

Phase 2 Ground Investigation

Client: Lidl Great Britain
Ltd

Telegraph Way, Kirkby

Report No: 1373.02.01

April 2025





Executive Summary

Remada Ltd was commissioned by Lidl Great Britain Ltd to conduct a Phase 2 Ground Investigation at Telegraph Way, Kirkby L32 8US. This report follows a Phase 1 Preliminary Risk Assessment (Remada report reference 1373.01.01 dated February 2025).

Summary of Phase 1 Desk Study

The site occupies a broadly triangular plot to the south of A506 Hall Lane and to the east and north-east of Telegraph Way. The majority of the site comprises an asphalt surfaced car park (named Hall Lane Car Park), accessed via Telegraph Way along the western boundary. The remainder of the site is occupied by soft landscaping, particularly in the east and north-western corner. No buildings are indicated to be present at the time of writing, although several lamp posts are indicated to be present associated with Hall Lane Car Park.

The earliest available mapping of 1850 indicates the site to comprise a field which extends off-site towards the east and west, with no structures indicated to be present. Development on-site is recorded between the mapping of 1966 and 1977, when the present-day car park appears to have been constructed in the western and central sectors of the site. Telegraph Way is indicated to within the eastern margins of the site, with associated access roads and footpaths. Between 2006 and 2024, the route of Telegraph Way and associated access roads / footpaths in the eastern area of the site are no longer shown. Their positions have been replaced by the existing grassed landscaping and trio of footpaths radiating out from the on-site car park.

Published geological mapping indicates the eastern and southern areas of the site to be underlain by Made Ground deposits. The superficial deposits underlying the site are indicated to comprise Shirdley Hill Sand, designated as a Secondary (A) Aquifer. The underlying bedrock is indicated to comprised Chester Formation sandstone, designated as a Principal Aquifer. The site is located within an Environment Agency-designated Zone III (Total Catchment) Source Protection Zone.

Proposed development

An indicative site layout is indicated in **Figure 3** with the proposed Lidl store zone being in the east of the site, in the location of existing flat landscape and partly within the existing car park. The proposed layout indicates that the customer car park is not within the existing site boundary and that land between the proposed store footprint and Hall Lane will be a service yard for HGV access to the delivery bay.

Intrusive Investigation

The investigation comprised the drilling of nine (9 No) window sample holes (WS01 – WS09 and four (4 No) CBR tests at locations indicated on **Figure 2** between 12th March and 8th April 2025.

The ground investigation revealed Made Ground to a maximum depth of 1.3m in the south of the proposed store footprint. Dependent upon location both CLAY and SAND were observed directly beneath the Made Ground.

Dependent upon location both CLAY and SAND were observed directly beneath the Made Ground. Within the south-east of the proposed store footprint at WS05A SAND (N=7) was observed overlying CLAY (N = 7) to 1.7m bgl overlying dense SAND (N = 32). At WS4 in the south-west corner of the proposed store footprint SAND was present from 1.3 to 2.0m overlying stiff CLAY (N = 15). However, CLAY was present directly beneath the Made Ground at WS06 just to the west of the proposed footprint. SAND was present at WS02 in west of the proposed footprint to a depth of 2m overlying stiff CLAY (N= 15), whilst firm CLAY was present in the east to 1m bgl overlying loose SAND (N = 6) to 1.6m bgl overlying firm CLAY (N = 14). Further to the west, beneath the service yard, loose SAND (N = 2) was found to overlie soft CLAY (N = 6). At WS01 beneath the proposed warehouse in the north of the footprint loose SAND



(N=8) was underlain PEAT from 1.8 to 2.0m bgl overlying loose SAND (N=4). SPT refusals (N = 50) were recorded at between 2.9 and 4.0m in the proposed store footprint.

Resting groundwater levels were recorded at between 1.22 and 2.03m bgl.

Human Health Assessment

The results of soil chemical analysis were compared to Human Health Generic Assessment Criteria for commercial land use. None of the analytes tested were detected at concentrations that exceeded the human health GAC protective of on-site workers.

Water Resources Assessment

The results of the soil chemical analysis undertaken has identified that concentrations of metals and inorganic contaminants are within the range of typical made ground. Detectable concentrations of TPH and PAHs were encountered in some samples. However, the contaminants identified are of low solubility and mobility and as such are unlikely to present a risk to groundwater beneath the site. In addition, it should be noted that the site will be predominantly covered with the building and areas of hardstanding. Therefore, the risk of leaching of contaminants as a result of infiltration of groundwater is likely to be limited. Therefore, the risk to groundwater from contaminants within the made ground at the site is considered to be low and does not warrant further consideration.

Waste Classification

In general, the results of the chemical analysis indicates that the material would be classified as non hazardous waste. WAC testing is not required for disposal of non hazardous waste to landfill.

The results of chemical analysis on two samples of asphalt found that the concentrations of PAHs were low. Therefore, the bituminous surfacing represented by this sample would be classified as non - hazardous waste and assigned the List of Wastes code 17 03 02 for bituminous mixtures other than those mentioned in 17 03 01.

Geotechnical Assessment – Lidl Store

Due to the presence of PEAT in the north of the proposed store footprint and loose SAND, soft and firm CLAY dependent upon on location there is a potential for unacceptable amount of differential settlement. Consequently, the bearing capacity of the made ground, loose SAND and soft cohesive deposits should be increased by vibro-ground improvement to achieve the required bearing capacity. It is recommended that specialist advice is sought from a ground improvement contractor with regard to the suitability of this technique due presence of PEAT. The bearing capacity required for either a raft, pad foundations and floor slab should be specified by the engineer and proven by in-situ plate bearing tests to prove the performance of the improved ground.

A Design Sulphate Class DS-1 is considered appropriate for buried concrete and an ACEC Class of AC-1 is considered appropriate for the location.

Due to the presence of Made Ground, loose SAND and PEAT temporary excavations are likely to remain stable even in the short term without support or without being battered back to a safe slope gradient. A detailed inspection of the side slopes should be made during excavation and a risk assessment carried out to fully assess the support measures required.

Ground Gas

The results of four rounds of gas monitoring visits placed the site into Characteristic Situation 1 and therefore ground gas protection measures will not be required within the proposed buildings.

The site is located in a Lower Probability Radon Area as less than 1% of properties are above the Action Level but no radon protective measures are necessary.



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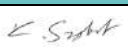
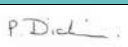
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Issue No	Date	Prepared By	Technical Review	Authorised
01	28.04.2025	K Szybut 	P Dickinson 	G Jones 



1 INTRODUCTION

Remada Ltd was commissioned by Lidl Great Britain Ltd (hereafter 'the Client') to undertake a Phase 2 Ground Investigation at Telegraph Way, Kirkby L32 8US at the location indicated in **Figure 1**.

1.1 Objectives

The objectives of this assessment are as follows:

- to examine whether there have been any potentially contaminative uses on the site or nearby land;
- to develop a conceptual model of the site to identify plausible pollutant linkages;
- to assess ground conditions in relation to the proposed development in relation to construction design issues including the presence, nature, likely severity and extent of soil and groundwater contamination, which may be present, its potential environmental impact and likely requirement for further work; and
- Provide preliminary foundation design recommendations for the proposed development.

1.2 Scope of Work

The scope and layout of this investigation and report is generally in accordance with BS10175:2011+A2 2017 and the Environment Agency's Land Contamination Risk Management guidance for land contamination reports.

The scope of work comprised:

- 5 No window sample boreholes to target depths of 7m including SPTs;
- 4 No window sample boreholes to target depths of 5m including SPTs;
- 3 No combined groundwater and gas monitoring standpipes installed with window sample boreholes;
- 4 No California Bearing Ratio (CBR) tests;
- Suite of geotechnical classification and strength tests;
- 5 No soil sample suites for chemical analysis of CLEA metals, asbestos, speciated hydrocarbons, cyanide and phenols to delineate any potential soil contamination;
- 4 No ground gas and groundwater monitoring visits to satisfy planning requirements; and
- Combined Factual & Interpretative Geoenvironmental Report.

The investigation methodology is presented in **Section 3**, Findings in **Section 4** and the Exploratory Hole Locations are indicated on **Figure 2**.

1.3 Proposed Development

It is understood that the proposed site use for the majority of the site will be a Lidl retail store with a delivery bay area and soft landscaping. This development will comprise a site area of 2239m² fronting onto Kirkby retail park car park as shown in **Figure 3**.

1.4 Previous Reports

The following Phase 1 Desk Study had been previously prepared for the site:

- Phase 1 Site Investigation & Preliminary Risk Assessment. Remada Ltd Report ref: 1373.01.01 issued in February 2025.



1.5 Limitations

The comments given in this report and the opinions expressed are based on the information reviewed and observations during site work. However, there may be conditions pertaining to the site that have not been disclosed by this assessment and therefore could not be taken into account.



2 SUMMARY OF PHASE 1 DESK STUDY

The Executive Summary and Conceptual Site Model presented within the Phase 1 Desk Study are reproduced below:

Site Setting

*The site occupies a broadly triangular plot to the south of A506 Hall Lane and to the east and north-east of Telegraph Way as indicated in **Figure 2**. The majority of the site comprises an asphalt surfaced car park (named Hall Lane Car Park), accessed via Telegraph Way along the western boundary. The remainder of the site is occupied by soft landscaping, particularly in the east and north-western corner. No buildings are indicated to be present at the time of writing, although several lamp posts are indicated to be present associated with Hall Lane Car Park.*

It is understood that the proposed site use for the site will be a Lidl retail store with associated delivery bay and soft landscaping. This development will comprise a site area of 2239 sqm fronting onto Kirkby Retail Park.

Site History

The earliest available mapping of 1850 indicates the site to comprise a field which extends off-site towards the east and west, with no structures indicated to be present. Development on-site is recorded between the mapping of 1966 and 1977, when the present-day car park appears to have been constructed in the western and central sectors of the site. Telegraph Way is indicated to within the eastern margins of the site, with associated access roads and footpaths. Between 2006 and 2024, the route of Telegraph Way and associated access roads / footpaths in the eastern area of the site are no longer shown. Their positions have been replaced by the existing grassed landscaping and trio of footpaths radiating out from the on-site car park.

Geology / Hydrogeology

Published geological mapping indicates the eastern and southern areas of the site to be underlain by Made Ground deposits. The superficial deposits underlying the site are indicated to comprise Shirdley Hill Sand, designated as a Secondary (A) Aquifer. The underlying bedrock is indicated to comprised Chester Formation sandstone, designated as a Principal Aquifer. The site is located within an Environment Agency-designated Zone III (Total Catchment) Source Protection Zone.

Mining

The site is located within an area which 'might not be' affected by coal mining activity and is not located within a Coal Authority designated Coal Mining Reporting Area. Consequently, no further action is considered necessary at this stage relating to coal mining at and beneath the site.

Radon

The site is located in a Lower Probability Radon Area as less than 1% of properties are above the Action Level but no radon protective measures are necessary.

Environmental Risk Assessment

The desk study has identified a number of on-site and off-site potential sources of contamination that would require further investigation. The following is recommended:

- *Investigation of the lateral and vertical extent of made ground/fill beneath the proposed store;*
- *Collection of soil and groundwater samples from the areas identified above for contaminants of concern; and*
- *Ground gas monitoring.*

Geotechnical Assessment

It is recommended that a ground investigation is undertaken to enable preliminary foundation design.



Potential Source Areas	Potential Contaminant of Concern	Pathways	Potential Receptor	Exposure Route (Human unless otherwise stated)	Potential Identified Linkage (unmitigated)	Findings of Ground investigation	Risk (Un-mitigated)	Proposed Remediation (Mitigation) Measures	Residual Risk Estimation
On-site Sources				Direct Soil Ingestion	N/A	N/A	N/A	N/A	N/A
Operational car park		Disturbance due to construction plant causing direct contact, dusts, vapours.		Indoor Dust ingestion	Yes	As above	Potential risk	TBA	TBA
Made Ground associated with former access road				Skin Contact with Soils	Yes	As above	Potential risk	TBA	TBA
Off-site Sources				Skin Contact with Dust	Yes	As above	Potential risk	TBA	TBA
Residential housing	Asbestos / Metals As, Be, Cd, Cu, Cr (VI), Cr (III) Hg, Ni, Se, Va, Zn, Boron, TPH /PAH.	Direct Contact with occupants of the proposed development	Occupants of the development / building fabric	Inhalation of Outdoor Dust	Yes	As above	Potential risk	TBA	TBA
Operational retail park				Inhalation of Outdoor Vapours	Yes	As above	Potential risk	TBA	TBA
Electrical sub stations		Inhalation of fibres / vapours / gases by occupants of proposed development	Adjacent residents during construction	Inhalation of Indoor Vapours	Yes	As above	Potential risk	TBA	TBA
Bus station				Inhalation of ground gas	No	Lower Probability Area	Negligible	None	Negligible
Development of Kirkby town centre				Inhalation of radon gas	Yes	As above	Potential risk	TBA	TBA
		Permeation of water supply pipework	Kirkby Brook	Ingestion via permeated water supply pipework	Yes	As above	Potential risk	TBA	TBA
		Leachate	Secondary A Aquifer & Principal Aquifer	Direct contact with Secondary (A) Aquifer in Superficial Deposits	Yes	As above	Potential risk	TBA	TBA
				In-direct contact with Principal Aquifer in bedrock	Yes	As above	Potential risk	TBA	TBA

Table 1: Outline Conceptual Site Model

Direct contact with subsurface soil and/or groundwater during redevelopment works are not assessed as part of the CSM. It is considered that risks to workers will be managed as part of any the redevelopment works at the site through the application of health and safety procedures, where required.

3 SITE WALKOVER

The opportunity was taken to inspect the site of the proposed Lidl store site on 12th March 2025 by Krysia Szybut of Remada Ltd during the intrusive works, as recorded in the photographs below. There were no visual or olfactory indicators of contamination.



Photo 1: A view of the site towards the south-west with Telegraph Way in the distance.



Photo 2: A view towards the north-east with areas of soft landscaping and the car park associated with Kirkby Retail Park to the right.



Photo 3: The western portion of the site showing the site access with two shallow bunds.



Photo 4: A view westwards, showing the car park, soft landscaping and footpath towards Kirkby Retail Park.



4 ENVIRONMENTAL & GEOTECHNICAL INVESTIGATION METHODOLOGY

4.1 Investigation Strategy

In accordance with Lidl Ground Investigation standard 05.2023, five (5 No). window sample holes were required beneath the proposed store footprint to a depth of 7m or refusal, and four (4 No) beneath the delivery bay, HGV access and car park. Four (4 No) CBR tests were conducted in the proposed car park. Four (4 No) ground gas monitoring visits were scheduled for the site to provide the minimum required by C665.

The investigation comprised the drilling of nine (9 No) window sample holes (WS01 – WS09 and four (4 No) CBR tests at locations indicated on **Figure 2** between 12th March and 8th April 2025.

Exploratory hole locations were selected to enable an investigation of ground conditions beneath the proposed retail store and delivery bay area. The site comprises a car park and it was therefore anticipated that there would be a limited thickness of Made Ground at the site.

All exploratory holes were logged by a suitably qualified Geo-environmental Engineer in general accordance with the recommendations of BS5930:2015+A1:2020. Detailed descriptions, together with relevant comments, are given in the **Exploratory Hole Logs**.

The weather conditions at the site during the fieldwork period were generally warm and dry, with no standing water nor slippery ground conditions being noted.

4.2 Intrusive Investigation

Five of the window samples were advanced to a target depth of 7m and four to a target depth of 5m. However, as bedrock was encountered at relatively shallow depths all window samples holes were drilled to refusal which was between 3.00 and 4.80m bgl. Combined Groundwater and Ground Gas monitoring standpipes were installed in WS01, WS03 and WS04.

4.3 In-Situ Testing

4.3.1 Standard Penetration Tests

Standard Penetration Tests (SPTs) in the window samples were carried out at 1.0m intervals as recorded on the borehole logs to assess the relative density and consistency of soils.

SPTs were conducted in accordance with BS EN ISO 22476-3 and the recorded SPT N-values are summarised on the borehole logs.

The SPT N-values have been corrected based on the Energy Ratio of 88% for the SPT hammer on the window sampling rig. The SPT Hammer Energy Test Report, undertaken in accordance with BS EN ISO 22476-3:2005 is presented in **Appendix A**.

4.3.2 Hand Shear Vane

Hand shear vane tests were undertaken using an Impact SL810 and in general accordance with the manufacturer's instructions on selected samples of cohesive soils.

4.4 Soil Sampling

4.4.1 Environmental

Made Ground and natural soils were selected by visual and olfactory means for subsequent analysis. Samples for chemical laboratory testing purposes were collected in amber glass jars, amber glass vials and plastic tubs and retained in a cool box for transport to the laboratory.



4.4.2 Geotechnical

Geotechnical samples were collected at depths indicated on the window sample logs with samples retrieved from within a sleeve line. The disturbed samples were placed in sealed and correctly labelled plastic tubs or bags as appropriate. All geotechnical samples were dispatched to the laboratory for testing with a completed chain of custody.

4.5 Gas & Groundwater

4.5.1 Installations

Combined ground gas and groundwater monitoring standpipes were installed in selected wells with a 50mm diameter slotted HDPE pipe and packed with gravel surround as recorded on the exploratory hole logs. Wells were completed with 0.5 – 1.0m of plain HDPE pipe and bentonite seal, with a gas bung and tap being installed at the top of the pipe.

4.5.2 Monitoring

Ground gas monitoring was undertaken using a GasData GFM436 gas analyser for the parameters reported below. Groundwater levels were measured with a GeoSense OWP30 oil water interface probe.

Permanent ground gas monitoring involved the measurement of the following in the prescribed order:

- Pressure difference between the monitoring well and the atmosphere.
- Peak and steady flow rates of gas into or out of the monitoring well.
- Peak and steady concentrations of carbon dioxide, methane, oxygen (minimum and steady recorded), carbon monoxide, hydrogen sulphide; and
- Depth to groundwater.

Four ground gas monitoring visits were undertaken as a minimum required for a commercial development in accordance with CIRIA C665. Ground gas concentrations were recorded on 18th and 24th March, and 8th and 16th April 2025 at WS01, WS03 and WS04 and the results are presented in **Table 2**. The corresponding Calibration Certificates for the GFM 436 gas analyser is presented in **Appendix C**.

4.6 Quality Assurance and Quality Control

All samples were submitted to a United Kingdom Accredited Laboratory (UKAS) under a completed chain of custody. The laboratory carried out its own QA/QC programme to ensure that the quality of the analytical data conformed to the appropriate test method protocols.

4.7 Laboratory Analysis & Testing

4.7.1 Chemical Analysis – Soil

Five (5 No) soil samples were scheduled for the analysis of asbestos, arsenic, barium, beryllium, cadmium, chromium (III & VI), copper, mercury, nickel, lead, selenium, zinc, fraction of organic carbon, Total Petroleum Hydrocarbons (TPHCWG), Polyaromatic Hydrocarbons (PAH), BTEX compounds (benzene, toluene, ethylbenzene and xylene) and phenols.

In addition, two (2 No.) samples of bituminous surfacing were analysed for PAH compounds.

The results of laboratory chemical analyses are presented at **Appendix D**.



4.7.2 Geotechnical

Samples recovered from the boreholes were submitted to an accredited laboratory for the following tests in general accordance with BS1377:1990:

- 7 No Natural Moisture Contents
- 7 No Plasticity Indices
- 1 No Particle Size Distribution tests
- 1 No Sedimentation test; and
- 4 No BRE SD1 suites

The results of the geotechnical testing are presented at **Appendix E**.



5 GEOTECHNICAL & ENVIRONMENTAL INVESTIGATION FINDINGS

5.1 Ground Conditions

A brief description of the published geology is provided together with a summary of the ground conditions encountered during the intrusive investigation. Exploratory logs are presented at the end of the report.

5.1.1 Published Geology

The geological mapping indicates that superficial deposits directly beneath the site comprise the Shirdley Hill Sandstone Formation which is described as *'moderately to well-sorted, fine-grained sand with peat layers in the lower part. Sand grains are dominated by rounded to sub-rounded quartz grains. The formation is divisible into an upper "white" sand and a lower "brown" sand that is olive grey and brown'*.

