

**Site Investigation & Risk
Assessment Report**

Project Name: Penygarnddu Industrial Estate

Location: Merthyr Tydfil, Wales CF48 2TA

Client: Glanville Consultants Ltd.

Project ID: J15809

Report Date: 5th August 2025

Report Issue: 1

SUMMARY

The site in Merthyr Tydfil, Wales, which is located within the Penygarnddu Industrial Estate, is roughly rectangular and extends to a maximum of approximately 70mx40m. At the time of the walkover, site comprised a disused area of land, covered in hardstanding. An earth bund, approximately 3-4m in height, was present within the south-west/north-western section of the site. It is proposed to construct a new McDonald's building with associated car parking and drive-thru

Geological records indicate the site to be underlain by Made Ground, over Till, over South Wales Lower Coal Measures Formation (SWLCM).

A Phase 1 Desk Study (our report ref: J15809, dated December 2024), which indicates that the site has a history of industrial uses, as a quarry and then as a works from the 1980s. The site is located in a coal mining area.

A single phase of intrusive investigation was carried out, which comprised 3 No. windowless sampler boreholes to a maximum depth of 5.0m (bgl), 4 No. trial pits to a maximum depth of 3.0m (bgl), 1 No. cable percussive borehole, with rotary-cored follow-on to a maximum depth of 30.0m (bgl), 2 No. Down-the-Hole-Hammer (DTHH) boreholes with rotary-cored follow-on to a maximum depth of 36.4m (bgl) and 2 No. Hand Auger boreholes to a maximum depth of 1.5m (bgl).

The soils encountered comprised 0.1/0.5m of Concrete, over sub-base (to 0.2/0.5m bgl), over Made Ground (to 1.5+/11.0m bgl) which in turn was underlain by Till (to 9.1/12.3m bgl), over a series of Mudstones, Siltstones and Sandstone, with coal seams (South Wales Lower Coal Measures Formation). Within one of the boreholes, a void was encountered between 29.9 – 30.6m (bgl), which may indicate the presence of possible mine workings.

During the course of the intrusive investigation groundwater was only encountered within one of the twelve exploratory holes, with a standing water level record as 4.6m (bgl) within WLS01 upon completion of drilling. During the subsequent groundwater monitoring visits, standing water levels were measured between 1.69 – 29.79m (bgl).

On the basis of the above and the investigation works undertaken to date, it is recommended that a shallow reinforced raft foundation be utilised. For this, an allowable bearing capacity of 30kPa is recommended at a depth of 1.0m.

The sulphate content of the made ground and natural soil analysed was found to fall within Class DS-1. The ACEC classification for the site is AC-1.

Allowance should be made for perched water entries within the made ground soils from old land drains/service pipe runs. The majority of these would be anticipated to be dealt with using simple dewatering techniques, such as pumping from sumps.

Detailed information on the proposed development, such as detailed final layout, loadings and serviceability limits was not provided. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules.

The contamination testing has not indicated significant contamination in terms of the proposed commercial development. No gas risk has been identified either.

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

As with any site, areas of contamination not identified during investigation works may come to light during the course of redevelopment. Accordingly, a discovery strategy must be in place during the redevelopment to ensure that any hitherto unknown contamination is identified and dealt with in an appropriate manner. Depending on the nature of any such contamination, it may prove necessary to reassess the remedial strategy for the site. The presence of contamination may affect the classification of waste soils, or the potential for their re-use.

A formal remediation strategy and verification plan should be agreed with the regulatory authorities prior to commencement of any remedial works.

It should be recognised that site conditions can vary over time, in response to seasonal variations, prevailing weather conditions or other natural phenomena, and also in response to human activity on or near the site. These factors can influence both geotechnical and geo-environmental characteristics, including soil moisture conditions, the occurrence of groundwater, and the behaviour of mobile contamination phases. Accordingly, the accuracy and reliability of the investigation findings may be affected.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of McDonalds and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

Southern Testing Laboratories Ltd. assumes no liability for any conditions not revealed in the records obtained in performance of the services in accordance with the limitations of the contract with the Client, or where variations occur between exploratory hole locations or below the depth of investigation.

The recommendations contained in this report are made in respect of the particular context of the investigation as described in the report and may not be appropriate to alternative development schemes. This report should be considered in its entirety and Southern Testing Laboratories Ltd. accepts no responsibility for and excludes liability in respect of any omission or alteration made by others, and any use of the report for any purpose other than that for which it was produced.

