mg/kg	7.9	< 0.10	27	< 0.10	< 0.10	0.42
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	6.7	< 0.10	24	< 0.10	< 0.10	0.28
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	3.7	< 0.10	13	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	8.4	< 0.10	32	< 0.10	< 0.10	0.30
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	10	< 0.10	31	< 0.10	< 0.10	0.41
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.80	< 0.10	4.9	< 0.10	< 0.10	< 0.10
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	6.0	< 0.10	20	< 0.10	< 0.10	0.19
PAH 16 Total	DETSC 3301	1.6	mg/kg	77	< 1.6	300	< 1.6	< 1.6	4.2
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.4	0.6	0.4	0.5	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 25-17135

Client Ref ~ M25-083

Contract Title ~ The Bell Inn, Pinchbeck

Lab No	2544834	2544835	2544836	2544837	2544838	2544839
Sample ID ~	TP01	TP03	CP01	CP02	CP03	CP04
Depth ~	0.70-0.80	0.20-0.30	3.00-3.50	13.50-14.00	10.50-11.00	5.00-5.50
Other ID ~						
Sample Type ~	D	D	D	D	D	D
Sampling Date ~	23/07/2025	23/07/2025	23/07/2025	23/07/2025	23/07/2025	23/07/2025
Sampling Time ~	n/s	n/s	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	8.6	8.6	8.5	8.2	8.4	8.1
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	24	34	45	1800	320	600
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 25-17135

Client Ref ~ M25-083

Contract Title ~ The Bell Inn, Pinchbeck

Lab No	2544834	2544835	2544836	2544837	2544838	2544839
Sample ID ~	TP01	TP03	CP01	CP02	CP03	CP04
Depth ~	0.70-0.80	0.20-0.30	3.00-3.50	13.50-14.00	10.50-11.00	5.00-5.50
Other ID ~						
Sample Type ~	D	D	D	D	D	D
Sampling Date ~	23/07/2025	23/07/2025	23/07/2025	23/07/2025	23/07/2025	23/07/2025
Sampling Time ~	n/s	n/s	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 25-17135

Client Ref ~ M25-083

Contract Title ~ The Bell Inn, Pinchbeck

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2544828	TP01 0.20-0.30	SOIL	NAD	none	Jason Barsby
2544829	TP03 0.20-0.30	SOIL	NAD	none	Jason Barsby
2544830	CP01 0.20-0.50	SOIL	NAD	none	Jason Barsby
2544831	CP02 0.20-0.50	SOIL	NAD	none	Jason Barsby
2544832	CP03 0.30-0.80	SOIL	NAD	none	Jason Barsby
2544833	CP04 0.40-0.70	SOIL	NAD	none	Jason Barsby

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 25-17135
 Client Ref ~ M25-083
 Contract ~ The Bell Inn, Pinchbeck

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2544828	TP01 0.20-0.30 SOIL	23/07/25	GJ 250ml, PT 1L x2		
2544829	TP03 0.20-0.30 SOIL	23/07/25	PT 1L		BTEX / C5-C10, EPH/Aliphatic/Aromatic, Naphthalene, PAH FID
2544830	CP01 0.20-0.50 SOIL	23/07/25	GJ 250ml, PT 1L x2		
2544831	CP02 0.20-0.50 SOIL	23/07/25	GJ 250ml, PT 1L x2		
2544832	CP03 0.30-0.80 SOIL	23/07/25	GJ 250ml, PT 1L x2		
2544833	CP04 0.40-0.70 SOIL	23/07/25	GJ 250ml, PT 1L x2		
2544834	TP01 0.70-0.80 SOIL	23/07/25	PT 1L		
2544835	TP03 0.20-0.30 SOIL	23/07/25	GJ 250ml, PT 1L		
2544836	CP01 3.00-3.50 SOIL	23/07/25	PT 1L		
2544837	CP02 13.50-14.00 SOIL	23/07/25	PT 1L		
2544838	CP03 10.50-11.00 SOIL	23/07/25	PT 1L		
2544839	CP04 5.00-5.50 SOIL	23/07/25	PT 1L		

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

Aliphatic C5-C6

Acronym

HS_1D_AL

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETS 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETS 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETS 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETS 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETS 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETS 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETS 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETS 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETS 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETS 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETS 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETS 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETS 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETS 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETS 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETS 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETS 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETS 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETS 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETS 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETS 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETS 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETS 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETS 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETS 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
--------	-----------	-------	--------------------	--------------------	----------------	------	--------

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

APPENDIX D

Laboratory Report Front Sheet		G2M Testing (Stockton) 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 033318 info@g2mtesting.co.uk	 10258
Site name	Job number		
The Bell Inn, Pinchbeck	M25-083		

Client details:

Reference: M25-083
 Name: Solmek
 Address: 12 Yarm Road,
 Stockton-on-tees,
 TS18 3NA

Telephone: 01642 607083
 Email: acrane@solmek.com

FAO: Archie Crane

Samples received: 25/07/2025

Date commenced: 25/07/2025

Date reported: 13/08/2025

Observations and interpretations are outside of the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 in full, without the prior written approval of the laboratory.