Bedrock geology is indicated to comprise the Chester Formation, a sandstone from the Triassic Period which is described as *'conglomerates and reddish brown, cross-bedded, pebbly sandstones with subordinate beds of red-brown mudstone. The conglomerates have a reddish brown sandy matrix and consist mainly of pebbles of brown or purple quartzite, with quartz conglomerate and vein quartz'*.

The Shirdley Hill Sandstone Formation is classified as a Secondary A Aquifer and the Chester Formation is designated as a Principal Aquifer. The site is located within a Source Protection Zone III.

5.1.2 Made Ground

Made Ground was encountered within all ten (10 No.) exploratory hole locations, ranging in thickness between 0.4m (WS8) and 1.3m (WS4), where proven.

Asphalt surfacing was encountered within the three boreholes located within the car park, ranging in thickness between 0.09m (WS6) and 0.2m (WS2). Elsewhere, the made ground surfacing typically comprised grass overlying dark brown, locally gravelly and clayey sand. The associated gravel typically comprised fragments of concrete, brick, sandstone, quartzite, chalk, igneous rock, slate, coal and asphalt with rare sandstone cobbles.

5.1.3 Superficial Deposits

According to the published geology superficial deposits of Shirdley Hill Sandstone Formation is present beneath the site and all exploratory holes encountered a material that has been interpreted as superficial in origin. The material was generally described as loose to medium dense brown locally slightly gravelly SAND where the gravel comprised angular to subangular sandstone. However, WS01 soft fibrous PEAT was encountered between 1.8 and 2.0m bgl.

Soft or loose ground was encountered in six of exploratory hole locations as summarised below:

- WS01 - Loose SAND between 1.0 and 1.8m bgl;
- WS01 - Soft PEAT between 1.8 and 2.0m bgl;
- WS01 - Loose gravelly SAND between 2.0 and 2.3m bgl;
- WS03 - Loose SAND between 1.0 and 1.6m bgl;
- WS04 - Loose slightly gravelly SAND between 1.3 and 2.0m bgl;
- WS05A - Loose SAND between 1.0 and 1.2m bgl;
- WS08 - Very loose silty SAND from 2.0m, very dense at 3.0m bgl;

- WS09 - Very loose SAND between 0.6 and 1.7m bgl; and
- WS09 - Soft sandy CLAY between 1.7 and 2.0m bgl.

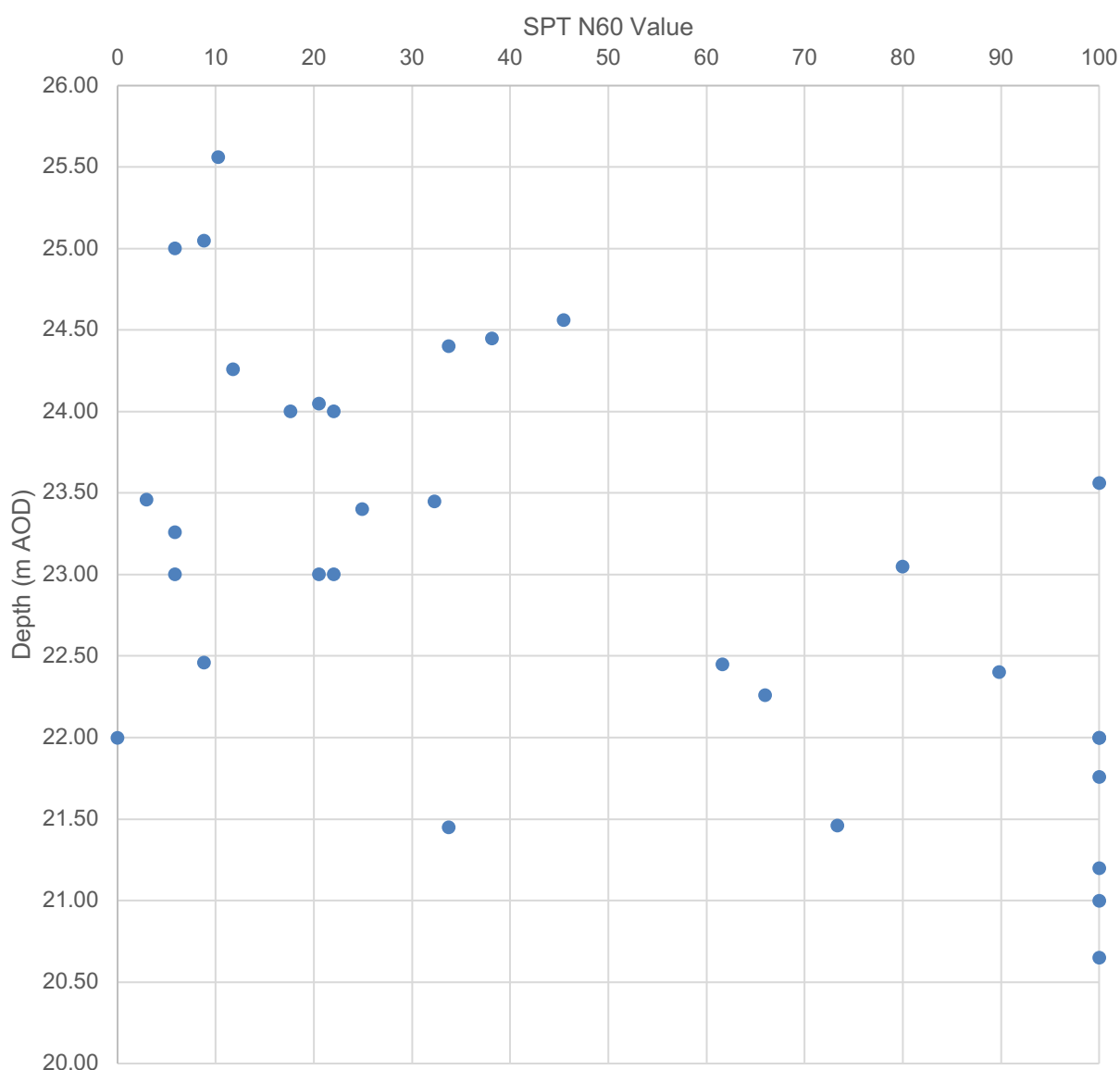
5.1.4 Bedrock

Bedrock was encountered in all of the exploratory holes. In general, near surface the bedrock had become completely weathered to either a red brown dense SAND, or a firm to very stiff red brown locally silty locally sandy CLAY with localised mudstone lithorelicts. Gravel within the bedrock comprised sandstone and mudstone.

5.2 In-situ Testing

5.2.1 Standard Penetration Tests (SPTs)

In-situ SPTs were undertaken to assist with the interpretation of strata encountered. The results of corrected N-values versus depth are plotted in the graph below. Where the N60 value >100, the plotted value has been capped at 100:



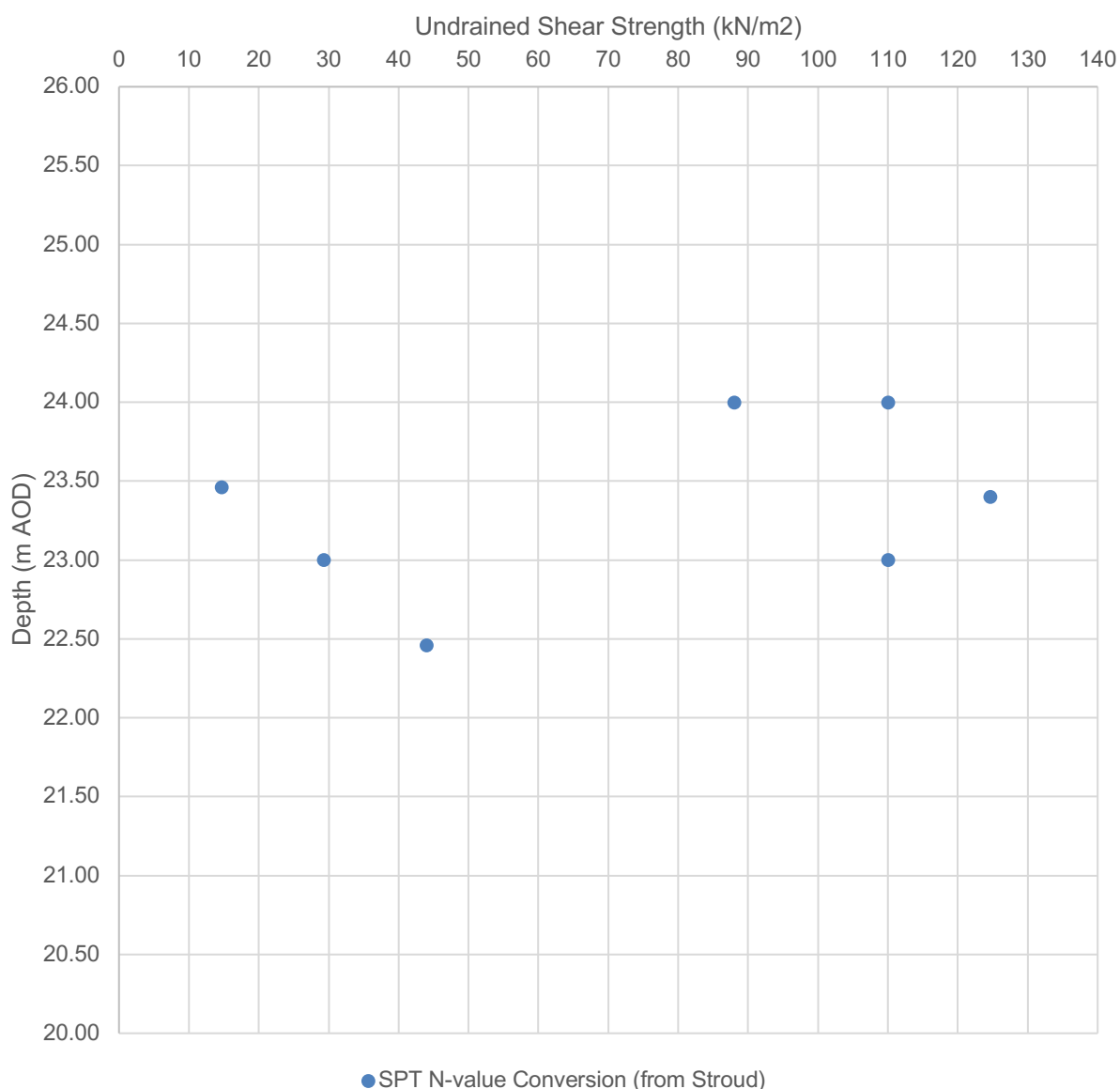
Graph 1: Plot of Corrected SPT N-Values Versus Depth

Undrained shear strengths have been estimated from SPT N values using the relationship developed by Stroud (*The standard penetration test in incentive clays and soft rocks*) and summarised in Tomlinson where:

$$\text{Mass shear strength} = f_1 \times N$$

Where f_1 is based on the plasticity index.

A Plasticity Index of 24% has been assumed (based on geotechnical laboratory testing) which equates to an f_1 factor of 5.0.



Graph 2: Plot of Mass Shear Strength Versus Depth (m AOD)

5.2.2 CBR Tests

The results of the four DCP tests within the proposed car park area produced values of 2.2% and >100% within the upper 500mm. The results are presented in **Appendix B**.



5.3 Soil Observations

Made Ground was recovered at all locations as a heterogeneous granular material containing a variety of man-made materials including brick, concrete, tarmac and tile.

WS05 encountered a hard layer at depth and did not fully penetrate the Made Ground at 0.9m bgl.

There were no visible or olfactory indicators of contamination within the sampled soils.

5.4 Groundwater Observations

Groundwater seepage was noted in WS02 at 3.0m bgl. Groundwater levels were also recorded in the monitoring wells installed in the three window sample holes at depths of between 1.22 and 2.03m bgl.

5.5 Chemical Analysis

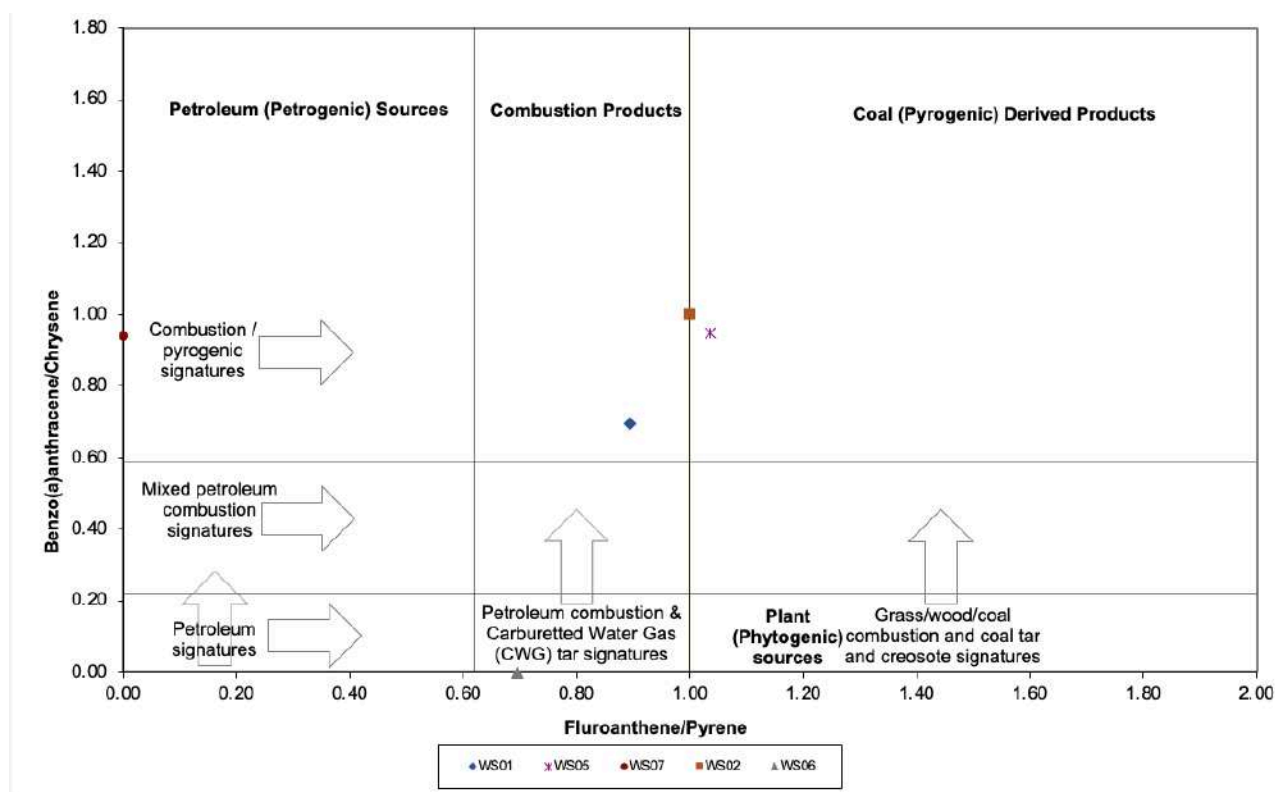
Results of the soil chemical analysis are presented in **Table 3** and summarised as follows.

The average FOC and pH were 0.0181 and 9.77 respectively. Asbestos was not detected in the samples analysed. Detectable concentrations of metals were identified, although these are generally within the range that would typically be expected for Made Ground.

Concentrations of TPH were detected above method detection limit (MDL) in three of the samples analysed (from WS05, WS06 and WS07). The hydrocarbons were generally heavy end hydrocarbons within the range C16 to C35 carbon range. However, hydrocarbons in the C10 to C16 carbon range were also encountered. Samples were taken from Made Ground and there was no visual or olfactory evidence of contamination.

Concentrations of PAHs were generally low (<10 mg/kg) except for a sample of Made Ground from WS05 which had total concentration 81.3 mg/kg.

In addition, the PAH concentrations have been plotted on a double ratio plot to provide an indication of the likely source of the PAHs. All of the samples that had detections of the four PAHs used have been plotted and all are indicated to be combustion related PAHs which could be associated with urban background sources.



Graph 3: PAH Double Ratio Plot

Two samples of car park surfacing material (asphalt) were scheduled for the analysis of PAH 17 and the results indicate that coal tar is unlikely to be present.

5.6 Geotechnical Testing

Results of the geotechnical testing are summarised below.

5.6.1 Plasticity Testing

Plasticity testing was undertaken on seven (7 No.) samples of cohesive soils recovered from the window sample boreholes, with the results ranging between 19 and 37%. These indicate the soils to be of both low plasticity (CL) and intermediate (CI) plasticity, and low to medium volume change potential. The samples from WS01 at 1.2m and WS08 at 1.5m recorded the material to be Non-Plastic (NP).

Location	Depth (m)	Plasticity Index (%)	Passing .425mm (%)	Modified Plasticity Index	Plasticity	Volume Change Potential
WS02	1.1	37	100	37.0	Intermediate Plasticity	Medium
WS03	1.9	20	97	19.4	Low Plasticity	Low
WS04	3.8	20	100	20.0	Intermediate Plasticity	Medium
WS5A	1.6	19	70	13.3	Low Plasticity	Low
WS09	1.9	23	100	23.0	Intermediate Plasticity	Medium

Table 4: Plasticity Indices and Volume Change Potentials of the Cohesive Strata

5.6.2 Particle Size Distribution (PSD) Analysis

The PSD tests revealed the following:



- Natural deposits in WS06 at 1.0 – 2.0m comprised brown gravelly, silty, clayey fine to coarse SAND.

5.6.3 BRE SD1 Analysis

The water-soluble sulphate contents varied from 10.6 to 91.1 mg/l in the four soil samples analysed with pH varying from 8.0 to 8.7. The total sulphur content varied from <0.005 to 0.044% and acid soluble sulphate varied from 0.009 to 0.029%.

5.7 Ground Gas Monitoring Results

The results of the ground gas and groundwater monitoring programme are summarised below:

- Methane concentrations in all monitoring wells was recorded at less than the instrument detection limit;
- A maximum steady state concentration of Carbon Dioxide was recorded as 1.7% v/v in WS01 on 16th April 2025. Detectable concentrations of carbon dioxide were recorded in all the monitoring wells;
- A minimum steady stated concentration of Oxygen was recorded 14.1 % v/v in WS01 on 18th March 2025;
- Ground gas flow rates were recorded at 0.0 litres per hour (l/hr) in all monitoring wells;
- Groundwater was encountered within all of the standpipes for at least one visit of the monitoring programme between depths of 1.22m and 2.03m bgl; and,
- Atmospheric pressure at the time of sampling varied between a high of 1026 millibar (mbar) on 8th April 2025 and a low of 990 mbar on 16th April 2025. The monitoring visits were undertaken during periods of rising, steady and falling pressure trends over the preceding forty-eight hours.



6 GENERIC QUANTITATIVE RISK ASSESSMENT

6.1 Human Health Risk Assessment

In order to provide an up to date assessment of the risks to human health, Remada has adopted the most recent Generic Assessment Criteria (GAC) published by LQM/CIEH (S4ULs) and CL:AIRE/EIC/AGS for the assessment of potential risks to human health. The derivation of GAC, methodology, input parameters and technical guidance (CLEA) may be obtained upon request.

The proposed site layout retail store and delivery area is presented in **Figure 3**.

Default parameters have been adopted for sandy loam of pH 7 and commercial land use. FOC ranged from 0.0056 to 0.033 giving a Soil Organic Matter (SOM) content range of between 0.01 to 0.057% with an average result of 0.03%. In order to present a conservative assessment, the SOM content of 1% has been adopted for the assessment.

The depth to potential sources of contamination for indoor air pathways has been assumed to be 0.5m below building foundation level. The source has been conservatively assumed to be at ground level for outdoor air and direct contact pathways.

For commercial land use the CLEA version 1.06 critical receptor is conservatively modelled as a female working adult with an exposure duration of 49 years. In accordance with the default parameters, it was assumed that employees spend most of their time indoors and that 80% of outdoor area is covered by hardstanding. As such, the potential exposure pathways have been assumed to be:

- Direct Soil and Indoor Dust Ingestion;
- Skin contact with soils and dusts;
- Inhalation of indoor and outdoor dusts and vapours.

Where GAC values for individual TPH fractions are not exceeded, the potential additive effect has been assessed by calculating overall TPH hazard index for each sample.

6.2 Comparison of Soil Analysis Results with Human Health GAC

A comparison of soil chemical analysis with GAC is presented as **Table 3**.