Author	S Marshall BSc (Hons) FGS	
Check / Review	J Kelly BSc PhD DIC	
Check / Review	J N Race BSc MSc CGeol FGS	
Check / Review	A Moffatt BSc MSc FGS	

For and on behalf of Southern Testing Laboratories Limited

DOCUMENT HISTORY AND STATUS

Issue No.	Date	Purpose or Status	Author	Check / Review
1	05/08/2025	Phase II Site investigation Report	SM	JK/ADM/JNR

TABLE OF CONTENTS

A	INTRODUCTION	1
1	Authority	1
2	Location	1
3	Proposed Construction	1
4	Object	1
5	Scope	1
B	DESK STUDY AND WALKOVER SURVEY	2
6	Desk Study	2
7	Site Walkover Survey	3
C	GROUND INVESTIGATION	4
8	Strategy and Method	4
9	Weather Conditions	4
10	Soils as Found	4
11	Groundwater Observations	6
D	DISCUSSION OF GEOTECHNICAL TEST RESULTS AND RECOMMENDATIONS	6
12	Geotechnical Laboratory Tests	6
13	Soil Classification and Properties	7
14	Groundwater Levels	9
15	Swelling and Shrinkage	10
16	Lateral Pressure & Heave	10
17	Soakaways	11
18	Sulphates and Acidity	11
19	Foundations and Bearing Capacity	11
20	Plant Platform	12
21	Excavations and Dewatering	12
22	Retaining Structures	12
23	Slope Stability	13
24	Pavement Construction	13
E	DISCUSSION OF GEOENVIRONMENTAL TEST RESULTS AND RECOMMENDATIONS	14
25	Analytical Framework	14
26	Site Investigation – Soils	14
27	Site Investigation - Gas	17
28	Summary of Identified Contamination	18
29	Risk Evaluation	18
30	Discussion and Conclusions	19

31	General Guidance	19
F	WASTE DISPOSAL	20
32	Introduction	20
33	Preliminary Waste Classification and WAC Analysis	20
34	Results of the Preliminary Assessment	20
35	Results of Waste Acceptance Criteria (WAC) Analysis	21
36	Recommendations	21

TABLE OF APPENDICES

APPENDIX A

Site Plans and Exploratory Hole Logs

APPENDIX B

Field Sampling and In-Situ Test Methods and Results

APPENDIX C

Geotechnical Laboratory Test Methods and Results

APPENDIX D

Geotechnical Figures and Tables

APPENDIX E

Contamination Laboratory Test Methods and Results

APPENDIX F

Monitoring Data

APPENDIX G

Photographs

A INTRODUCTION

1 Authority

Our authority for carrying out this work is contained in an email from Mr J Cross of Glanville Consultants Ltd., dated 9th January 2025.

2 Location

The site is located in the Penygarnddu Industrial Estate to the north-east of Merthyr Tydfil in Wales, as indicated on Figure 1 within Appendix A. The approximate National Grid Reference of the site is SO 07802 08695.

3 Proposed Construction

It is proposed to construct a new McDonald's building on the site with associated car parking and drive-thru as per the proposed site layout plan (Figure 2 in Appendix A).

For the purposes of the contamination risk assessment, the proposed development land use is classified as Commercial/Industrial CLEA Model Ref [1].

The gas sensitivity of the proposed development is therefore rated as Low CIRIA C665 Ref [1].

4 Object

A Phase 1 Desk Study (including a walkover survey) and a Coal Mining Risk Assessment, has previously been undertaken, to which the reader is referred (our report ref: J15809, dated December 2024).

This is a Phase II geotechnical and contamination (risk estimation and evaluation) investigation (Tier 1).

The object of the investigation was to assess foundation bearing conditions and other soil parameters relevant to the proposed development, and to assess the likely nature and extent of soil, groundwater and soil gas contamination on the site.

5 Scope

This report presents our exploratory hole logs and test results and our interpretation of these data.

As with any site there may be differences in soil conditions between exploratory hole positions.

This report is not an engineering design and the figures and calculations contained in the report should be used by the Engineer, taking note that variations will apply, according to variations in design loading, in techniques used, and in site conditions. Our figures therefore should not supersede the Engineer's design.

The site investigation has been completed with reference to BS 5930 Ref [1] and BS 10175 Ref [2].