Samples will be held at the laboratory for a period of 4 weeks after the report date. After the above reporting date the samples will be disposed of. Should further testing be required then the office should be informed before the above date.

Signature:	Approved Signatories:
	☐ D.Anderson (Managing Director) ☒ J. Brischuk (Laboratory Manager) ☐

Summary of Classification Tests

G2M Testing (Stockton)

12-16 Yarm Road
Stockton on Tees
TS18 3NA

01642 033318

info@g2mtesting.co.uk



10258

Site name

Job number

The Bell Inn, Pinchbeck

M25-083

[illegible]

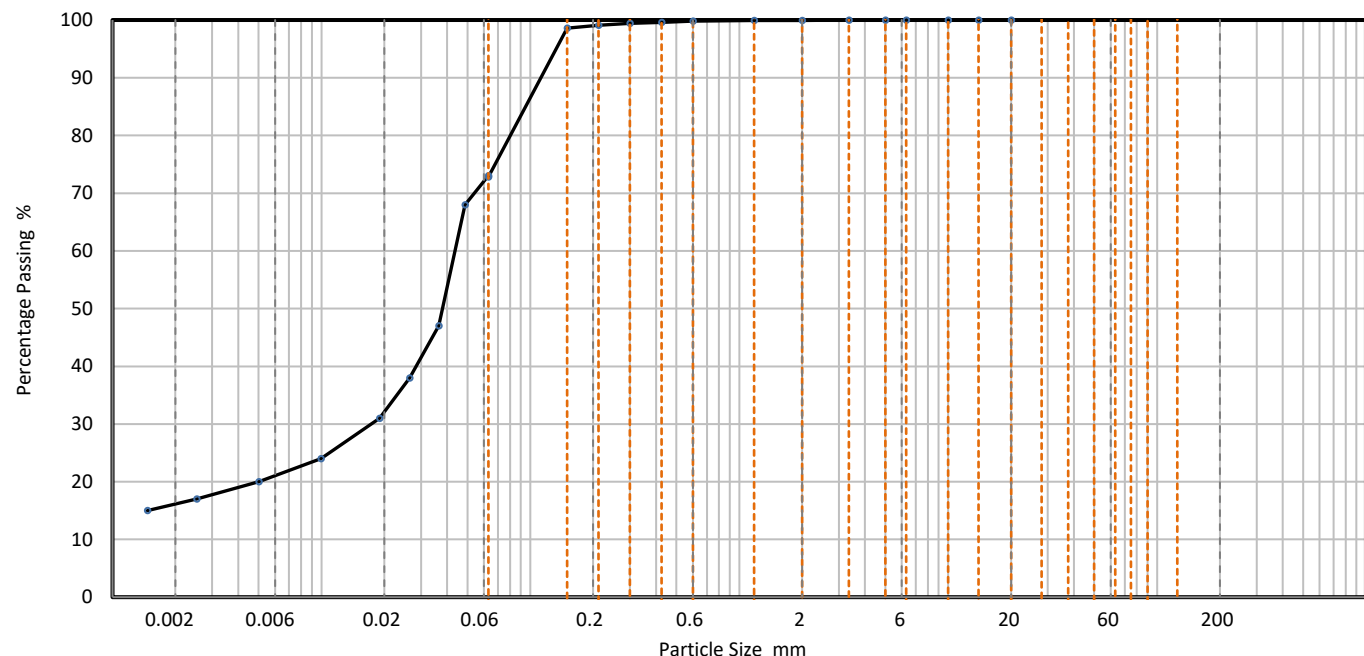
All tests found in G2M Testing UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

Key	Description	Category	BS Test Code
w	Moisture content		BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moisture content passing 425µm sieve		BS 1377:1990 Part 2 Clause 3.2
wL	Liquid limit Single point Four point	-s	BS 1377:1990 Part 2 Clause 4.4
		-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit		BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing 425um sieve		
Pr	Percentage retained 425um sieve		
IP	Plasticity index		BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index		BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating test is "Not UKAS Accredited"	*	

Approved by	JBrischuk
Approval date	11/08/2025 10:53
Date report generated	
Report Number	