TPH, PAH & BTEX

None of the analytes tested were detected at concentrations that exceeded the human health GAC protective of on-site workers.

Metals & Inorganics Excluding Asbestos

None of the analytes tested were detected at concentrations that exceeded the human health GAC protective of on-site workers.

Asbestos

There was no asbestos detected in the samples selected for analysis.

6.3 Controlled Waters Risk Assessment

6.3.1 Sensitivity – Groundwater

The Shirdley Hill Sandstone Formation is classified as a Secondary A aquifer and the Chester Formation is designated as a Principal Aquifer. The site is located within a Source Protection Zone III.



6.3.2 Sensitivity – Surface Waters

The nearest surface water feature lies at greater than 250m from the site.

6.3.4 Risk Assessment

The results of the soil chemical analysis undertaken has identified that concentrations of metals and inorganic contaminants are within the range that would be expected for 'typical' made ground. Detectable concentrations of TPH and PAHs were encountered in some samples. However, the contaminants identified are of low solubility and mobility and as such are unlikely to present a risk to groundwater beneath the site.

Post-development, the site will continue to be predominantly covered by a retail building and areas of hardstanding. Consequently, the risk of leaching of contaminants as a result of infiltration of groundwater is limited. Therefore, the risk to controlled waters from contaminants within the made ground at the site is considered to be low and does not warrant further consideration at this stage.

6.4 Ground Gas Assessment

In order to understand the gassing regime at the site, a Characteristic Situation (as defined in CIRIA C665 and BS8576:2013) is determined for the site. CIRIA C665 and BS8576 provides definitions for each Characteristic Situation based on Gas Screening Values (GSV) which are calculated as follows:

- $GSV = \text{Gas Concentration (\% v/v)} \times \text{Measured Borehole Flow Rate (l/hr)}$

BS8576 makes a distinction between the GSV and the Hazardous Gas Flow Rate (Q_{hg}) which is also calculated using the above calculation. BS8576 states that Q_{hg} is calculated for each individual borehole for each monitoring visit, whereas the GSV is taken as the representative value for the site or site zone.

As a worst case assessment, the GSV for the site is therefore taken as the maximum steady-state carbon dioxide/methane concentration recorded in the boreholes which is multiplied by the maximum flow rate recorded during the same monitoring event.

- Methane GSV = $0.1\% \times 0.1 \text{ l/hr} = 0.0001 \text{ l/hr}$ (methane concentration taken as equal to the instrument detection limit of 0.1%).
- Carbon Dioxide GSV = $1.7\% \times 0.1 \text{ l/hr} = 0.017 \text{ l/hr}$

The calculated GSV of less than 0.07 l/hr for methane and carbon dioxide places the site into Characteristic Situation 1. BS 8485:2015+A1:2019 states that for Characteristic Situation 1 the methane concentration would typically be less than 1% and carbon dioxide less than 5% and that if concentrations are above these limits then consideration should be given to placing the site into Characteristic Situation 2. As the concentrations of methane and carbon dioxide were both within these typical limits it is considered that the Characteristic Situation 1 classification is appropriate for the site. Therefore, gas protection measures are not deemed necessary for the proposed development.

6.5 Revised Conceptual Site Model

A revised Conceptual Site Model is presented as **Table 5** below.



6.6 Waste Classification & Waste Acceptance

Waste classification has been undertaken following guidance set out in WM3 EA Technical Guidance 'Guidance on the classification and assessment of waste', 1st Edition, Version 1.2GB, October 2021. The results of this assessment determine the appropriate List of Waste (LoW) Code and whether the waste should be classified as hazardous or non-hazardous. Classification is undertaken using the results of solid (total) analyses and not on the results of the WAC analyses.

Once the waste has been classified as either hazardous or non-hazardous then the WAC testing determines if the waste meets the requirements for disposal in the required landfill. Therefore, if the waste is classified as hazardous waste, then the waste would also need to meet the hazardous waste WAC requirements to be disposed of in a hazardous waste landfill. However, if the final destination of the waste is not to landfill then WAC analysis is not required.

The WAC testing also allows for a distinction to be made between inert and non-hazardous waste. Waste that does not fall within the hazardous waste category and meets the requirements for disposal in an inert landfill can therefore be disposed of in an inert landfill. However, waste that does not meet the requirements for inert landfill will need to be disposed of in a non-hazardous landfill. In certain circumstances hazardous waste can be disposed of in a designated cell within a non-hazardous landfill. In this case the waste would need to meet more stringent leachate requirements for stable non-reactive hazardous waste.

6.6.1 Waste Classification

The results of the assessment found that contaminant concentrations within the made ground were generally low and would classify it as non-hazardous with LoW Code 17 05 04 (soils and stones other than those mentioned in 17 05 03).

The results of chemical analysis on two samples of asphalt found that the concentrations of PAHs were low. Therefore, the bituminous surfacing represented by these samples would be classified as non-hazardous waste and assigned the List of Wastes code 17 03 02 for bituminous mixtures other than those mentioned in 17 03 01.

6.6.2 Waste Acceptance

Waste Acceptance Criteria (WAC) analysis was undertaken on three samples of Made Ground. The assessment of both samples found that two samples met the requirements for landfill disposal as non-hazardous and one as sample met the requirements for landfill disposal as Inert.

6.7 Health & Safety Considerations

To ensure direct exposure of construction workers involved in the site redevelopment to any impacted contaminated shallow soils is minimised, the guidance stated in HSG 66 "Protection of Workers and the General Public During Redevelopment of Contaminated Land" should be followed.



Potential Source Areas	Potential Contaminant of Concern	Pathways	Potential Receptor	Exposure Route (Human unless otherwise stated)	Potential Identified Linkage (unmitigated)	Findings of Ground investigation	Risk (Un-mitigated)	Proposed Remediation (Mitigation) Measures	Residual Risk Estimation
On-site Sources									
Operational car park		Disturbance due to construction plant causing direct contact, dusts, vapours.		Direct Soil Ingestion	No	N/A.	N/A	Hardstanding to cover retail site minimising direct contact.	N/A
Made Ground associated with former access road				Indoor Dust ingestion	Yes	No exceedance of GAC.	Very Low	As above.	N/A
				Skin Contact with Soils	Yes	<GAC	Very Low	As above	N/A
				Skin Contact with Dust	Yes	<GAC	Very Low	As above	N/A
Off-site Sources				Inhalation of Outdoor Dust	Yes	<GAC	Very Low	As above	N/A
Residential housing		Direct Contact with occupants of the proposed development	Occupants of the development / building fabric	Inhalation of Outdoor Vapours	Yes	<GAC	Very Low	As above	N/A
Operational retail park		Inhalation of fibres / vapours / gases by occupants of proposed development	Adjacent residents during construction	Inhalation of Indoor Vapours	Yes	<GAC	Very Low	As above	N/A
Electrical sub stations				Inhalation of ground gas	Yes	CS1	Negligible	None	N/A
Bus station				Inhalation of radon gas	No	Lower Probability Radon Area	Negligible	N/A	N/A
Development of Kirkby town centre				Ingestion via permeated water supply pipework	Yes	Concentrations within typical range of made ground (< GAC)	Negligible	N/A	N/A
				Direct contact with Secondary (A) Aquifer in Superficial Deposits	Yes	<GAC	Negligible	Site to be predominately hardstanding	N/A
		Leachate	Secondary A Aquifer & Principal Aquifer	In-direct contact with Principal Aquifer in bedrock	Yes	<GAC	Negligible	As above	N/A

Table 5: Refined Conceptual Site Model

Direct contact with subsurface soil and/or groundwater during redevelopment works are not assessed as part of the CSM. It is considered that risks to workers will be managed as part of any the redevelopment works at the site through the application of health and safety procedures, where required.



7 GEOTECHNICAL SITE ASSESSMENT

7.1 Geotechnical Considerations

An indicative site layout is indicated in **Figure 3** with the proposed Lidl store zone being in the east of the site, in the location of existing flat landscape and partly within the existing car park park. It is envisaged that proposed finished floor levels and car park levels will be similar to the finished road level of the existing car park. The proposed layout indicates that the customer car park is not within the existing site boundary and that land between the proposed store footprint and Hall Lane will be a service yard for HGV access to the delivery bay.

Historical maps record that the site was developed as a car park and the ground investigation revealed Made Ground to a maximum depth of 1.3m in the south of the proposed store footprint. Dependent upon location both CLAY and SAND were observed directly beneath the Made Ground. Within the south-east of the proposed store footprint at WS05A SAND (N=7) was observed overlying CLAY (N = 7) to 1.7m bgl overlying dense SAND (N = 32). At WS4 in the south-west corner of the proposed store footprint SAND was present from 1.3 to 2.0m overlying stiff CLAY (N = 15). However, CLAY was present directly beneath the Made Ground at WS06 just to the west of the proposed footprint. SAND was present at WS02 in west of the proposed footprint to a depth of 2m overlying stiff CLAY (N= 15), whilst firm CLAY was present in the east to 1m bgl overlying loose SAND (N = 6) to 1.6m bgl overlying firm CLAY (N = 14). Further to the west, beneath the service yard, loose SAND (N = 2) was found to overlie soft CLAY (N = 6). At WS01 beneath the proposed warehouse in the north of the footprint loose SAND (N=8) was underlain PEAT from 1.8 to 2.0m bgl overlying loose SAND (N=4). SPT refusals (N = 50) were recorded at between 2.9 and 4.0m in the proposed store footprint.

Resting groundwater levels were recorded at between 1.22 and 2.03m bgl.

Details of the proposed permanent and variable design loads (actions) are not currently known although an indicative column load of 400kN has been provided.

7.2 Design Approach

Due to the presence of PEAT in the north of the proposed store footprint and loose SAND, soft and firm CLAY dependent upon on location there is a potential for unacceptable amount of differential settlement. Consequently, the bearing capacity of the made ground, loose SAND and soft cohesive deposits should be increased by vibro-ground improvement to achieve the required bearing capacity. It is recommended that specialist advice is sought from a ground improvement contractor with regard to the suitability of this technique due presence of PEAT. The bearing capacity required for either a raft, pad foundations and floor slab should be specified by the engineer and proven by in-situ plate bearing tests to prove the performance of the improved ground.

7.3 Shrinkage and Swelling

All samples of CLAY were reported as being LOW and INTERMEDIATE plasticity with between 70% and 100% passing a 0.425mm sieve. The modified plasticity index equates at Low to Medium Volume Change Potential.

The minimum foundation depths outside the zone of tree influence as specified by the NHBC have been reproduced in **Table 6** below, however:

Volume Change Potential	A) Minimum foundation depth (m) (allowing for restricted new planting)	B) Minimum foundation depth (m) (where planting is outside the zone of influence of trees)
High	1.50	1.0
Medium	1.25	0.9
Low	0.9	0.75

Table 6: NHBC 2023 Table 4 Minimum Foundation Depths

7.4 Floor Slab

If vibro ground improvement is adopted, the required bearing capacity should be specified for either a ground bearing floor slab or raft.

7.5 Imported Fill

All imported fill material should comply with an earthworks specification to be prepared by the Engineer and not contain concentrations of contaminants at greater than the Generic Assessment Criteria (GAC) presented in **Table 3**.

7.6 Excavations and Temporary Works

Due to the presence of Made Ground, loose SAND and PEAT temporary excavations are likely to remain stable even in the short term without support or without being battered back to a safe slope gradient. A detailed inspection of the side slopes should be made during excavation and a risk assessment carried out to fully assess the support measures required.

7.7 HGV Delivery Area

CBR values estimated from the DCP tests indicated that, near surface the CBR values were variable being in existing landscape and/or Made Ground. CBR 4 at the location of WSO6 recorded at values on not less than 20% in the SAND that underlies the Made Ground.

Poorly compacted made ground backfill resulting from the demolition works should be excavated, processed as necessary to produce a 6F2 material and replaced in compacted layers in accordance with an engineering specification.

7.8 Protection of Buried Concrete

In accordance with BRE SD1 for buried concrete in a brownfield site with mobile groundwater, analyse of selected samples for water soluble sulphate returned values of up to 0.91 g/l and pH >8.0. A total potential sulphate value of 0.13% was also calculated from the total sulphur results. Therefore, a Design Sulphate Class DS-1 is considered appropriate for buried concrete and an ACEC Class of AC-1 is considered appropriate for the location.

7.9 General Construction Advice

All formations should be cleaned, and subsequently inspected, by a suitably qualified engineer prior to placing concrete. Should any soft, compressible or otherwise unsuitable materials be encountered they should be removed and replaced by blinding concrete.

Foundation concrete, or alternatively, a blinding layer of concrete, should be placed immediately after excavation and inspection in order to protect the formation against softening and disturbance.

Generally, all formations should be placed wholly within the same material type, unless specific



geotechnical inspection and assessment have been undertaken.

Where applicable ground beneath the proposed building footprint and potentially car parking may require to be stripped to reveal localised areas of made ground and structures. Excavations should be backfilled with suitably re-compacted materials to achieve formation level.

During foundation excavation works arisings should be constantly monitored for the presence of contamination.



8 CONCLUSIONS & RECOMMENDATIONS

8.1 Conclusions

The following conclusions have been made based on the findings of this investigation.

8.1.1 Phase 2 Site Investigation

Historical maps record that the site was first developed as a car park. Geological mapping that superficial deposits directly beneath the site comprise the Shirdley Hill Sandstone Formation described as '*moderately to well-sorted, fine-grained sand with peat layers in the lower part*'. Bedrock geology is indicated to be sandstone of the Chester Formation.

The Shirdley Hill Sandstone Formation is classified as a Secondary A aquifer and the Chester Formation is designated, as a Principal Aquifer. The site is located within a Source Protection Zone III.

The ground investigation revealed Made Ground to a maximum depth of 1.3m in the south of the proposed store footprint. Dependent upon location both CLAY and SAND were observed directly beneath the Made Ground.

Dependent upon location both CLAY and SAND were observed directly beneath the Made Ground. Within the south-east of the proposed store footprint at WS05A SAND (N=7) was observed overlying CLAY (N = 7) to 1.7m bgl overlying dense SAND (N = 32). At WS4 in the south-west corner of the proposed store footprint SAND was present from 1.3 to 2.0m overlying stiff CLAY (N = 15). However, CLAY was present directly beneath the Made Ground at WS06 just to the west of the proposed footprint. SAND was present at WS02 in west of the proposed footprint to a depth of 2m overlying stiff CLAY (N= 15), whilst firm CLAY was present in the east to 1m bgl overlying loose SAND (N = 6) to 1.6m bgl overlying firm CLAY (N = 14). Further to the west, beneath the service yard, loose SAND (N = 2) was found to overlie soft CLAY (N = 6). At WS01 beneath the proposed warehouse in the north of the footprint loose SAND (N=8) was underlain PEAT from 1.8 to 2.0m bgl overlying loose SAND (N=4). SPT refusals (N = 50) were recorded at between 2.9 and 4.0m in the proposed store footprint.

Resting groundwater levels were recorded at between 1.22 and 2.03m bgl.

8.1.2 Human Health Risk Assessment

The results of soil chemical analysis were compared to Human Health Generic Assessment Criteria for commercial land use. None of the analytes tested were detected at concentrations that exceeded the human health GAC protective of on-site workers.

8.1.3 Water Resources Risk Assessment

The results of the soil chemical analysis undertaken has identified that concentrations of metals and inorganic contaminants are within the range of typical made ground. Detectable concentrations of TPH and PAHs were encountered in some samples. However, the contaminants identified are of low solubility and mobility and as such are unlikely to present a risk to groundwater beneath the site. In addition, it should be noted that the site will be predominantly covered with the building and areas of hardstanding. Therefore, the risk of leaching of contaminants as a result of infiltration of groundwater is likely to be limited. Therefore, the risk to groundwater from contaminants within the made ground at the site is considered to be low and does not warrant further consideration.



8.1.4 Waste Classification

In general, the results of the chemical analysis indicate that the material would be classified as non-hazardous waste. WAC testing is not required for disposal of non-hazardous waste to landfill. The results of chemical analysis on two samples of asphalt found that the concentrations of PAHs were low. Therefore, the bituminous surfacing represented by this sample would be classified as non-hazardous waste and assigned the List of Wastes code 17 03 02 for bituminous mixtures other than those mentioned in 17 03 01.

8.2 Recommendations

Due to the presence of PEAT in the north of the proposed store footprint and loose SAND, soft and firm CLAY dependent upon on location there is a potential for unacceptable amount of differential settlement. Consequently, the bearing capacity of the made ground, loose SAND and soft cohesive deposits should be increased by vibro-ground improvement to achieve the required bearing capacity. It is recommended that specialist advice is sought from a ground improvement contractor with regard to the suitability of this technique due presence of PEAT. The bearing capacity required for either a raft, pad foundations and floor slab should be specified by the engineer and proven by in-situ plate bearing tests to prove the performance of the improved ground.

A Design Sulphate Class DS-1 is considered appropriate for buried concrete and an ACEC Class of AC-1 is considered appropriate for the location.

Due to the presence of Made Ground, loose SAND and PEAT temporary excavations are likely to remain stable even in the short term without support or without being battered back to a safe slope gradient. A detailed inspection of the side slopes should be made during excavation and a risk assessment carried out to fully assess the support measures required.

8.3 Ground Gas

The results of four rounds of gas monitoring visits placed the site into Characteristic Situation 1 and therefore ground gas protection measures will not be required within the proposed buildings.

The site is located in a Lower Probability Radon Area as less than 1% of properties are above the Action Level but no radon protective measures are necessary.



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STUDY LIMITATIONS

IMPORTANT. This section should be read before reliance is placed on any of the information, opinions, advice, recommendations or conclusions contained in this report.

1. This report has been prepared by Remada, Ltd with all reasonable skill, care and diligence within the terms of the Appointment and with the resources and manpower agreed with (the 'Client'). Remada does not accept responsibility for any matters outside the agreed scope.

2. This report has been prepared for the sole benefit of the Client unless agreed otherwise in writing.

3. Unless stated otherwise, no consultations with authorities or funders or other interested third parties have been carried out. Remada is unable to give categorical assurance that the findings will be accepted by these third parties as such bodies may have published, more stringent objectives. Further work may be required by these parties.

4. All work carried out in preparing this report has used, and is based on, Remada's professional knowledge and understanding of current relevant legislation. Changes in legislation or regulatory guidance may cause the opinion or advice contained in this report to become inappropriate or incorrect. In giving opinions and advice pending changes in legislation, of which Remada is aware, have been considered. Following delivery of the report Remada has no obligation to advise the Client or any other party of such changes or their repercussions.

5. This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report.

6. Whilst this report and the opinions made are to the best of Remada's belief, Remada cannot guarantee the accuracy or completeness of any information provided by third parties.

7. This report has been prepared based on the information reasonably available during the project programme. All information relevant to the scope may not have received.

8. This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of changes in the condition of the site since the time of the investigation.

9. The content of this report represents the professional opinion of experienced environmental consultants. Remada does not provide specialist legal or other professional advice. The advice of other professionals may be required.

10. Where intrusive investigation techniques have been employed they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. In some cases the investigation is further limited by site operations, underground obstructions and above ground structures. Unless otherwise stated, areas beyond the boundary of the site have not been investigated.

11. If below ground intrusive investigations have been conducted as part of the scope, service tracing for safe location of exploratory holes has been carried out. The location of underground services shown on any drawing in this report has been determined by visual observations and electromagnetic techniques. No guarantee can be given that all services have been identified. Additional services, structures or other below ground obstructions, not indicated on the drawing, may be present on site.

12. Unless otherwise stated the report provides no comment on the nature of building materials, operational integrity of the facility or on any regulatory compliance issues.

13. Unless otherwise stated, samples from the site (soil, groundwater, building fabric or other samples) have NOT been analysed or assessed for waste classification purposes.



TABLES

(not presented within text).