It should be recognised that site conditions can vary over time, in response to seasonal variations, prevailing weather conditions or other natural phenomena, and also in response to human activity on or near the site. These factors can influence both geotechnical and geoenvironmental characteristics, including soil moisture conditions, the occurrence of groundwater, and the behaviour of mobile contamination phases. Accordingly, the accuracy and reliability of the investigation findings may be affected. The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of McDonalds and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The recommendations contained in this report are made in respect of the particular context of the investigation as described in the report and may not be appropriate to alternative development schemes. This report should be considered in its entirety and Southern Testing Laboratories Ltd. accepts no responsibility for and excludes liability in respect of any omission or alteration made by others, and any use of the report for any purpose other than that for which it was produced.

Detailed information on the proposed development, such as detailed final layout, loadings and serviceability limits was not provided. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules.

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

B DESK STUDY AND WALKOVER SURVEY

6 Desk Study

The following Sections, 6 & 7, have been taken from our Desk Study report (our ref: J15809, dated December 2024) to provide some background information.

6.1 Geology

The British Geological Survey Map of the area (Sheet No. 231 – Merthyr Tydfil), together with the BGS online maps, indicates that the site geology consists of Made Ground, over Till, over South Wales Lower Coal Measures Formation (SWLCM).

6.1.1 Fill and Made Ground

"Fill" and "made ground" are terms which are used interchangeably to describe material that has been placed by man. It may have been placed in a controlled or uncontrolled manner and, if the latter term applies, then very great variations in material type, depth and density are likely to occur. Old refuse filling often contains sulphate rich materials, heavy metals and other dangerous chemicals, and may produce methane gas. Many fills are subject to high and variable amounts of settlement when loaded.

6.1.2 Till

Till deposits are glacial in origin and were formed underneath the former ice sheets. They consist of interbedded clays and silty clays composed of ground-up debris, or rock flour, in which boulders and rocky fragments of all sizes are embedded. Deposits of sand and gravel may be found within the Boulder Clay. The colour of the clay depends on the colour of the rock over which the ice has passed.

6.1.3 South Wales Lower Coal Measures Formation

The SWLCM generally consists of grey, coal-bearing mudstones/siltstones and minor sandstones formed in swamps during the Carboniferous period. It should be noted that the strata have been subjected to varying amounts of folding and disturbance. The coals present in the strata vary greatly in both thickness and depth and are thought to extend laterally from southern Wales through to the Bristol Coalfield.

Near Merthyr it is predominantly argillaceous, comprising a sequence of mudstone- siltstone- seatearth cycles and including several widely worked coals. Precise correlation of these seams remains uncertain.

Tabular and nodular ironstones distributed through the measures were formerly worked from patchworks and shallow mines, particularly in the area north of Merthyr Tydfil.

This formation is known to contain pyrite.

7 Site Walkover Survey

7.1 General Site Description and Boundaries

The site, which is located within the Penygarnddu Industrial Estate, is roughly rectangular and extends to a maximum of approximately 70m x 40m. At the time of the walkover, site comprised a disused area of land, covered in hardstanding. An earth bund approximately 3-4m in height was present within the south-west/north-western section of the site.

The site is bounded to the north-east by an unnamed road, which runs approximately east to west. The south-eastern site boundary is marked by a derelict fence beyond which is an aggregate/highways yard which includes piles of aggregate; to the south of the aggregate yard, is the Heads of the Valleys Road (A465). The south-western/north western site boundary is marked by an earth bund beyond which is a retaining wall which marks the edge of a car parking area.

7.2 Topography and Drainage

On a regional scale, the topography of the local area generally slopes down from the north and the south-east, with the Heads of the Valleys Road (A465) marking a relatively low point within the local area.

The site itself slopes down gently from the gate/site entrance in the northern corner towards the south-eastern site boundary. An earth bund, approximately 3-4m in height, is present within the south-western/north-western section of the site. An approximately 2m high retaining wall and gabion wall were present along the southern edge of the earth bund.

At the time of the walkover, an area of standing water was noted within the south-western section of the site.

7.3 Vegetation

The main body of the site is generally absent of any significant vegetation. The earth bund on site was noted to be covered in grass, shrubs and some semi-mature saplings/trees. A number of semi-mature to mature trees were noted within the north-eastern corner of the site.