PARTICLE SIZE DISTRIBUTION		G2M Testing (Stockton) 12-16 Yarm Road Stockton on Tees TS18 3NA 01642 033318 info@g2mtesting.co.uk	 10258
Site name	Job number		
The Bell Inn, Pinchbeck	M25-083		

Hole	TP03	Lab sample ID	G2MT2025072563
Depth (Top)	m 0.90	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m	Soil Description	Very slightly Gravelly, Clayey, very Sandy, SILT
Sample type	B		



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	73
		0.0487	68
		0.0365	47
		0.0264	38
		0.0189	31
		0.0100	24
		0.0050	20
20	100	0.0025	17
14	100	0.0015	15
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100	Particle density (assumed) 2.65 Mg/m3	
0.425	100		
0.3	99		
0.212	99		
0.15	99		
0.063	73		

Dry Mass of sample, g	972
-----------------------	-----

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	0.1
Sand	27.1
Silt	56.9
Clay	15.9

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with test method unless noted below

Accreditation status
 Hydrometer is the usual Sedimentation method carried out by G2M Testing and is part of the G2M Testing UKAS accreditation schedule.

Approved by	D Anderson
Approval date	12/08/2025 13:42

APPENDIX E

♣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.

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 <i>significant harm</i> , 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 volatilised 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.

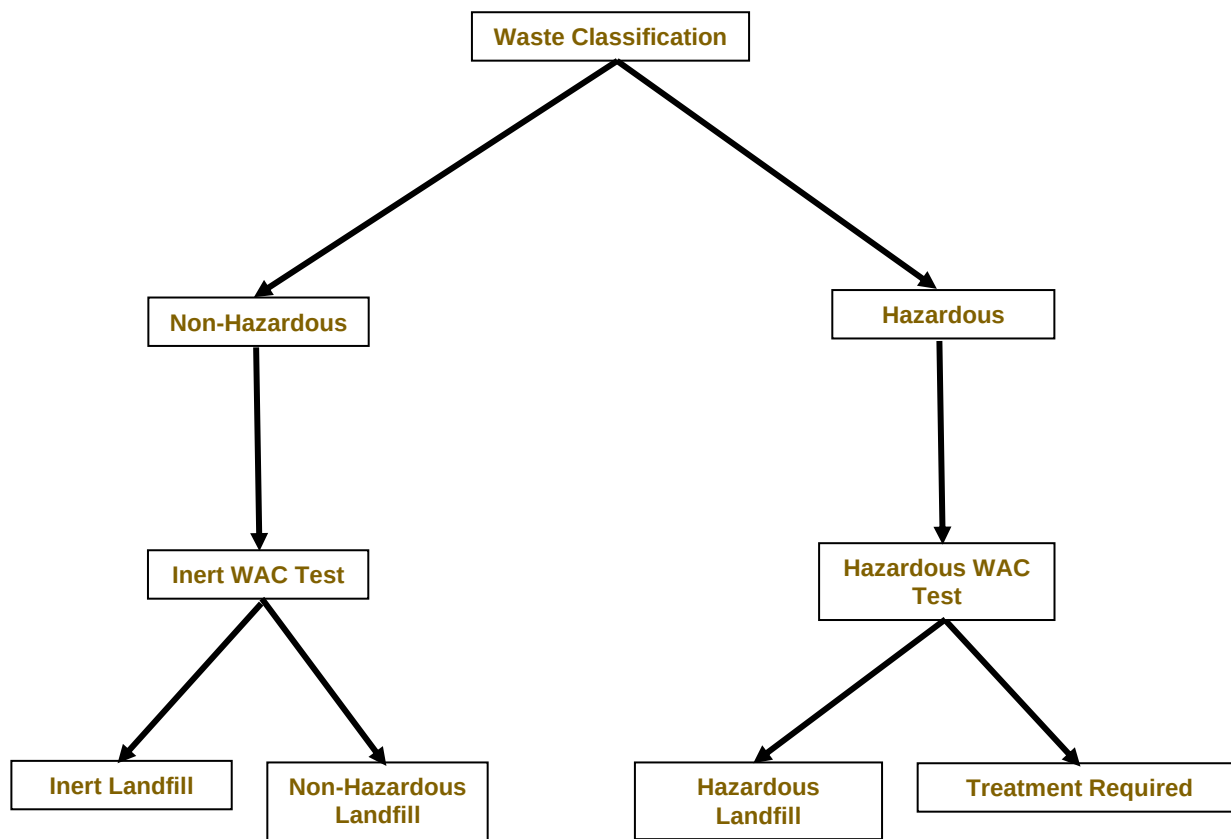
WASTE CLASSIFICATION AND WASTE ACCEPTANCE CRITERIA

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.

Parameter group	Pipe Material (Threshold concentrations in mg/kg)					
	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.