Table 2: Gas Groundwater Monitoring Data

GAS & GROUNDWATER MONITORING DATA																									
SITE		Kirkby																							
PROJECT No.		1373.02																	Atmospheric & Ground Conditions						
Visit 1 of 4				Atmospheric Pressure Variations During Visit															Ground Surface Conditions						
Carried Out by:		PGS		1014-1016m8															Dry						
Date:		18.03.25																							
Instrument Details		GFM436 14048		Atmospheric Pressure Trend Over Previous 48hrs															Weather Conditions						
				Falling															Warm and sunny						
Well No.	Cover Height (m AOD)	Well Diameter (mm)	CH ₄ (% v/v)		CH ₄ Steady LEL (%)	CO ₂ (% v/v)		O ₂ (% v/v)		H ₂ S		CO (ppm)		Duration (secs) ^a	Flow Rate (l/hr)	Relative Pressure (mb)	PID (ppm)	Atmospheric Pressure (mb)	Water Level (m bgl)	Water Level (m Aod)	Depth of Pipe (m bgl)	Comments			
			Peak	Steady		Peak	Steady	Minimum	Steady	Minimum	Steady	Minimum	Steady				Peak	Steady							
WS01		50	0.0	0.0	0.0	1.5	1.5	14.1	14.1	0.0	0.0	0.0	0.0	180	0.0	0.00	NR	NR	1016	1.620	-1.620	2.620			
WS03		50	0.0	0.0	0.0	0.1	0.1	17.2	17.2	0.0	0.0	0.0	0.0	180	0.0	0.00	NR	NR	1014	2.030	-2.030	2.800			
WS04		50	0.0	0.0	0.0	0.1	0.1	19.4	19.5	0.0	0.0	0.0	0.0	180	0.0	0.0	NR	NR	1014	1.500	-1.500	3.800			

NR = Not Recorded

^a For measurement of gas concentrations

> = Above LEL

WST = Water Sample Taken

GL = Ground Level

GAS & GROUNDWATER MONITORING DATA																								
SITE		Kirkby																						
PROJECT No.		1373.02																						
Visit 2 of 4																								
Carried Out by:		Peter Searing		Atmospheric Pressure Variations During Visit															Ground Surface Conditions					
Date:		24.03.25		1016mB															Dry					
Instrument Details		GFM436 12928		Atmospheric Pressure Trend Over Previous 48hrs															Weather Conditions					
				Rising															Warm and sunny					
Well No.	Cover Height (m AOD)	Well Diameter (mm)	CH ₄ (% v/v)		CH ₄ Steady LEL (%)	CO ₂ (% v/v)		O ₂ (% v/v)		H ₂ S (ppm)		CO (ppm)		Duration (secs) ^a	Flow Rate (l/hr)	Relative Pressure (mb)	PID (ppm)		Atmospheric Pressure (mb)	Water Level (m bgl)	Water Level (m Aod)	Depth of Pipe (m bgl)	Comments	
			Peak	Steady		Peak	Steady	Minimum	Steady	Minimum	Steady	Minimum	Steady				Peak	Steady						
WS01		50	0.0	0.0	0.0	0.8	0.8	17.6	17.6	0.0	0.0	0.0	0.0	180	0.0	0.00	NR	NR	1016	1.650	-1.650	2.620		
WS03		50	0.0	0.0	0.0	0.1	0.1	18.7	18.7	0.0	0.0	0.0	0.0	180	0.0	0.00	NR	NR	1016	2.020	-2.020	2.850		
WS04		50	0.0	0.0	0.0	0.1	0.1	20.1	20.1	0.0	0.0	0.0	0.0	180	0.0	0.00	NR	NR	1016	1.540	-1.540	3.820		

Notes:

NR = Not Recorded

^a For measurement of gas concentrations

> = Above LEL

WST = Water Sample Taken

GL = Ground Level

GAS & GROUNDWATER MONITORING DATA																							
SITE		Kirkby																					
PROJECT No.		1373.02																					
Visit 3 of 4		Atmospheric Pressure Variations During Visit															Ground Surface Conditions						
Carried Out by:		Lewis Hillman															Dry						
Date:		08.04.2025																					
Instrument Details		GFM36 14048															Weather Conditions						
		Rising															Clear						
Well No.	Cover Height (m AOD)	Well Diameter (mm)	CH ₄ (% v/v)		CH ₄ Steady LEL (%)	CO ₂ (% v/v)		O ₂ (% v/v)		H ₂ S (ppm)		CO (ppm)		Duration (secs) ^a	Flow Rate (l/hr)	Relative Pressure (mb)	PID (ppm)	Atmospheric Pressure (mb)	Water Level (m bgl)	Water Level (m Aod)	Depth of Pipe (m bgl)	Comments	
			Peak	Steady		Peak	Steady	Minimum	Steady	Minimum	Steady	Minimum	Steady				Peak	Steady					
WS01		50	0.0	0.0	0.0	0.3	0.1	20.1	20.7	-	-	-	-	60	0.0	-	-	-	1026	1.700	-1.700	2.800	
WS03		50	0.0	0.0	0.0	1.0	0.3	18.9	19.4	-	-	-	-	60	0.0	-	-	-	1026	1.220	-1.220	2.790	
WS04		50	0.0	0.0	0.0	0.1	0.1	20.3	19.7	-	-	-	-	60	0.0	-	-	-	1026	1.550	-1.550	3.750	

Notes:

NR = Not Recorded

^a For measurement of gas concentrations

> = Above LEL

WST = Water Sample Taken

GL = Ground Level

GAS & GROUNDWATER MONITORING DATA																							
SITE		Kirkby																					
PROJECT No.		1373.02																					
Visit 4 of 4		Atmospheric & Ground Conditions																					
Carried Out by:		Lewis Hillman		Atmospheric Pressure Variations During Visit													Ground Surface Conditions						
Date:		16.04.2025		990mb													Wet						
Instrument Details		GFM36 14048		Atmospheric Pressure Trend Over Previous 48hrs													Weather Conditions						
				Falling													Overcast, Rainy						
Well No.	Cover Height (m AOD)	Well Diameter (mm)	CH ₄ (% v/v)		CH ₄ Steady LEL (%)	CO ₂ (% v/v)		O ₂ (% v/v)		H ₂ S (ppm)		CO (ppm)		Duration (secs) ^a	Flow Rate (l/hr)	Relative Pressure (mb)	PID (ppm)		Atmospheric Pressure (mb)	Water Level (m bgl)	Water Level (m Aod)	Depth of Pipe (m bgl)	Comments
			Peak	Steady		Peak	Steady	Minimum	Steady	Minimum	Steady	Minimum	Steady				Peak	Steady					
WS01	55.610	50	0.0	0.0	0.0	1.8	1.7	16.3	16.4	0.0	0.0	0.0	0.0	60	0.0	-	-	-	990	1.720	53.890	2.610	
WS03	55.100	50	0.0	0.0	0.0	1.2	0.1	18.5	18.5	0.0	0.0	0.0	0.0	60	0.0	-	-	-	990	2.100	53.000	2.790	
WS04	56.400	50	0.0	0.0	0.0	0.1	0.1	18.7	20.4	0.0	0.0	0.0	0.0	60	0.0	-	-	-	990	1.580	54.820	3.780	

Notes:

NR = Not Recorded

^a For measurement of gas concentrations

> = Above LEL

WST = Water Sample Taken

GL = Ground Level

Table 2: Gas and Groundwater Monitoring Data

Table 3: Comparison of Soil Chemical Analyses with GAC (Commercial)

Lab Sample Number:				Commercial GAC 1.0% SOM	481202	481203	481204	481205	481206	481207	481208
Sample Reference:					WS01	WS05	WS07	WS02	WS06	WS02	WS06
Borehole:											
Top Depth (m):					0.80	0.70	0.45	0.30	0.40	0.20	0.10
Basal Depth (m):											
Date Sampled:					11/03/2025	12/03/2025	11/03/2025	11/03/2025	11/03/2025	11/03/2025	11/03/2025
Determinand	Units	Limit of detection	Accreditation Status	[mg/kg unless stated]	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Asphalt	Asphalt
Moisture	%	0.01	NONE		10	7.3	9.9	20	5	1.3	1.9
Asbestos in Soil	Type	N/A	ISO 17025		Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	-	-
Asbestos % by hand picking/weighing	%				-	-	-	-			
Asbestos Containing Material Types Detected (ACM)	Type				-	-	-	-			
pH	pH Units	N/A	MCERTS		7.6	10.6	7.7	8	8.9	6.6	7.7
Arsenic	mg/kg	1.00	MCERTS	640	5.6	5	66	4.7	4.2	-	-
Beryllium	mg/kg	0.06	MCERTS	12	0.39	0.46	2.8	0.35	1	-	-
Boron	mg/kg	0.20	MCERTS	240000	0.4	1.2	0.9	0.8	0.2	-	-
Cadmium	mg/kg	0.20	MCERTS	190	< 0.2	0.2	2.1	< 0.2	< 0.2	-	-
Chromium (Hexavalent)	mg/kg	1.80	MCERTS	33	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	-	-
Chromium (Trivalent)	mg/kg	1.00	NONE	8600	12	14	34	12	38	-	-
Chromium (aqua regia extractable)	mg/kg	1.00	MCERTS	-	12	14	35	13	38	-	-
Copper	mg/kg	1.00	MCERTS	68000	17	13	380	17	20	-	-
Lead	mg/kg	1.00	MCERTS	NC	33	19	1400	140	8.1	-	-
Mercury	mg/kg	0.30	MCERTS	58 ^{US} (25.6)	< 0.3	< 0.3	1.7	< 0.3	< 0.3	-	-
Nickel	mg/kg	1.00	MCERTS	980	11	10	65	6.8	31	-	-
Selenium	mg/kg	1.00	MCERTS	12000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	-
Vanadium	mg/kg	1.00	MCERTS	9000	15	15	67	19	37	-	-
Zinc	mg/kg	1.00	MCERTS	730000	34	36	1000	45	58	-	-
Total Cyanide	mg/kg	1.00	MCERTS		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS		0.011	0.0056	0.033	0.029	0.012		
Calculated TOC from FOC	-	-	-		1.00	0.560	3.300	2.900	1.200		
Calculated SOM from FOC	-	-	-		0.019	0.010	0.057	0.050	0.021		
Aliphatic TPH >C5-C6	mg/kg	0.01	NONE	3200 ^{US} (304)	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	-	-
Aliphatic TPH >C6-C8	mg/kg	0.01	NONE	7800 ^{US} (144)	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	-	-
Aliphatic TPH >C8-C10	mg/kg	0.01	NONE	2000 ^{US} (78)	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	-	-
Aliphatic TPH >C10-C12	mg/kg	1.00	MCERTS	9700 ^{US} (48)	< 1.0	< 1.0	< 1.0	< 1.0	8.4	-	-
Aliphatic TPH >C12-C16	mg/kg	2.00	MCERTS	59000 ^{US} (24)	< 2.0	3.3	6.8	< 2.0	110	-	-
Aliphatic TPH >C16-C21	mg/kg	8.00	MCERTS		< 8.0	13	9.2	< 8.0	150	-	-
Aliphatic TPH >C21-C35	mg/kg	8.00	MCERTS	1600000	< 8.0	240	37	< 8.0	48	-	-
Total Aliphatic Hydrocarbons:	mg/kg	10.00	NONE		< 10	250	53	< 10	310		
Aromatic TPH >C5-C7	mg/kg	0.01	NONE	26000 ^{US} (1220)	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	-	-
Aromatic TPH >C7-C8	mg/kg	0.01	NONE	56000 ^{US} (869)	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	-	-
Aromatic TPH >C8-C10	mg/kg	0.02	NONE	3500 ^{US} (613)	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-
Aromatic TPH >C10-C12	mg/kg	1.00	MCERTS	16000 ^{US} (364)	< 1.0	< 1.0	2.5	< 1.0	7	-	-
Aromatic TPH >C12-C16	mg/kg	2.00	MCERTS	36000 ^{US} (189)	< 2.0	3.9	7.8	< 2.0	69	-	-
Aromatic TPH >C16-C21	mg/kg	10.00	MCERTS	28000	< 10	< 10	33	< 10	94	-	-
Aromatic TPH >C21-C35	mg/kg	10.00	MCERTS	28000	< 10	48	40	< 10	24	-	-
Total Aromatic Hydrocarbons	mg/kg	10.00	NONE		< 10	52	83	< 10	190		
Calculated Sum TPH (sum Aliphatic + sum Aromatic)					260	302	136	20	500		
Naphthalene	mg/kg	0.05	MCERTS	190 ^{US} (76.4)	0.47	0.38	2.5	< 0.05	2	0.31	0.26
Acenaphthylene	mg/kg	0.05	MCERTS	8300 ^{US} (86.1)	< 0.05	0.06	0.41	< 0.05	0.09	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	8400 ^{US} (57)	< 0.05	0.06	1.2	< 0.05	0.58	< 0.05	0.06
Fluorene	mg/kg	0.05	MCERTS	6300 ^{US} (30.9)	< 0.05	0.09	1.2	< 0.05	0.61	< 0.05	0.05
Phenanthrene	mg/kg	0.05	MCERTS	22000	0.26	0.8	11	< 0.05	0.5	< 0.05	0.27
Anthracene	mg/kg	0.05	MCERTS	520000	0.06	0.16	2.9	< 0.05	< 0.05	< 0.05	0.12
Fluoranthene	mg/kg	0.05	MCERTS	23000	0.62	0.87	12	0.08	0.1	< 0.05	0.55
Pyrene	mg/kg	0.05	MCERTS	54000	0.57	0.84	13	< 0.05	0.11	< 0.05	0.79
Benzo[a]anthracene	mg/kg	0.05	MCERTS	170	0.25	0.36	6.3	< 0.05	< 0.05	< 0.05	0.31
Chrysene	mg/kg	0.05	MCERTS	350	0.36	0.38	6.7	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[b]fluoranthene	mg/kg	0.05	ISO 17025	44	0.36	0.36	6.4	< 0.05	< 0.05	< 0.05	1
Benzo[k]fluoranthene	mg/kg	0.05	ISO 17025	1200	0.15	0.17	2.9	< 0.05	< 0.05	< 0.05	0.36
Benzo[a]pyrene	mg/kg	0.05	MCERTS	35	0.28	0.36	6.6	< 0.05	< 0.05	< 0.05	1.6
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.05	MCERTS	500	0.14	0.15	3	< 0.05	< 0.05	< 0.05	1.1
Dibenzo(a,h)Anthracene	mg/kg	0.05	MCERTS	3.5	< 0.05	< 0.05	0.91	< 0.05	< 0.05	< 0.05	0.22
Benzo(g,h,i)perylene	mg/kg	0.05	MCERTS	3900	0.21	0.2	3.9	< 0.05	< 0.05	< 0.05	1.7
Coronene	mg/kg	0.05	NONE		-	-	-	-	-	< 0.05	< 0.05
Total Of 16 PAH's	mg/kg	0.8	ISO 17025		3.74	5.23	81.3	< 0.80	4.04	-	-
Total Of 17 PAH's	mg/kg	0.85	ISO 17025		-	-	-	-	-	< 0.85	8.45
Benzene	µg/kg	5.00	MCERTS	27	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5.00	MCERTS	56000 ^{US} (869)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5.00	MCERTS	5700 ^{US} (518)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	8.00	MCERTS	5900 ^{US} (576)	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-xylene	µg/kg	5.00	MCERTS	6600 ^{US} (478)	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5.00	NONE		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Phenols	mg/kg	1.00	MCERTS	440 ^{US} (28000)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Determinand concentration below the GAC

Determinand concentration in exceedance of GAC

Determinand concentration in exceedance of the vapour/solubility saturation limit.

NC: No published criteria, US: Unsuitable sample.

vap: Screening criteria presented exceed the vapour saturation limit, which is presented in brackets.

sol: Screening criteria presented exceed the solubility saturation limit, which is presented in brackets.

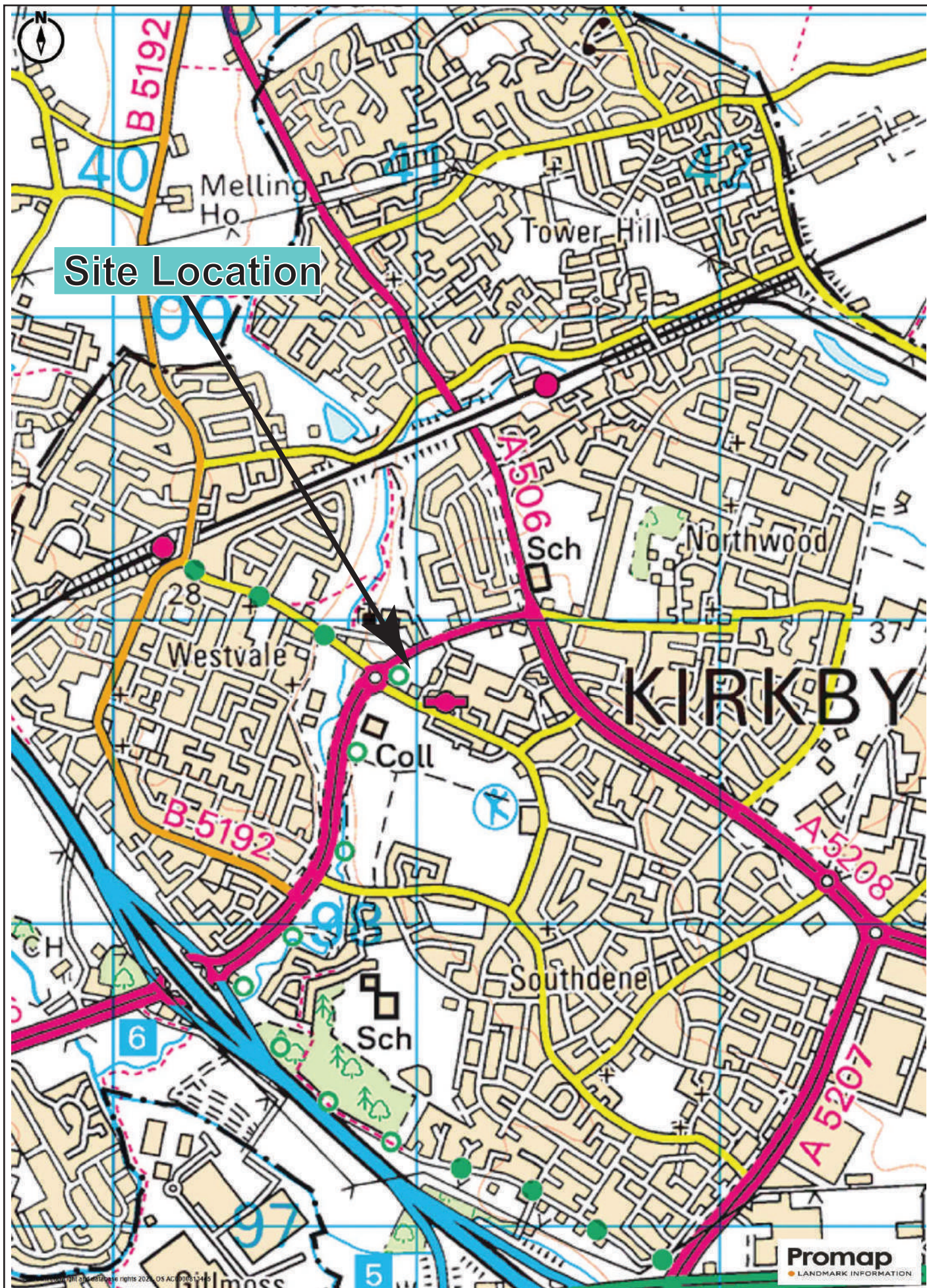
dir: Screening criteria based on threshold protective of direct skin contact (guideline in brackets based on health effects following long term exposure provided for illustration only).

(1): For assessment based on the use of the surrogate marker approach the GAC for Coal Tar must be used instead of benzo(a)pyrene.