7.4 Buildings and Land Use on Site and Nearby

At the time of the walkover survey, the majority of the site was vacant. A disused welfare cabin was present within the north-eastern corner of the site. The main body of the site was covered in a mixture of concrete and gravel hardstanding. An approximately 2m high retaining wall and gabion wall were present adjacent to the earth bund on site.

During the course of the walkover survey, an area of fly-tipped material was noted between the back of the earth bund and the retaining wall for the adjacent car park area.

The area surrounding the site comprised predominately commercial/industrial properties, with their associated car parking areas. An aggregate/highway yard was noted to the south-east of the site. A derelict residential property is present to the north-east. A supermarket with its associated car parking area is present to the north-west/south-west.

7.5 Site Photographs

A series of photographs showing the site and surrounding area at the time of the intrusive investigation is included in Appendix G.

C GROUND INVESTIGATION

8 Strategy and Method

The strategy adopted for the intrusive investigation comprised the following:

Activity / Method	Purpose	Max Depth Range (m bgl)	Installations / Notes
WLS01 – WLS03 Dynamic Windowless Sampling	Boreholes to investigate the shallow ground conditions within external areas. To undertake SPT's and allow collection of samples for geotechnical and contamination testing. Installation of shallow land gas and groundwater monitoring wells.	2.0 – 5.0m	Gas & groundwater monitoring wells installed within WLS01 and WLS02.
BH01 Cable Percussive with Rotary follow-on	Borehole to assess deeper ground conditions, undertake SPT's and allow collection of samples for geotechnical testing.	30.0m	Gas & groundwater monitoring well installed within BH01.
BH02 & BH03* Down-The-Hole-Hammer (DTHH) with Rotary follow-on	Borehole to assess deeper ground conditions and allow collection of samples for geotechnical testing.	29.6 – 36.4m	Gas & groundwater monitoring well installed within BH02.
TP01 – TP04 8 Tonne Excavator	Trial pit to investigate the shallow ground conditions.	1.5 - 3.0m	
HA01 & HA02 Hand Auger Boreholes	Hand auger boreholes to assess materials within earth bund on site.	1.5m	
DCP01 – DCP03 DCP CBR	Dynamic Cone Penetrometer (DCP) CBR tests adjacent to exploratory hole locations.	1.0m	Undertaken adjacent to WLS01, WLS02 & TP04.

*At the original location of BH03 (BH03A), a 2.4m deep void was located beneath the sub-base & concrete. The location was moved to avoid this area.

Exploratory hole locations which were agreed with the Client's Engineer are shown in Figure 3 in Appendix A.

In-situ test and sampling methods descriptions employed are given in Appendix B together with the test results.

SPT Energy Ratio certificates and a Summary Table of SPT N Values is provided within Appendix B.

The presence of hardstanding, underground utility services and an earth bund on site limited/restricted the fieldwork.

9 Weather Conditions

The fieldwork was carried out between 18th to 25th March 2024, at which time the weather was generally dry and clear.

10 Soils as Found

The soils encountered are described in detail in the attached exploratory hole logs (Appendix A), but in general comprised a covering of Concrete and/or Sub-base over Made Ground over Till over South Wales Lower Coal Measures Formation. A summary is given below.

Depth (m bgl)	Soil Type	Description
GL to 0.1/0.5m	Concrete (TP02, TP03, WLS03, BH02 & BH03 only)	CONCRETE with 5mm steel mesh reinforcement.
GL/0.5m to 0.2/0.5	Sub-base	Reddish brown to dark grey, sandy, medium to coarse, sub-angular, limestone GRAVEL (sub-base).
0.1/0.5m to 1.5+/11.0m	Made Ground	Greyish brown to dark grey, gravelly CLAY. Gravel comprises fine to coarse, sub-angular, brick, mudstone, siltstone, limestone and coal, with occasional limestone cobbles. <i>Full depth not proven in some of the shallower trial holes</i>
4.5/11.0m to 9.10/12.30m	Till	Firm, dark grey, silty, gravelly, CLAY. Gravel comprises fine to coarse, sub-angular, siltstone and mudstone (potentially reworked).
9.1/12.30m to 29.60/36.40m+	South Wales Lower Coal Measures Formation	Weak to very strong, thinly laminated, pale grey to dark grey, MUDSTONE/SILTSTONE/SANDSTONE.