* Value presented in mg/kg

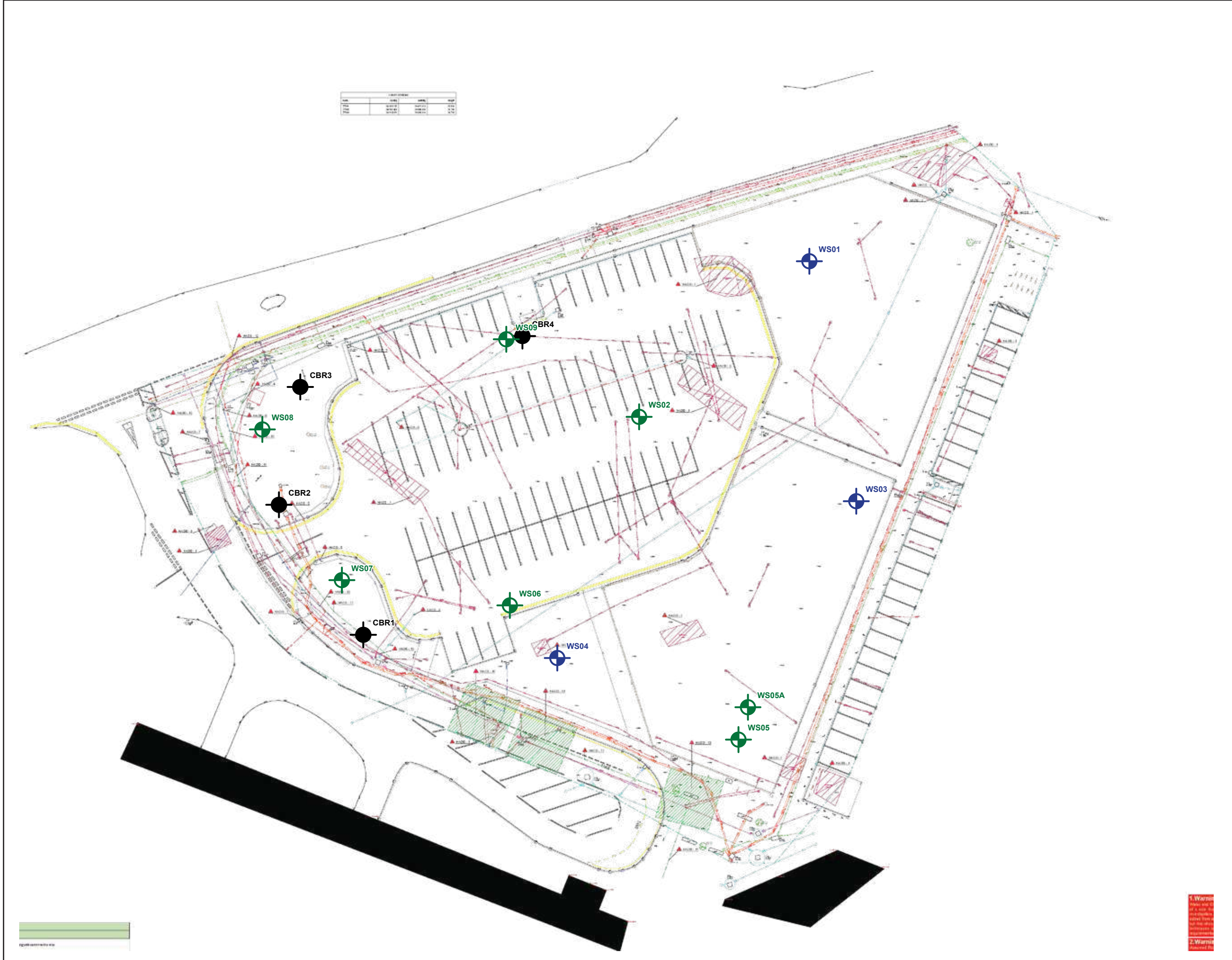


FIGURES



Notes	Revision	Approved	Date	Project Title	Scale	Drawn	Size
				Irlam Drive, Kirkby	as shown	LH	A4
				Drawing Title	Date	Job No.	Figure No.
				Site Location Plan	10.02.25	1373.01	01
				Client			
				Lidl Great Britain Ltd	 		





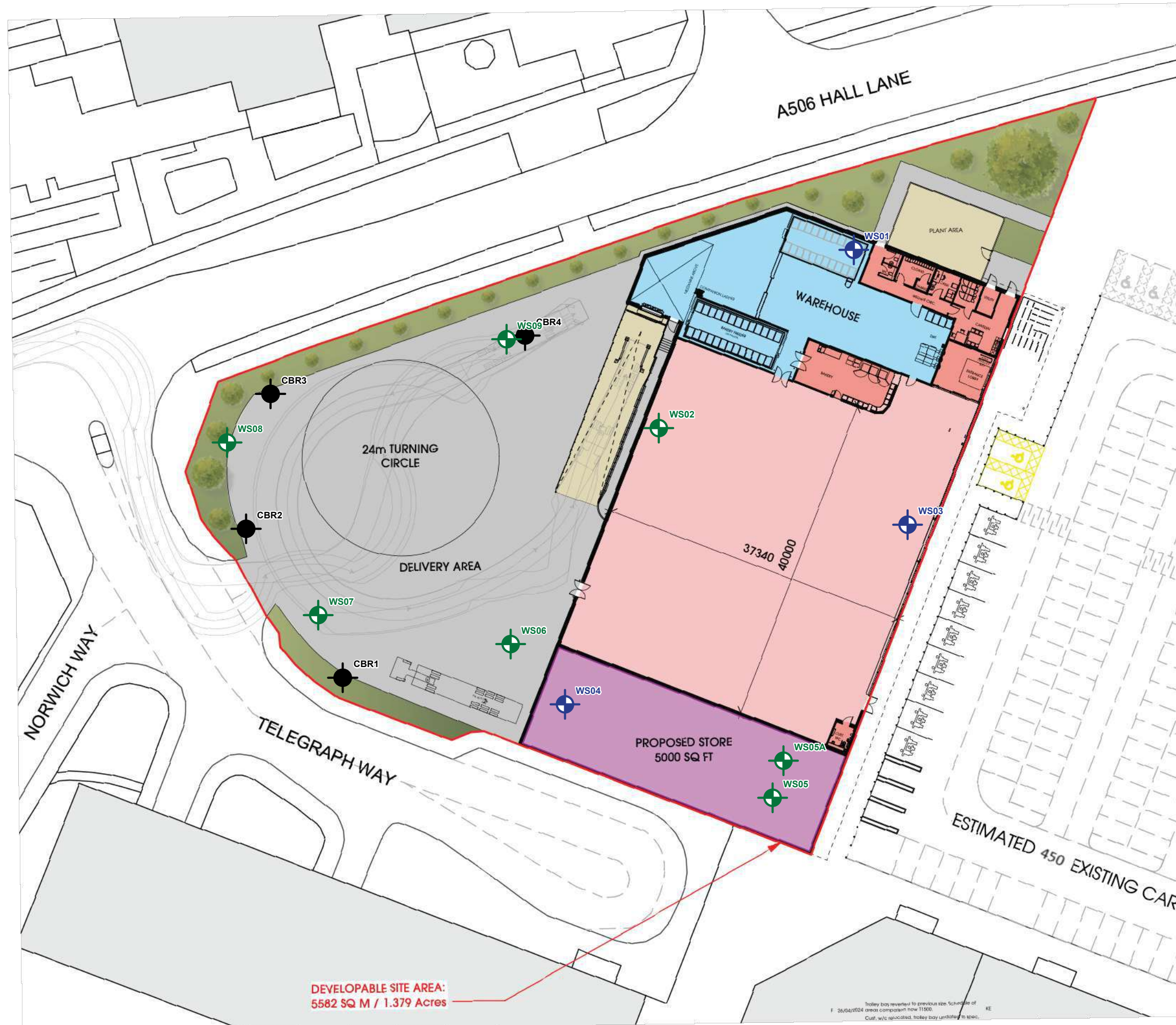
- Legend
- WS01 Window Sample & Installation
 - WS02 Window Sample
 - PBT01 Plate Bearing Test
 - CBR1 CBR Test
 - SA01 Soakaway Test Pit

Notes:

Proposed Layout reproduced from HTC Architects Ltd's Proposed Site Plan (Option 14), drawing ref: 3288_F414 Rev F, dated January 24.

The proposed site layout plan presented here is indicative only and may be subject to change following publication of Remada's Phase 1 report.

Revision	Approved	Date
Project Title		
Irlam Drive, Kirkby		
Drawing Title		
Existing Site Layout		
Client		
Lidl Great Britain Ltd 		
Scale	Drawn	Size
as shown	LH	A4
Date	Job No.	Figure No.
04.04.25	1373	02
		



- Legend
- WS01 Window Sample & Installation
 - WS02 Window Sample
 - PBT01 Plate Bearing Test
 - CBR1 CBR Test
 - SA01 Soakaway Test Pit

Notes:

Proposed Layout reproduced from HTC Architects Ltd's Proposed Site Plan (Option 14), drawing ref: 3288_F414 Rev F, dated January 24.

The proposed site layout plan presented here is indicative only and may be subject to change following publication of Remada's Phase 1 report.

Revision	Approved	Date
Project Title		
Irlam Drive, Kirkby		
Drawing Title		
Proposed Indicative Site Layout Plan		
Client		
Lidl Great Britain Ltd		
Scale	Drawn	Size
as shown	LH	A4
Date	Job No.	Figure No.
04.04.25	1373	03



DEVELOPABLE SITE AREA:
5582 SQ M / 1.379 Acres

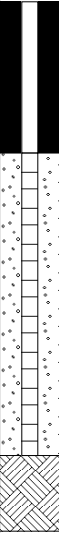
Trolley bay reverted to previous size. Schedule of F: 26/04/2024 areas component now 11500. Cust. w/c relocated. Trolley bay updated in spec. KE



EXPLORATORY HOLE LOGS

Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 12/03/2025	
Location:		Contractor:		Co-ords: E341202.00 N398940.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS01	Hole Type WS	Level 25.26m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

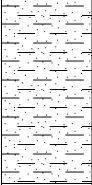
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20	25.06		MADE GROUND: Dark brown gravelly sand. Gravel is angular to subrounded fine to coarse sandstone, brick and concrete.	
					0.60	24.66		MADE GROUND: Grey sandy angular to subangular fine to coarse gravel of concrete and igneous rock.	
		0.80	ES						
		1.00	SPT	N=8 (3,2/2,2,2,2)	1.00	24.26		MADE GROUND: Fabric geotextile over brown very gravelly silty sand. Gravel is angular to rounded fine to coarse brick, sandstone, coal, mudstone and concrete.	1
		1.20	D					Loose brown SAND.	
					1.80	23.46		Soft dark brown fibrous PEAT.	
		1.90	D						
		2.00	SPT	N=4 (1,1/1,1,1,1)	2.00	23.26		Loose brown gravelly SAND. Gravel is subrounded fine to coarse sandstone.	2
					2.30	22.96		Stiff/friable red brown silty CLAY with mudstone lithorelicts.	
		2.70	D		2.80	22.46		Red brown silty SAND.	
		3.00	SPT	N=45 (4,5/5,10,15,15)	3.00	22.26		Very dense red brown SAND.	3
		3.50	D		3.50	21.76		End of Borehole at 3.500m	
		3.50	SPT	N=50 (11,13/50 for 125mm)					4
									5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks 1. Groundwater not encountered. 2. Terminated upon SPT refusal (N>50). 3. Installed to 3.0m; 1.0m plain pipe, 2.0m slotted pipe.										
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Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 11/03/2025	
Location:		Contractor:		Co-ords: E341179.00 N398919.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS02	Hole Type WS	Level 25.00m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

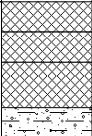
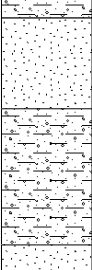
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.20	24.80		MADE GROUND: Asphalt.	
		0.30	ES					MADE GROUND: Brown and grey gravelly sand. Gravel is subangular to rounded fine to coarse sandstone and quartzite with rare subangular cobbles of sandstone.	
		1.00	SPT	N=12 (1,1/2,4,3,3)	0.95	24.05		MADE GROUND: Dark brown slightly gravelly silty sand. Gravel is subangular fine to medium brick.	1
		1.10	D		1.00	24.00		Brown slightly gravelly SAND. Gravel is angular to subangular fine to coarse sandstone.	
		1.60	D		1.60	23.40		Firm brown slightly gravelly CLAY. Gravel is angular to subangular fine to coarse sandstone.	
		2.00	SPT	N=4 (1,1/1,1,1,1)	2.10	22.90		Brown slightly gravelly SAND. Gravel is subrounded fine to coarse sandstone.	2
		2.50	D					Firm becoming very stiff by 3.8m red brown slightly sandy CLAY with rare subangular sandstone gravel.	
		3.00	SPT	N=27 (2,4/5,5,7,10)					3
		3.80	SPT	N=50 (25 for 60mm/50 for 30mm)	3.80	21.20		End of Borehole at 3.800m	4
									5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks 1. Groundwater encountered at 3.0m bgl. 2. Terminated upon SPT refusal (N>50). 3. Backfilled with arisings on completion.										
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Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 12/03/2025	
Location:		Contractor:		Co-ords: E341208.00 N398905.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS03	Hole Type WS	Level 26.05m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

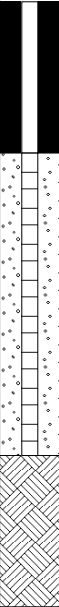
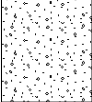
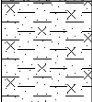
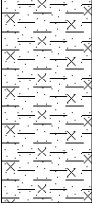
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D SPT	N=6 (1,1/1,1,2,2)	0.20	25.85		MADE GROUND: Grass over dark brown slightly clayey slightly gravelly sand. Gravel is subangular to subrounded fine to coarse sandstone. MADE GROUND: Grey sandy angular to subangular fine to coarse gravel of concrete and brick. MADE GROUND: Fabric geotextile over brown gravelly sand. Gravel is subangular fine to coarse brick and sandstone. Firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. Loose brown SAND. Firm brownish grey slightly gravelly slightly sandy CLAY. Gravel is subangular to rounded fine to coarse sandstone, mudstone and organic wood fragments. Very dense red brown SAND.	1
		0.40			0.40	25.65			
		0.70			0.70	25.35			
		0.90			0.90	25.05			
		1.00	D SPT	N=14 (1,1/1,3,5,5)	1.00	25.05		Firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to medium sandstone and mudstone. Loose brown SAND. Firm brownish grey slightly gravelly slightly sandy CLAY. Gravel is subangular to rounded fine to coarse sandstone, mudstone and organic wood fragments. Very dense red brown SAND.	2
		1.60			1.60	24.45			
		1.90			1.90	23.55			
		2.00			2.00	23.05			
		2.90	D SPT	N=50 (4,3/50 for 275mm)	2.90	23.05		End of Borehole at 3.000m	3
		3.00			3.00	23.05			

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks 1. Groundwater not encountered. 2. Terminated upon SPT refusal (N>50). 3. Backfilled with arisings on completion.										
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Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 11/03/2025	
Location:		Contractor:		Co-ords: E341168.00 N398883.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS04	Hole Type WS	Level 26.00m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.45 0.50	25.55 25.50		MADE GROUND: Grass over dark brown clayey slightly gravelly sand. Gravel is subangular to subrounded fine to coarse sandstone.	1
		1.00	SPT	N=4 (1,1/1,1,1,1)				MADE GROUND: Concrete.	
		1.50	D		1.30	24.70		MADE GROUND: Brown slightly clayey locally very clayey gravelly sand. Gravel is angular to subrounded fine to coarse sandstone, brick and concrete with rare subangular cobbles of sandstone.	
		2.00	SPT	N=15 (3,4/3,4,4,4)	2.00	24.00		Loose brown locally grey slightly gravelly SAND. Gravel is subangular fine to coarse sandstone.	2
		3.00	SPT	N=15 (3,3/3,4,4,4)				Stiff/friable becoming very stiff slightly sandy locally very sandy silty CLAY.	3
		3.80 4.00	D SPT		4.00	22.00		End of Borehole at 4.000m	4
									5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks 1. Groundwater not encountered. 2. Terminated upon SPT refusal (N>50). 3. Installed to 3.0m; 1.0m plain pipe, 2.0m slotted pipe.										
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Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date:	
Location:		Contractor:		Co-ords: E341192.00 N398871.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS05	Hole Type WS	Level 26.57m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.70	ES		0.15	26.42		MADE GROUND: Grass over dark brown gravelly sand. Gravel is subangular to subrounded fine to coarse brick, sandstone and concrete.	1
					0.30	26.27		MADE GROUND: Brown gravelly sand. Gravel is subangular to subrounded fine to coarse sandstone and mudstone.	
					0.35	26.22		MADE GROUND: Dark brown and dark grey angular to subangular fine to coarse gravel of tarmac.	
					0.90	25.67		MADE GROUND: Brown and grey very sandy angular to subrounded fine to coarse gravel of sandstone, mudstone, concrete, brick and tile. End of Borehole at 0.900m	
									2
									3
									4
									5
									6
									7
									8
									9
									10

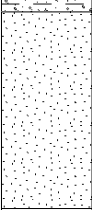
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

- Groundwater not encountered.
- Terminated upon liner refusal and relocated to WS05A.
- Backfilled with arisings on completion.

Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 12/03/2025	
Location:		Contractor:		Co-ords: E341194.00 N398876.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS05A	Hole Type WS	Level 26.56m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

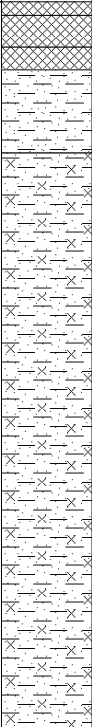
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.20	26.36		MADE GROUND: Grass over dark brown gravelly sand. Gravel is subangular to subrounded fine to coarse sandstone.	1
		1.00	SPT	N=7 (3,2/1,2,2,2)	1.00	25.56		MADE GROUND: Brown and grey sand and gravel. Gravel is subangular to rounded fine to coarse sandstone, brick and concrete.	
		1.20			1.20	25.36		Loose brown SAND.	
		1.60	D		1.70	24.86		Firm brown and grey silty sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse sandstone and mudstone.	
		2.00	SPT	N=32 (2,3/5,7,10,10)				Dense becoming very dense red brown SAND.	2
		2.20	D						
		3.00	SPT	N=50 (25 for 135mm/50 for 180mm)	3.00	23.56		End of Borehole at 3.000m	3
									4
									5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks 1. Groundwater not encountered. 2. Terminated upon SPT refusal (N>50). 3. Installed to 3.0m; 1.0m plain pipe, 2.0m slotted pipe.										
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Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 11/03/2025	
Location:		Contractor:		Co-ords: E341160.00 N398891.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS06	Hole Type WS	Level 25.45m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.09	25.36		MADE GROUND: Asphalt.	1
		0.40	ES		0.30	25.15		MADE GROUND: Brown gravelly sand. Gravel is subangular fine to coarse sandstone.	
		0.90	D		0.45	25.00		MADE GROUND: Dark grey and bluish grey slightly sandy angular to subangular fine to coarse gravel of slate and sandstone.	
		1.00 - 2.00	B		1.00	24.45		Firm red brown locally light brown slightly sandy CLAY.	
		1.00	SPT	N=26 (1,3/6,6,7,7)				Stiff/friable becoming very stiff at 4.8m bgl slightly sandy silty CLAY with rare subangular fine to coarse sandstone gravel and mudstone lithorelicts from 4.0m bgl.	
		2.00	SPT	N=22 (4,4/5,5,6,6)					
		2.20	D						
		3.00	SPT	N=42 (13,11/10,9,13,10)					
		4.00	SPT	N=23 (6,6/5,6,6,6)					
		4.20	D						
		4.80	SPT	N=50 (12,13/50 for 160mm)	4.80	20.65		End of Borehole at 4.800m	5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

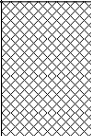
Remarks

- Groundwater not encountered.
- Terminated upon SPT refusal (N>50).
- Backfilled with arisings on completion.



Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 11/03/2025	
Location:		Contractor:		Co-ords: E341138.00 N398892.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS07	Hole Type WS	Level 25.40m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.45	ES					MADE GROUND: Grass over dark brown gravelly sand. Gravel is angular to subrounded fine to coarse brick, sandstone, mudstone, coal and chalk.	
		1.00	SPT	N=23 (8,6/6,6,6,5)	0.90 1.10	24.50 24.30		Brown gravelly SAND. Gravel is subrounded to rounded fine to coarse sandstone.	1
		1.60	D					Medium dense brown slightly clayey slightly gravelly SAND. Gravel is subrounded to rounded fine to coarse sandstone.	
		2.00	SPT	N=17 (1,2/3,4,5,5)	2.00	23.40		Firm to stiff red brown slightly sandy silty CLAY.	2
		2.50	D		2.60	22.80		Very dense red brown slightly clayey silty SAND.	
		3.00	SPT	N=50 (10,12/50 for 245mm)	3.00	22.40		End of Borehole at 3.000m	3
									4
									5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

- Groundwater not encountered.
- Terminated upon SPT refusal (N>50).
- Backfilled with arisings on completion.

Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 12/03/2025	
Location:		Contractor:		Co-ords: E341125.00 N398915.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS08	Hole Type WS	Level 24.00m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.40 0.50	23.60 23.50		MADE GROUND: Grass over dark brown clayey slightly gravelly sand. Gravel is subangular to subrounded fine to coarse coal, sandstone and rare brick.	1
		1.00	SPT	N=14 (2,2/2,4,4,4)	1.00	23.00		Dark brown SAND. Red brown silty SAND with rare gravel. Gravel is subangular fine to coarse sandstone and coal.	
		1.50	D		1.80	22.20		Medium dense brown SAND.	
		2.00	SPT	N=0 (0,0/0,0,0,0)				Very loose becoming very dense red brown silty SAND.	
		2.80 3.00	D SPT	N=50 (10,15/50 for 180mm)	3.00	21.00			
								End of Borehole at 3.000m	3
									4
									5
									6
									7
									8
									9
									10

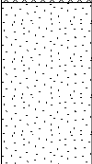
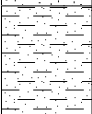
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

- Groundwater not encountered.
- Terminated upon SPT refusal (N>50).
- Backfilled with arisings on completion.

Percussion Drilling Log

Project Name: Irlam Drive, Kirkby		Client: Lidl Great Britain Ltd		Date: 11/03/2025	
Location:		Contractor:		Co-ords: E341159.00 N398929.00	
Project No. : 1373.02		Crew Name:		Drilling Equipment: Tracked rig	
Borehole Number WS09	Hole Type WS	Level 24.46m AoD	Logged By KS	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.10	24.36		MADE GROUND: Asphalt.	1
		0.60	D		0.60	23.86		MADE GROUND: Brown very gravelly sand. Gravel is subangular to subrounded fine to coarse sandstone.	
		1.00	SPT	N=2 (1,1/0,0,1,1)				Very loose brown SAND.	
		1.90	D		1.70	22.76		Soft becoming firm at 2.0m red brown sandy CLAY locally clayey SAND.	
		2.00	SPT	N=6 (1,1/1,1,2,2)					
		2.90	D		2.50	21.96		Very stiff/friable red brown slightly sandy silty CLAY with mudstone lithorelicts.	
		3.00	SPT	N=50 (5,5/6,14,16,14)	3.00	21.46		End of Borehole at 3.000m	3
									4
									5
									6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

- Groundwater not encountered.
- Terminated upon SPT refusal (N>50).
- Backfilled with arisings on completion.



APPENDIX A

SPT Hammer Energy Test Certificate



SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Socotec uk
Progress close
Binley
Coventry
CV3 2TF

SPT Hammer Ref: 110.24
Test Date: 30/01/2025
Report Date: 30/01/2025
File Name: 110.24.spt
Test Operator: DP

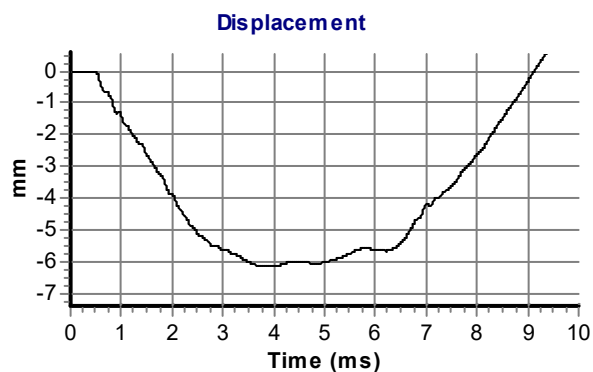
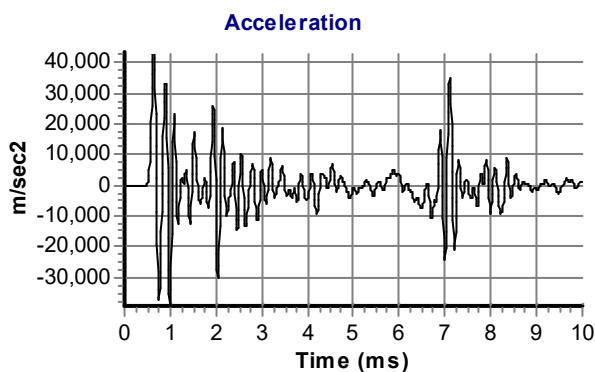
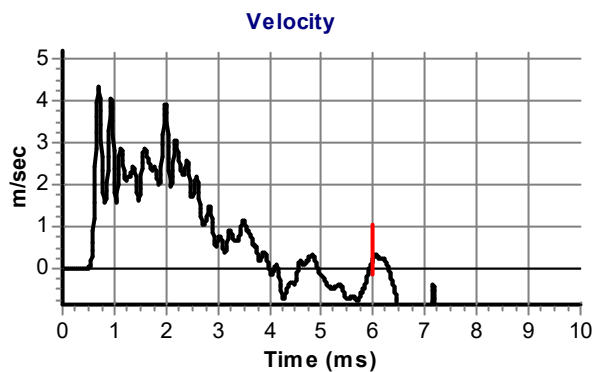
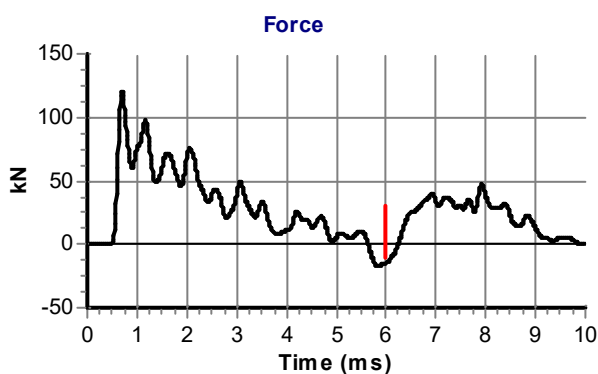
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 72570
Accelerometer No.2: 72571

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 12.6

Comments / Location



Calculations

Area of Rod A (mm^2): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 417

Energy Ratio E_r (%): **88**

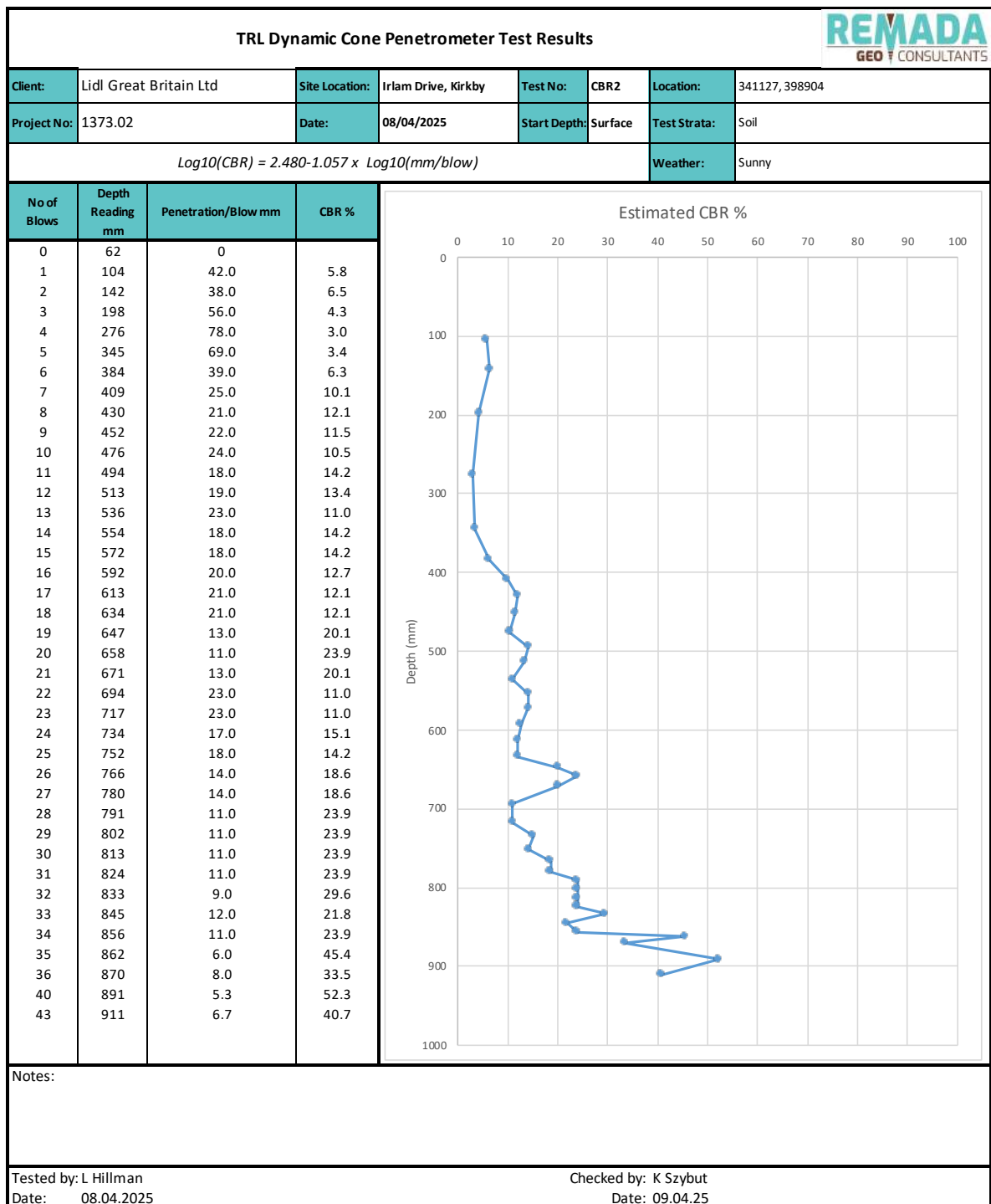
Signed: D Perrett
Title: Drilling Supervisor

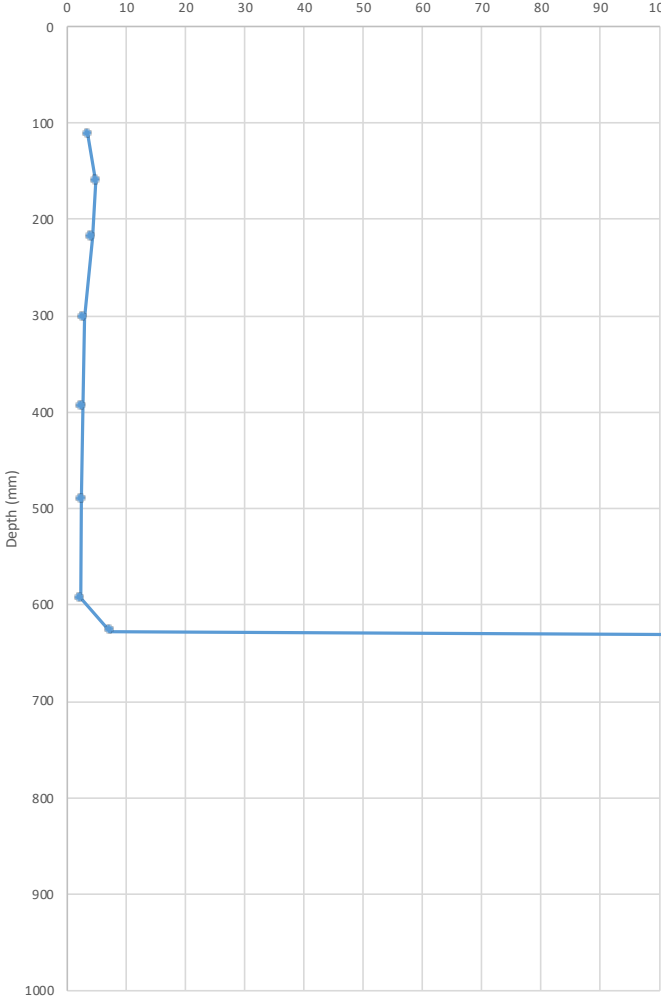


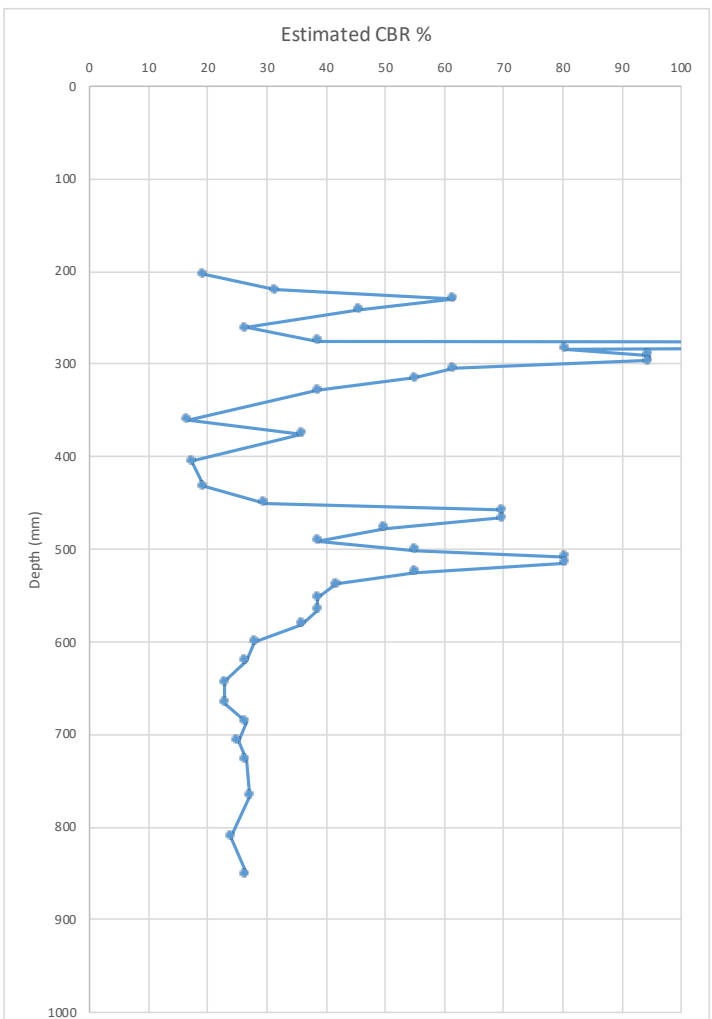
APPENDIX B

Dynamic Cone Penetrometer (DCP) Test Results

TRL Dynamic Cone Penetrometer Test Results						REMADA GEO CONSULTANTS	
Client:	Lidl Great Britain Ltd	Site Location:	Irlam Drive, Kirkby	Test No:	CBR1	Location:	341138, 398887
Project No:	1373.02	Date:	08/04/2025	Start Depth:	Surface	Test Strata:	Soil
Log10(CBR) = 2.480-1.057 x Log10(mm/blow)						Weather:	Sunny
No of Blows	Depth Reading mm	Penetration/Blow mm	CBR %	Estimated CBR %			
0	68	0					
1	169	101.0	2.3				
2	273	104.0	2.2				
3	302	29.0	8.6				
4	314	12.0	21.8				
5	331	17.0	15.1				
6	344	13.0	20.1				
7	361	17.0	15.1				
8	374	13.0	20.1				
9	381	7.0	38.6				
12	421	13.3	19.5				
14	443	11.0	23.9				
15	452	9.0	29.6				
18	492	13.3	19.5				
21	509	5.7	48.3				
24	532	7.7	35.1				
29	564	6.4	42.4				
34	610	9.2	28.9				
36	627	8.5	31.4				
37	638	11.0	23.9				
40	661	7.7	35.1				
41	672	11.0	23.9				
42	684	12.0	21.8				
43	691	7.0	38.6				
45	714	11.5	22.8				
46	726	12.0	21.8				
49	751	8.3	32.1				
54	779	5.6	48.9				
59	824	9.0	29.6				
62	862	12.7	20.6				
65	884	7.3	36.8				
68	912	9.3	28.5				
71	937	8.3	32.1				
Notes:							
Tested by: L Hillman				Checked by: K Szybut			
Date: 08.04.2025				Date: 09.04.25			



TRL Dynamic Cone Penetrometer Test Results						REMADA GEO CONSULTANTS		
Client:	Lidl Great Britain Ltd		Site Location:	Irlam Drive, Kirkby	Test No:	CBR3	Location:	341133, 398923
Project No:	1373.02		Date:	08/04/2025	Start Depth:	Surface	Test Strata:	Soil
Log10(CBR) = 2.480-1.057 x Log10(mm/blow)							Weather:	Sunny
No of Blows	Depth Reading mm	Penetration/Blow mm	CBR %	Estimated CBR % 				
0	45	0						
1	112	67.0	3.5					
2	161	49.0	4.9					
3	219	58.0	4.1					
4	302	83.0	2.8					
5	394	92.0	2.5					
6	491	97.0	2.4					
7	593	102.0	2.3					
8	627	34.0	7.3					
13	634	1.4	211.6					
Notes: Refusal at 634mm								
Tested by: L Hillman				Checked by: K Szybut				
Date: 08.04.2025				Date: 09.04.25				

TRL Dynamic Cone Penetrometer Test Results						REMADA GEO CONSULTANTS					
Client:	Lidl Great Britain Ltd		Site Location:	Irlam Drive, Kirkby		Test No:	CBR4	Location:	341159, 398929		
Project No:	1373.02		Date:	20/03/2025		Start Depth:	100mm bgl	Test Strata:	Soil		
Log10(CBR) = 2.480-1.057 x Log10(mm/blow)								Weather:	Sunny		
No of Blows	Depth Reading mm	Penetration/Blow mm	CBR %	Estimated CBR % 							
0	176	0									
2	203	13.5	19.3								
4	220	8.5	31.4								
6	229	4.5	61.6								
8	241	6.0	45.4								
10	261	10.0	26.5								
12	275	7.0	38.6								
14	277	1.0	302.0								
16	284	3.5	80.3								
18	290	3.0	94.6								
20	296	3.0	94.6								
22	305	4.5	61.6								
24	315	5.0	55.1								
26	329	7.0	38.6								
28	360	15.5	16.7								
30	375	7.5	35.9								
32	405	15.0	17.3								
34	432	13.5	19.3								
36	450	9.0	29.6								
38	458	4.0	69.8								
40	466	4.0	69.8								
42	477	5.5	49.8								
44	491	7.0	38.6								
46	501	5.0	55.1								
48	508	3.5	80.3								
50	515	3.5	80.3								
52	525	5.0	55.1								
54	538	6.5	41.8								
56	552	7.0	38.6								
58	566	7.0	38.6								
60	581	7.5	35.9								
62	600	9.5	28.0								
64	620	10.0	26.5								
66	643	11.5	22.8								
68	666	11.5	22.8								
70	686	10.0	26.5								
72	707	10.5	25.2								
74	727	10.0	26.5								
78	766	9.8	27.2								
82	810	11.0	23.9								
86	850	10.0	26.5								
Notes:											
Tested by: K Szybut						Checked by: K Szybut					
Date: 20.03.2025						Date: 09.04.25					



APPENDIX C

Gas Analyser Calibration Certificate

TEST DATE AND CONDITIONS	
Date	29/02/24
Atmospheric pressure	998mb
Ambient Temp	21.3°C
Envionics Serial No.	3268

GAS DATA LTD
Unit D,
Earlplace Business Park,
Coventry,
CV4 9XL, UK
+44 (0) 24 7630 3311



GFM436-1 FINAL INSPECTION & CALIBRATION CHECK CERTIFICATE

INSTRUMENT DETAILS	
Serial No	Customer
14048	Shawcity Ltd

INSTRUMENT CHECKS			
Keyboard	✓	Pump Flow	500cc/min
Display Contrast	✓	Pump Flow @ -200mB	350cc/min
Clock Set / Running	✓	S/W Version	G436-00.0029/0010
Labels Fitted	✓	Recalibration Date	01/03/25

GAS CHECKS							
Calibration Gas		Instrument Gas Channels Read					
Gas Type	Applied Conc.	CH4 (%)	tol. (% vol.)	CO2 (%)	tol. (% vol.)	O2 (%)	tol. (% vol.)
N2	100%	0.0	0.0	0.0	0.0	0.0	+/-0.1
CH4	5%	5.0	+/-0.3	0.0	0.0	0.0	+/-0.1
	60%	59.7	+/-3.0	0.0	0.0	0.0	+/-0.1
CO2	5%	0.0	0.0	5.0	+/-0.3	0.0	+/-0.1
	40%	0.0	0.0	40.0	+/-3.0	0.0	+/-0.1
O2	20.9%	0.0	0.0	0.1	+0.1	21.0	+/-0.5