The soils and rocks encountered have been described in accordance with BS5930, BS EN ISO 14688 & BS EN ISO 14689. The deeper boreholes (BH01 – BH03) provided a sequence which was generally logged as Made Ground (to 4.5/11.0m bgl) over gravelly Clay (to 9.1/12.3m bgl) over a sequence of mudstone/siltstone/sandstone, which included bands/layers of coal.

10.1 Underlying Coal Seams

Within the deeper boreholes (BH01, BH02 & BH03), intact coal and evidence of mines workings were encountered at various depths. The details of which are included within the exploratory holes (Appendix A) and are summarised in the table below.

Hole ID	Depth Top (m bgl)	Depth Base (m bgl)	Thickness (m)	Notes
BH01	14.3	14.55	0.25	Intact Coal
	20.7	20.75	0.05	Intact Coal
BH02	13.30	13.50	0.20	Intact Coal
BH03	14.30	14.55	0.25	Intact Coal
	29.90	30.60	0.70	Void – Possible Mine Workings
	34.70	35.10	0.40	Intact Coal

Each borehole encountered deep made ground over the underlying coal measures. A thin seam (0.2-0.25m thick) of intact coal from around 13.3-14.3m bgl was encountered within each of the boreholes. A very thin seam (50mm thick) was also recorded in BH01 at 20.7m, although not recorded within BH02 or BH03. A possible working was noted in BH03 at 29.9-30.6m bgl (0.7m thick), and it appears likely that based on the topographical differences across the site, was below the depth of BH01 and BH02, if present.

It is difficult to assign names to the seams, but based on the working is likely to be a former ironstone working.

The soils encountered are broadly consistent with the recorded geology as outlined within our Desk Study and Coal Mining Risk Assessment report (our ref: J15809, dated December 2024); however, the 1350mm thick coal seam (Five Foot Gellideg) suggested to be at 11m depth, was noticeably absent in the boreholes (BH01-BH03), as were the presence of any ironstone seams (i.e. GARW No.1 Ironstone) similarly, it is unknown if the void at depth relates to a coal or ironstone working.

Deep made ground/reworked soils were encountered within the borehole together with an absence and/or relatively shallow thickness of superficial deposits. The superficial deposits, were noted to be similar in nature to the made ground/reworked soils.

One potential explanation for the above and for the absence of the Five Foot Gellideg at depth of 11m below the site could be that the site and surrounding area was worked, in an open cast manner to the depth of the seam, with the spoil materials placed back on site at a later date. This ties into the information provided by the Coal Authority (see Section 12.7 in our Coal Mining Risk Assessment Report (our report ref: J15809, dated December 2024) which stated that on the rationalised seam plans (historically produced by the National Coal Board) for the site both the coal seams and ironstone seams includes a note stating *“Ironstone/Coal probably worked to outcrop in each seam”*.

Within the Coal Authority’s Consultants Coal mining Report (ref: 51003447079001, dated August 2024) the Past Underground mining entries table (summarised in Section 12.6 in our Coal Mining Risk Assessment Report) states that the Five Foot Gellideg was last worked in 1830, which was before the date of the earliest mapping (1876) included within the Phase 1 Desk Study (our report ref: J15809, dated December 2024).

10.2 Mine Gases

Monitoring for land gases was undertaken during the rotary drilling operation, with readings taken after every 3.0m run. The gases monitored were methane, carbon dioxide, oxygen, carbon monoxide and hydrogen sulphide. No elevated levels of methane, carbon dioxide, carbon monoxide or hydrogen sulphide were detected during the monitoring, with recorded oxygen at normal levels.

See also gas monitoring section below.

10.3 Visual and Olfactory Evidence of Contamination

Organic odours were noted within two of the exploratory holes, at a depth of 3.8 – 5.0m (bgl) in WLS01 and 0.4 – 1.2m (bgl) in TP03. Additionally, made ground was encountered within all of the exploratory holes to depths of up to 11.0m (bgl). These materials comprised predominately gravelly Clay soils and included anthropogenic materials including brick, as well as mudstone, siltstone, limestone and coal, with occasional limestone cobbles. No obvious contamination was encountered based only on a visual and olfactory assessment, although such soils can potentially contain elevated contaminant concentrations of heavy metals, Polyaromatic Hydrocarbons (PAHs), asbestos, etc. which can only be detected through laboratory analysis. The results of the laboratory analysis undertaken to date are discussed in Section E.