OPTIONAL GAS CHECKS							
Calibration Gas		Instrument Gas Channels Read					
Gas Type	Applied Conc.	Label Range	H2S 5000ppm	CO 2000ppm		Hexane 2.00%	tol. (% vol.)
N2	100%		0	0		0.000	0.0
H2S	1500ppm		1520	0			+/- 5.0
CO	1000ppm		90	994			+/- 5.0
Hexane	2.00%					2.035	+/- 10.0

PRESSURE CHECKS							
Calibration Pressure		Instrument Pressure Channels Read					
Pressure @	Applied Pressure	Atmospheric [Ap] (mB)	tol. (mB)				
All Ports	Current Atmospheric	998	+/-2.0				
Ap Port (Internal)	+800mB(a)	799	+/-5.0				
	+1200mB(a)	1199	+/-5.0				

TEST DATE AND CONDITIONS	
Date	04/03/24
Atmospheric pressure	994 mb
Ambient Temp	18.7 °C
EnviroNics Serial No.	3268/9416

GAS DATA LTD
Unit D,
Earlplace Business Park,
Coventry,
CV4 9XL, UK
+44 (0) 24 7630 3311



GFM436-1 OUTWARD INSPECTION & QUALITY CHECK SHEET

INSTRUMENT DETAILS			
SO Number	Instrument Banner	Instrument Serial Number + SW Version	Job Number(s)
337447	GFM436	14048 V29.10	27294 - -

Calibration Technician [Signature]

DATE 29/2/24

Inspection Technician [Signature]

DATE 04/03/24

INSTRUMENT CHECKS		Pass (P), Fail (F) or not applicable(NA)	INSTRUMENT PACKING LIST		Tick if included
Function Tests	Dust Caps Fitted	P	Instrument		✓
	Keyboard Test (All keys)	P	Leather Case		✓
	Backlight Test	P	Instrument Strap		✓
	Clock Set / Running	P	AC Battery Charger (UK)		✓
	Comms Test	P	AC Battery Charger (EURO)		X
	Pump Flow Test (In & Out)	P	AC Battery Charger (US)		X
	Overall Leak Test (30mb)	N/A	AC Battery Charger (AUS)		X
	Battery Charge Test	P	Gas Sample Pipe		✓
	Service Date set to?	01/03/25	Hard Carry Case		✓
Channel Tests	Data Logging Enabled?	P	Spares Pot		✓
	Verify CH4/LEL/Hexane/PID	P	Allen Key		✓
	Verify CO2	P	Flow Sample Pipe		✓
	Verify O2	P	Temperature Probe		X
	Verify H2S	P	Vane Anemometer		X
	Verify CO	P	USB Cable		✓
	Verify LEL	P	USB Memory Stick		X
	Verify 1st Option gas	N/A	SM V5 Software	Ver	X
	Verify atmospheric pressure	P	Internal Filter Pack	Qty	X
	Verify differential pressure	P	External Filter Pack	Qty 10	✓
	Verify flow	P	Field Guide		X
	Verify temperature probe input	P	EX Safety Flier		✓
	Verify vane anemometer input	P	Extra Items:		
DataBase Checks	Jobcard(s) completed and signed	P			
	Jobcard(s) booked off database	P			
	Calibration certificate completed	P			
	Complete & print QI record	N/A			
Label Checks	No. of Calibration label fitted	12567	Comments		
	MCERTS label not displayed	P			
	Warranty label fitted	P			
H2S Range	H2S Range from SO	5000 ppm			
	H2S Range from cal cert	5000 ppm			
	Over-range value correct?	P			

TEST DATE AND CONDITIONS			
Date		11/04/2025	
Atmospheric Pressure		1005	mB
Ambient Temperature		21.3	°C
EnviroNics Serial No.		9370	

**GFM436 Final Inspection & Calibration
Check Certificate**

GAS DATA LTD

Unit D

Earlplace Business Park

Fletchamstead Highway

Coventry

CV4 9XL

Tel 02476303311

Fax 02476307711



GAS DATA
LISTEN • ANALYSE • INFORM

Customer	Remada Ltd
Certificate Number	126129
Order Number	342447

Serial Number	14048
Software Version	G436-00.0029/0010

Recalibration DUE Date
11/04/26

Instrument Checks					
Keyboard	✓		Display Contrast	✓	
Pump Flow In	500	Accept > 200 cc/min	Pump Flow @ -200mB	300	Accept > 200 cc/min
Clock Set / Running	✓		Labels Fitted	✓	

Gas Checks						
Sensor	CH ₄		CO ₂		O ₂	
	Instrument Gas	True Gas Value %	Instrument Gas	True Gas Value %	Instrument Gas	True Gas Value %
	Readings %		Readings %		Readings %	
	59.8	60	39.5	40	20.9	20.9
	Accept ±3.0		Accept ±3.0		Accept ±0.5	
	5.0	5	5.0	5	6.0	6
	Accept ±0.3		Accept ±0.3		Accept ±0.3	
Zero Reading 100% N2	0.0	0	0.0	0	0.0	0
	Accept ±0.0		Accept ±0.0		Accept ±0.1	

Optional Gas Checks						
Applied Gas & Range		Concentration Tested @ (ppm)	Instrument Readings (ppm)			
Gas Type	Range (ppm)		Zero Reading		Instrument Gas Reading	
H2S	5000	1500	0	Accept ±0.0	1500	Accept ±5.0%
CO	2000	1000	0	Accept ±0.0	1003	Accept ±5.0%
Hexane	2.0%	2.0%	0	Accept ±0.0	1.99	Accept ±10.0%

Cross Gas Effects									
Applied Gas (ppm)		Instrument Readings (ppm)							
Gas Type	Concentration	Toxic 1:	H2S	Toxic 2:	CO	Toxic 3:	HEX		
H2S	1500	1500		0		0			
CO	1000	90		1003		0			
Hexane	2.0%	0		0		1.99			

Pressure Checks			
Atmospheric Pressure [AP] (mB)			
Current Atmospheric Pressure (mB)		Instrument Atmospheric Pressure Reading (mB)	
AP Open Ports		1005	Accept ± 2.0
AP Port (Internal)	+800 mB	800	Accept ± 5.0
	+1200mb	1200	Accept ± 5.0

Flow Checks					
Borehole Flow			Differential Pressure		
Applied Reading (l/h)	Instrument Reading (l/h)		Applied Pressure (Pa)	Instrument Reading (Pa)	
-30	-30.1	Accept ± 3.0	-391	-397	Accept ± 50
-3	-3.0	Accept ± 1.0	-17	-18	Accept ± 6.0
0	0.0	Accept ± 0.0	0	0	Accept ± 0.5
3	3.0	Accept ± 0.5	15	16	Accept ± 3.0
30	30.0	Accept ± 3.0	344	344	Accept ± 50
60	60.2	Accept ± 6.0	1081	1098	Accept ± 130
90	91.6	Accept ± 9.0	2141	2238	Accept ± 250

Temperature Checks		
Calibration Temperature	Instrument Temperature Reading $^{\circ}\text{C}$	
Applied Temperature $^{\circ}\text{C}$		
-10	-10.0	Accept ± 2.0
0	0.0	Accept ± 1.0
30	30.0	Accept ± 1.0
60	60.0	Accept ± 1.0
100	100.0	Accept ± 1.0

Technician:
<i>Jack Rutland</i>

Date Tested:
<i>11/04/2025</i>

The instrument identified by the serial number stated above has been tested by Gas Data personnel for calibration accuracy on the date and under the ambient conditions stated. Gas Data Ltd internal BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018 compliant workshop procedures were followed to apply known calibration test gases, gas flow rates, pressures and temperatures of the values stated.

The results displayed on the instrument at each stage are recorded above.

Gas Data Ltd is certified to BS EN ISO9001:2015, BS EN ISO14001:2015, BS EN ISO45001:2018.

TEST DATE AND CONDITIONS			
Date	11.4.25		
Atmospheric Pressure	1005	mB	
Ambient Temperature	21.3	°C	
EnviroNics Serial No.	5089		

GAS DATA LTD Unit D Earlplace Business Park Fletchamstead Highway Coventry CV4 9XL UK +44 (0) 24 7630 3311	 GAS DATA LISTEN • ANALYSE • INFORM
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GFM436-1 OUTWARD INSPECTION & QUALITY CHECK SHEET

INSTRUMENT DETAILS			
SO Number	Instrument Type	Instrument Serial Number + SW Version	Job Number(s)
342447	GFM436	14048 G436-29/10	126129

Calibration Technician *J. Williams*

Date 11.4.25

Inspection Technician *J. Williams*

Date 15.6.23

INSTRUMENT CHECKS		Pass (P), Fail (F) or not applicable (NA)	INSTRUMENT PACKING LIST		Tick if included
Function Tests	Dust Caps Fitted	P	Instrument		✓
	Keyboard Test (All Keys)	P	Leather Case		✓
	Backlight	P	Instrument Strap		✓
	Clock Set / Running	P	AC Battery Charger (UK)		✓
	Comms Test	P	AC Battery Charger (EURO)		X
	Pump Flow Test (In & Out)	P	AC Battery Charger (US)		X
	Overall Leak Test (30mB)	n/a	AC Battery Charger (AUS)		X
	Battery Charge Test	P	Gas Sample Pipe - (new issue)		✓
	Service Date set to?	11/04/26	Flow Sample Pipe - (new issue)		✓
Channel Tests	Data Logging Enabled?	P	Hard Carry Case		✓
	Verify CH4/LEL/Hexane/PID	P	Spares Pot		✓
	Verify CO2	P	Allen Key		✓
	Verify O2	P	Temperature Probe		X
	Verify H2S	P	Vane Anemometer		Y
	Verify CO	P	USB Cable		X
	Verify LEL	P	USB Memory stick		X
	Verify 1 st Option Gas	N/A	SM V5 Software	Ver 6.05	X
	Verify Atmospheric pressure	P	Internal Filter Pack	Qty	X
	Verify differential pressure	P	External Filter Pack	Qty	X
	Verify flow	P	Field Guide		✓
	Verify temperature probe input	P	Extra Items: USED TUBING. TAG.		
	Verify vane anemometer input	P			
	Verify vane anemometer input	P			
DataBase Checks	Jobcard(s) completed and signed	P	Comments: N/A		
	Jobcard(s) booked off database	P			
	Calibration certificate completed	P			
	Complete & print QI record	n/a			
Label Checks	No. of Calibration label fitted	GDC 13791			
	MCERTS label displayed	P			
	Warranty label fitted	P			
H2S Range	H2S Range from Sales Order	5000 ppm			
	H2S Range from Cal Cert	5000 ppm			
	Over-range value correct?	P			
QA Cylinders Used	No. of High Range CH4/CO2	SIPLEX110 - 56779			
	No. of Low Range CH4/CO2/O2	" - 69849			
	No. of H2S	" 6037295			
	No. of CO	" - 69834			
	No. of Optional Cylinder	N/A			



APPENDIX D

Laboratory Chemical Analysis

Remada Ltd
Forward House
17 High Street
Henley-in-Arden
Warwickshire
B955AA

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

e: krysia.szybut@remada.co.uk
info@remada.co.uk

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-012689

Project / Site name:	Irlam Drive, Kirkby	Samples received on:	13/03/2025
Your job number:	1373.02	Samples instructed on/ Analysis started on:	13/03/2025
Your order number:	1373.02	Analysis completed by:	24/03/2025
Report Issue Number:	1	Report issued on:	24/03/2025
Samples Analysed:	11 soil samples		

Signed:



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

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

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

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

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

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

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

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

Analytical Report Number: 25-012689
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number	481202	481203	481204	481205	481206
Sample Reference	WS01	WS05	WS07	WS02	WS06
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.80	0.70	0.45	0.30	0.40
Date Sampled	11/03/2025	12/03/2025	11/03/2025	11/03/2025	11/03/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	40	65.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	10	7.3	9.9	20	5
Total mass of sample received	kg	0.1	NONE	2	2	2	0.6	0.6

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SSZ	SSZ	SSZ	SSZ	SSZ
Analysis completed	N/A	N/A	N/A	21/03/2025	21/03/2025	21/03/2025	21/03/2025	21/03/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.6	10.6	7.7	8	8.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphur	%	0.005	MCERTS	-	-	-	-	-
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	-	-	-	-	-
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	-	-
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.011	0.0056	0.033	0.029	0.012
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	-	-	-	-	-
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Analytical Report Number: 25-012689
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number	481202	481203	481204	481205	481206
Sample Reference	WS01	WS05	WS07	WS02	WS06
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.80	0.70	0.45	0.30	0.40
Date Sampled	11/03/2025	12/03/2025	11/03/2025	11/03/2025	11/03/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.47	0.38	2.5	< 0.05	2
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.41	< 0.05	0.09
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06	1.2	< 0.05	0.58
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.09	1.2	< 0.05	0.61
Phenanthrene	mg/kg	0.05	MCERTS	0.26	0.8	11	< 0.05	0.5
Anthracene	mg/kg	0.05	MCERTS	0.06	0.16	2.9	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.62	0.87	12	0.08	0.1
Pyrene	mg/kg	0.05	MCERTS	0.57	0.84	13	< 0.05	0.11
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.25	0.36	6.3	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.36	0.38	6.7	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.36	0.36	6.4	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.15	0.17	2.9	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.28	0.36	6.6	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.14	0.15	3	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.91	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.21	0.2	3.9	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	-	-	-	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.74	5.23	81.3	< 0.80	4.04
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	-	-	-	-

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.6	5	66	4.7	4.2
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.39	0.46	2.8	0.35	1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	1.2	0.9	0.8	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	2.1	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	12	14	34	12	38
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	12	14	35	13	38
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	13	380	17	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	19	1400	140	8.1
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	1.7	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	10	65	6.8	31
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	15	15	67	19	37
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	34	36	1000	45	58

Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-	-

Analytical Report Number: 25-012689
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number	481202	481203	481204	481205	481206
Sample Reference	WS01	WS05	WS07	WS02	WS06
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.80	0.70	0.45	0.30	0.40
Date Sampled	11/03/2025	12/03/2025	11/03/2025	11/03/2025	11/03/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	8.4
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	3.3	6.8	< 2.0	110
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	13	9.2	< 8.0	150
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	240	37	< 8.0	48
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	250	53	< 10	310

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	2.5	< 1.0	7
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	3.9	7.8	< 2.0	69
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	33	< 10	94
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	48	40	< 10	24
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	52	83	< 10	190

VOCs

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

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

Analytical Report Number: 25-012689
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number	481207	481208	481209	481210	481211
Sample Reference	WS02	WS06	WS01	WS02	WS04
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.20	0.10	2.70	1.60	1.50
Date Sampled	11/03/2025	11/03/2025	12/03/2025	11/03/2025	11/03/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	1.3	1.9	14	12	11
Total mass of sample received	kg	0.1	NONE	0.7	0.7	0.5	0.5	0.5

Asbestos

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

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	-	-	8	8.4	8.7
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	0.029	0.01	0.009
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	180	28	29
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	91.1	13.9	14.4
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	13	81	7.5
Total Sulphur	mg/kg	50	MCERTS	-	-	440	< 50	< 50
Total Sulphur	%	0.005	MCERTS	-	-	0.044	< 0.005	< 0.005
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	-	-	1.9	1.1	< 0.5
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	0.13	0.08	< 0.05
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	-	-	-	-	-
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	-	-	< 2.0	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	-	-	< 5.0	< 5.0	< 5.0

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	-	-	-	-
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Analytical Report Number: 25-012689
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number	481207	481208	481209	481210	481211
Sample Reference	WS02	WS06	WS01	WS02	WS04
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.20	0.10	2.70	1.60	1.50
Date Sampled	11/03/2025	11/03/2025	12/03/2025	11/03/2025	11/03/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.31	0.26	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06	-	-	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.05	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.27	-	-	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.12	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.55	-	-	-
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.79	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.31	-	-	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	1	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.36	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	1.6	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	1.1	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.22	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	1.7	-	-	-
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	-	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	-	-	-
Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	8.45	-	-	-

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	-
Chromium (III)	mg/kg	1	NONE	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-

Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	6.3	8	49
Magnesium (water soluble)	mg/kg	5	NONE	-	-	13	16	98

Analytical Report Number: 25-012689
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number	481207	481208	481209	481210	481211
Sample Reference	WS02	WS06	WS01	WS02	WS04
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.20	0.10	2.70	1.60	1.50
Date Sampled	11/03/2025	11/03/2025	12/03/2025	11/03/2025	11/03/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Petroleum Hydrocarbons

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

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

VOCs

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

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

Analytical Report Number: 25-012689
 Project / Site name: Irlam Drive, Kirkby
 Your Order No: 1373.02

Lab Sample Number				481212
Sample Reference				WS05
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				2.80
Date Sampled				12/03/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	13
Total mass of sample received	kg	0.1	NONE	0.5

Asbestos

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

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.5
Total Cyanide	mg/kg	1	MCERTS	-
Total Sulphate as SO ₄	%	0.005	MCERTS	0.014
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	21
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	10.6
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	19
Total Sulphur	mg/kg	50	MCERTS	< 50
Total Sulphur	%	0.005	MCERTS	< 0.005
Ammoniacal Nitrogen as NH ₄ ⁺	mg/kg	0.5	MCERTS	< 0.5
Ammonium as NH ₄ ⁺ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	-
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	< 2.0
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-
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Analytical Report Number: 25-012689
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number				481212
Sample Reference				WS05
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				2.80
Date Sampled				12/03/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Speciated PAHs

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

Total PAH

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

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-
Chromium (III)	mg/kg	1	NONE	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-

Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0

Analytical Report Number: 25-012689
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number				481212
Sample Reference				WS05
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				2.80
Date Sampled				12/03/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Petroleum Hydrocarbons

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

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

VOCs

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

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

Analytical Report Number : 25-012689

Project / Site name: Irlam Drive, Kirkby

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
481202	WS01	None Supplied	0.8	Brown sand with gravel and vegetation
481203	WS05	None Supplied	0.7	Brown sand with gravel and stones
481204	WS07	None Supplied	0.45	Brown sand with clinker and stones
481205	WS02	None Supplied	0.3	Brown sand with gravel
481206	WS06	None Supplied	0.4	Brown clay and sand with gravel
481207	WS02	None Supplied	0.2	Non Soil. ^{*9}
481208	WS06	None Supplied	0.1	Non Soil. ^{*9}
481209	WS01	None Supplied	2.7	Brown clay with vegetation
481210	WS02	None Supplied	1.6	Brown sand with gravel
481211	WS04	None Supplied	1.5	Brown sand with gravel
481212	WS05	None Supplied	2.8	Brown sandy clay

Analytical Report Number : 25-012689

Project / Site name: Irlam Drive, Kirkby

Water matrix abbreviations:

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

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
TPH Chromatogram in soil	TPH Chromatogram in soil	In-house method	L064B	D	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE

Analytical Report Number : 25-012689
Project / Site name: Irlam Drive, Kirkby

Water matrix abbreviations:

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

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazine followed by colorimetry	In-house method	L080-PL	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate	In-house method	L009B	D	MCERTS

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

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

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

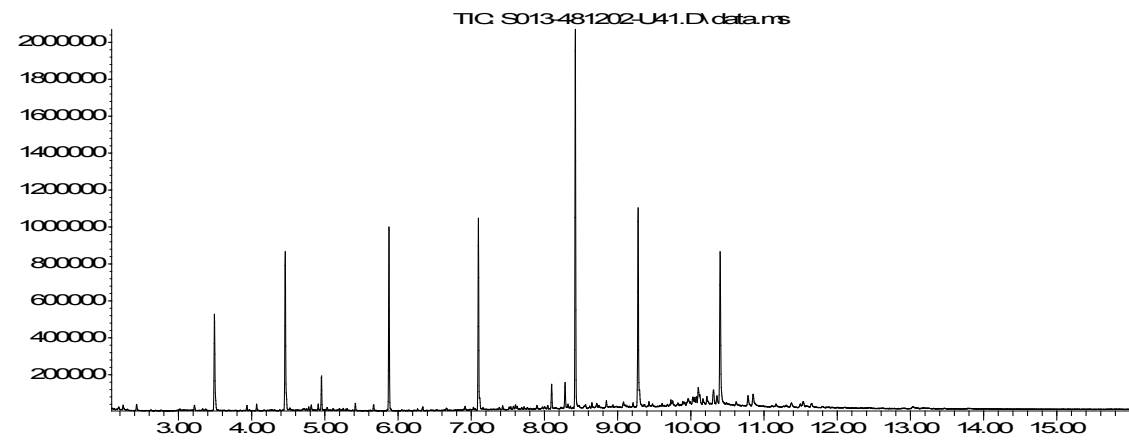
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

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

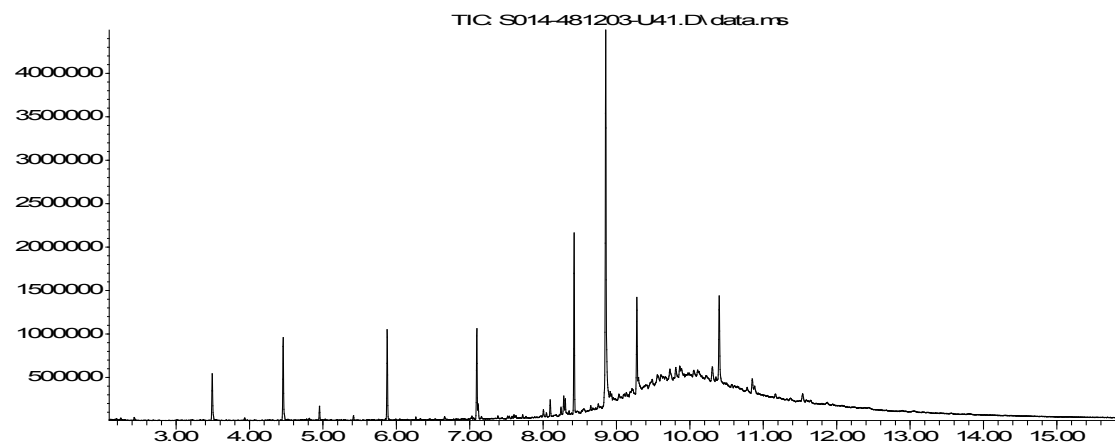
Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

*g - Unaccredited sample matrix.

Abundance

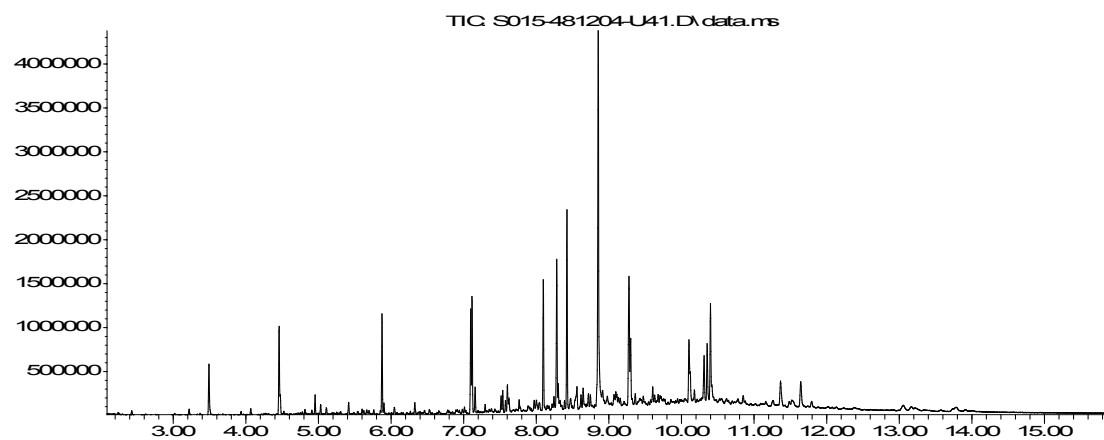


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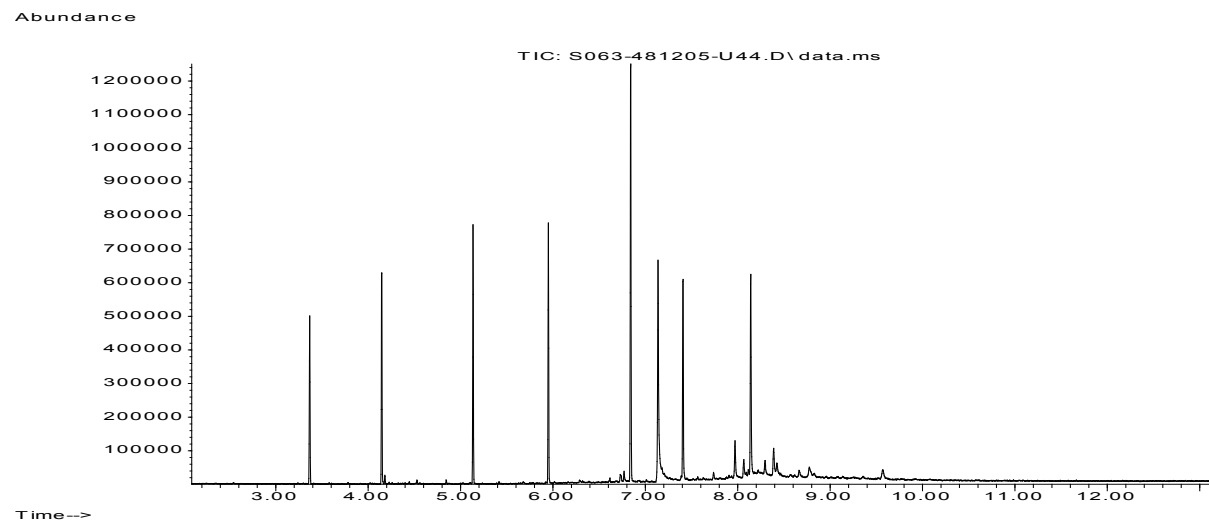


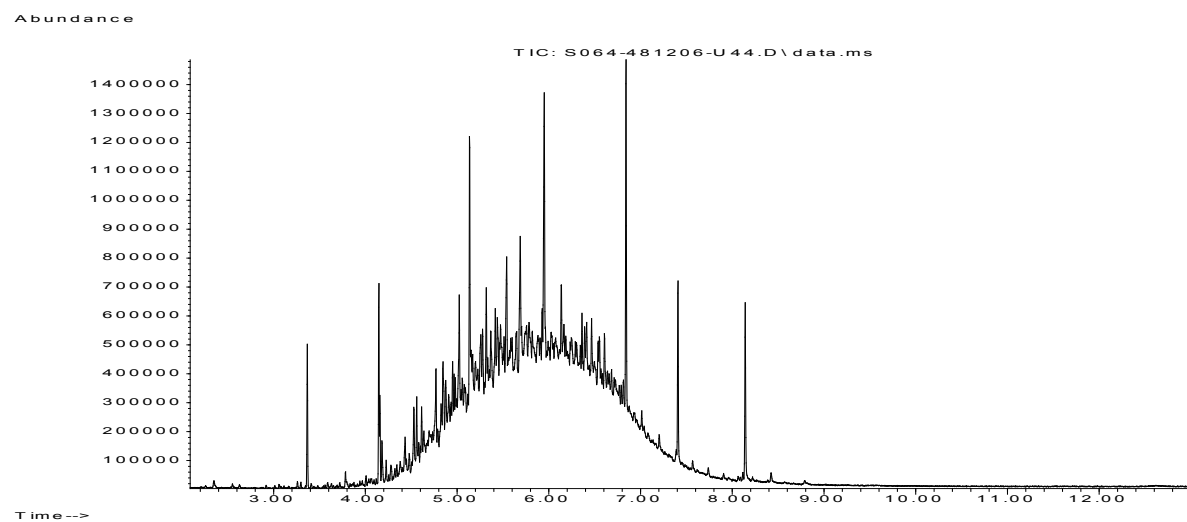
Time-->

Abundance



Time-->





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Analytical Report Number : 25-012691

Project / Site name:	Irlam Drive, Kirkby	Samples received on:	13/03/2025
Your job number:	1373.02	Samples instructed on/ Analysis started on:	13/03/2025
Your order number:	1373.02	Analysis completed by:	24/03/2025
Report Issue Number:	1	Report issued on:	24/03/2025
Samples Analysed:	3 10:1 WAC samples		

Signed:



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

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

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

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

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

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

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

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

Analytical Report Number: 25-012691
Project / Site name: Irlam Drive, Kirkby
Your Order No: 1373.02

Lab Sample Number	481221	481222	481223
Sample Reference	WS01	WS05	WS07
Sample Number	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A
Depth (m)	0.80	0.70	0.45
Date Sampled	11/03/2025	12/03/2025	11/03/2025
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	40	65.1
Moisture Content	%	0.01	NONE	10	7.3	9.9
Total mass of sample received	kg	0.1	NONE	2	2	2

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	7.5	8.8	7.6
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.9	0.6	3.3
Loss on Ignition @ 450°C	%	0.2	MCERTS	2	1.8	8.4
Acid Neutralisation Capacity	mmol/kg	-9999	NONE	3.6	12	6.5

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.47	0.38	2.5
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.41
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06	1.2
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.09	1.2
Phenanthrene	mg/kg	0.05	MCERTS	0.26	0.8	11
Anthracene	mg/kg	0.05	MCERTS	0.06	0.16	2.9
Fluoranthene	mg/kg	0.05	MCERTS	0.62	0.87	12
Pyrene	mg/kg	0.05	MCERTS	0.57	0.84	13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.25	0.36	6.3
Chrysene	mg/kg	0.05	MCERTS	0.36	0.38	6.7
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.36	0.36	6.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.15	0.17	2.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.28	0.36	6.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.14	0.15	3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.91
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.21	0.2	3.9
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	1.4

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	3.74	5.23	82.7
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Petroleum Hydrocarbons

Mineral Oil (EC10 - EC40) EH_CU_1D_AL	mg/kg	10	NONE	< 10	290	64
---------------------------------------	-------	----	------	------	-----	----

VOCs

Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

Total BTEX	µg/kg	10	MCERTS	< 10	< 10	< 10
------------	-------	----	--------	------	------	------

Analytical Report Number: 25-012691
 Project / Site name: Irlam Drive, Kirkby
 Your Order No: 1373.02

Lab Sample Number				481221	481222	481223
Sample Reference				WS01	WS05	WS07
Sample Number				None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A
Depth (m)				0.80	0.70	0.45
Date Sampled				11/03/2025	12/03/2025	11/03/2025
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status			

PCBs by GC-MS

PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	< 0.007	< 0.007

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

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Waste Acceptance Criteria Analytical Results

Waste Acceptance Criteria Analytical Results							
Report No:	25-012691						
					Client: REMADALT		
Location	Irlam Drive, Kirkby						
Lab Reference (Sample Number)	481221				Landfill Waste Acceptance Criteria		
					Limits		
Sampling Date	11/03/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS01						
Depth (m)	0.80						
Solid Waste Analysis							
TOC (%)**	0.9				3%	5%	6%
Loss on Ignition (%) **	2.0				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH, ID, CU, AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	3.74				100	--	--
pH (units)**	7.5				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	3.6				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test		
	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00261			0.0261	0.5	2	25
Barium *	0.0128			0.128	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0017			0.017	0.5	10	70
Copper *	0.016			0.16	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.00353			0.0353	0.5	10	30
Nickel *	0.0019			0.019	0.4	10	40
Lead *	0.0037			0.037	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.011			0.11	4	50	200
Chloride *	1.2			12	800	15000	25000
Fluoride*	0.52			5.2	10	150	500
Sulphate *	5.5			55	1000	20000	50000
TDS*	43			430	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	5.40			54.0	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	90						
Moisture (%)	10						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation							
* = UKAS accredited (liquid eluate analysis only)							
** = MCERTS accredited							

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3. This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.
Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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Waste Acceptance Criteria Analytical Results

Waste Acceptance Criteria Analytical Results							
Report No:	25-012691						
					Client: REMADALT		
					Landfill Waste Acceptance Criteria Limits Inert Waste Landfill Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill Hazardous Waste Landfill		
Location	Irlam Drive, Kirkby						
Lab Reference (Sample Number)	481222						
Sampling Date	12/03/2025						
Sample ID	WS05						
Depth (m)	0.70						
Solid Waste Analysis							
TOC (%)**	0.6				3%	5%	6%
Loss on Ignition (%) **	1.8				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH, ID, CU, AL	290				500	--	--
Total PAH (WAC-17) (mg/kg)	5.23				100	--	--
pH (units)**	8.8				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	12				--	To be evaluated	To be evaluated
Eluate Analysis							
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test		
	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00527			0.0527	0.5	2	25
Barium *	0.0123			0.123	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0028			0.028	0.5	10	70
Copper *	0.015			0.15	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.00475			0.0475	0.5	10	30
Nickel *	0.0029			0.029	0.4	10	40
Lead *	0.0034			0.034	0.5	10	50
Antimony *	0.0073			0.073	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0096			0.096	4	50	200
Chloride *	5.0			50	800	15000	25000
Fluoride*	0.37			3.7	10	150	500
Sulphate *	14			140	1000	20000	50000
TDS*	83			830	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	8.78			87.8	500	800	1000
Leach Test Information							
Stone Content (%)	40.0						
Sample Mass (kg)	2.0						
Dry Matter (%)	93						
Moisture (%)	7.3						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation							
* = UKAS accredited (liquid eluate analysis only)							
** = MCERTS accredited							

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3. This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.
Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.



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Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3. This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.

Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number : 25-012691
Project / Site name: Irlam Drive, Kirkby

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
481221	WS01	None Supplied	0.8	Brown sand with gravel and vegetation
481222	WS05	None Supplied	0.7	Brown sand with gravel and stones
481223	WS07	None Supplied	0.45	Brown sand with clinker and stones

Analytical Report Number : 25-012691

Project / Site name: Irlam Drive, Kirkby

Water matrix abbreviations:

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

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1 ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025

Analytical Report Number : 25-012691
Project / Site name: Irlam Drive, Kirkby

Water matrix abbreviations:

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

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025

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

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

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

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

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

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

The result for sum should be interpreted with caution



APPENDIX E

Laboratory Geotechnical Tests



Laboratory Report



Contract Number: 77798

Client Ref: **1373.02**

Client PO: **1373.02**

Date Received: **21-03-2025**

Date Completed: **25-03-2025**

Report Date: **25-03-2025**

Client: **Remada Limited**

This report has been checked and approved by:

Contract Title: **Irlam Drive, Kirkby**

For the attention of: **Krysia Szybut**

Brendan Evans

Senior Office Administrator

Description	Qty
Determination of water content BS EN ISO 17892-1:2014	7
4 Point Liquid & Plastic Limit.. BS EN ISO 17892-12 - * UKAS	7
Particle Size Distribution BS EN ISO 17892-4 : 5.1 - * UKAS	1
Sedimentation by Pipette Method BS EN ISO 17892-4 : 5.4	1

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

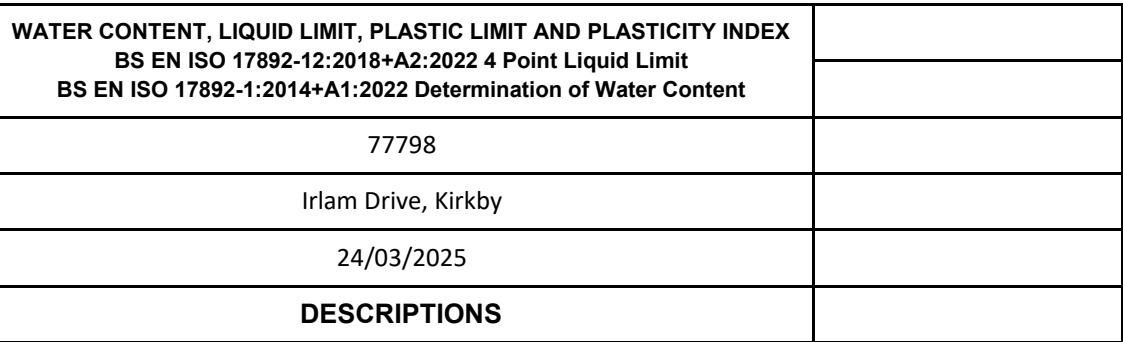
This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO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

Approved Signatories:

Brendan Evans (Senior Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)

Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)

Wayne Honey (HR & HSE Manager)

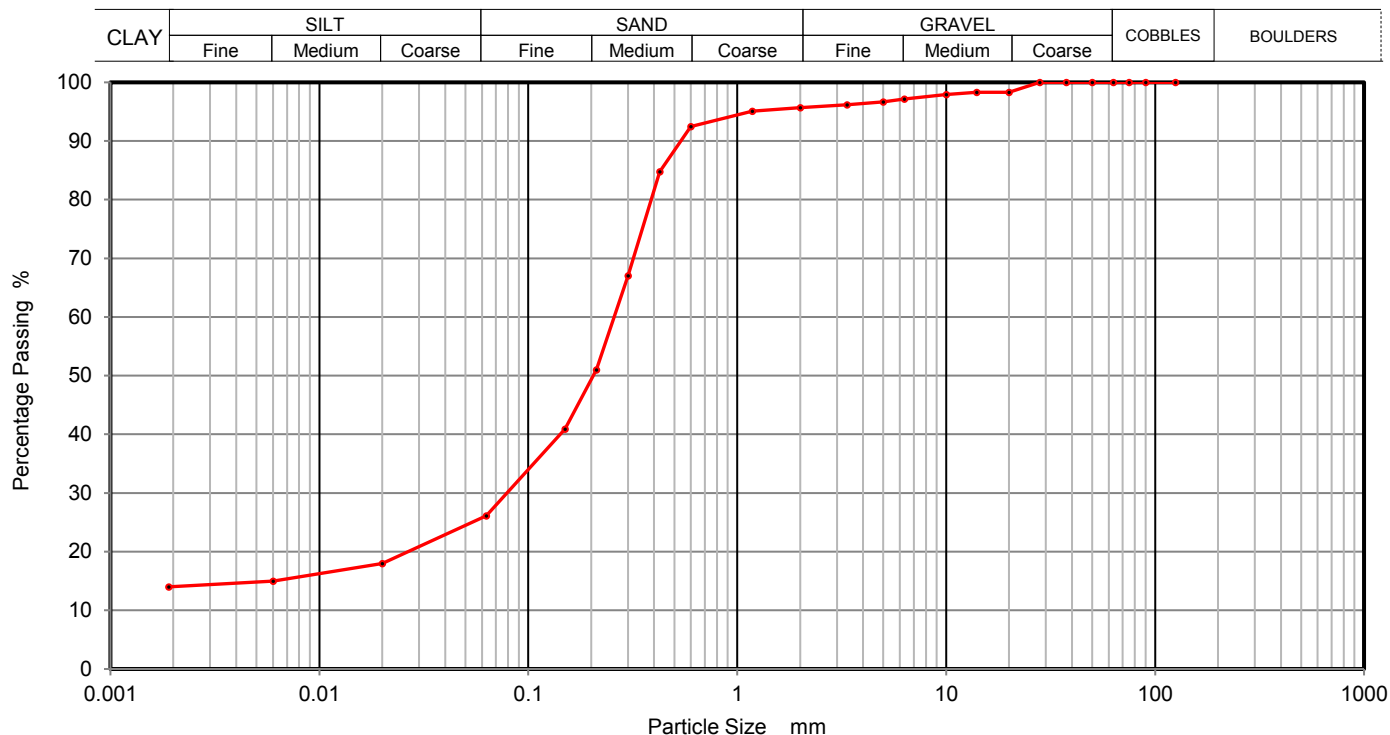
[illegible]

Operator
Aaron. H

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve & Pipette Analysis, Clause 5.2 & 5.4

Contract Number	77798
Borehole/Pit No.	WS06
Sample No.	
Depth Top	1.00
Depth Base	2.00
Sample Type	B

Project Name	Irlam Drive, Kirkby
Sample Description	Brown/ red slightly gravelly silty clayey fine to coars SAND
Date Tested	24/03/2025



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	18
90	100	0.0060	15
75	100	0.0020	14
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	98		
10	98		
6.3	97		
5	97		
3.35	96		
2	96		
1.18	95		
0.63	92		
0.425	85		
0.30	67		
0.20	51		
0.15	41		
0.063	26		

Sample Proportions	% dry mass
Cobbles	0
Gravel	4
Sand	70
Silt	12
Clay	14

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator
Cameron. T