11 Groundwater Observations

With the exception of one of the windowless sampler boreholes (WLS01) all of the exploratory holes were noted as being dry upon completion of drilling/excavation. A standing water level of 4.6m (bgl) was noted within WLS01 upon completion of drilling. See Section 14 also for the groundwater levels recorded during the monitoring.

D DISCUSSION OF GEOTECHNICAL TEST RESULTS AND RECOMMENDATIONS

12 Geotechnical Laboratory Tests

The following geotechnical laboratory testing was carried out on selected samples in order to aid material classification and characterise soil properties. The test method references and results are given in Appendix C.

Laboratory Test	Number of Samples Tested	Stratum
Moisture Content	7*	Made Ground
	1	Till - Clay

Laboratory Test	Number of Samples Tested	Stratum
	1	South Wales Lower Coal Measures Formation - Clay
Atterberg Limit	7*	Made Ground
	1	Till - Clay
	1	South Wales Lower Coal Measures Formation - Clay
Uniaxial Compressive Strength of Rock	6	South Wales Lower Coal Measures Formation
Point Load Strength of Rock	12	South Wales Lower Coal Measures Formation
BRE SD1 Suite D**	7	Made Ground
	1	Natural Soils

*Asbestos Screening tests undertaken prior to geotechnical testing being carried out.

**Sulphate results for an additional 14 No. made ground samples are included within the contamination test results.

13 Soil Classification and Properties

13.1 Made Ground

Made Ground was encountered within all twelve of the exploratory holes, with the majority of the shallower holes recording made ground to the base of the borehole/trial pits.

The full depth of the made ground materials was proven within the deeper boreholes (BH01, BH02 & BH03) only and was noted to be between 4.5 - 11.5m in depth. The made ground materials were found to generally comprise gravelly Clays and included anthropogenic materials including fragments of brick, mudstone, siltstone, limestone and coal, with occasional limestone cobbles.

Three of the exploratory holes (HA01, HA02 & TP01) were undertaken within the earth bund on site, these materials were seen to be of a similar composition to the other made ground materials encountered on site.

Asbestos screening tests were undertaken on seven samples of the made ground samples in order to allow for geotechnical laboratory to be undertaken. Atterberg Limit tests were carried out on all the samples where no asbestos fibres were detected. The results of the Atterberg Limit tests indicate clays of low plasticity (CL) to intermediate plasticity (CI). The results of the Atterberg Limit test is included within Appendix C and are summarised in the table below.

	Water Content (%)	Liquid Limit (%)	Plasticity Limit (%)	Unmodified Plasticity Index (%)
Range	11.5 – 25.4	28 - 41	17 - 22	11 - 21
Mean	17.6	36.7	19.3	17.4

The unmodified Plasticity Indices for the clay made ground materials were recorded in the range 11-21%, indicating Low to Medium Volume Change Potential.

The made ground should be anticipated to be variable in both composition, and thickness across the site and potentially having high compressibility, as indicated by the very variable densities noted from the SPT “N” values, which indicated very loose to medium dense materials.

On the basis of the above the made ground materials do not appear to be “Engineered” backfill and will, therefore, will have variable settlement characteristics.

It is possible that obstructions could be present within the made ground materials associated with both the current and former developments on the site.

13.2 Till

These deposits were only encountered within the deeper boreholes (BH01, BH02 & BH03), where they were noted to be similar in nature to the made ground comprising, silty, gravelly Clay. These materials are noted to potentially be reworked; which would fit in with the potential scenario of the open-cast workings.

A single Atterberg Limit test was undertaken on a sample of the Clay materials encountered within BH01 at 12.0m (bgl). The results of which indicate a clay of intermediate plasticity (CI). The results of the Atterberg Limit tests is included within Appendix C and are summarised in the table below.

Hole ID / Depth (m bgl)	Water Content (%)	Liquid Limit (%)	Plasticity Limit (%)	Unmodified Plasticity Index (%)
BH01 at 12.0m	18.5	42	19	23

13.3 South Wales Lower Coal Measures Formation

The underlying rock at this site was generally seen as weak to very strong, thinly laminated, pale grey to dark grey, Mudstone/Siltstone/Sandstone, with occasional layers/beds of intact coal. Occasional bands/layers of clay were also noted within the rock strata.

A single Atterberg Limit tests was undertaken on a sample of the Clay materials encountered within BH03 at 19.2m (bgl). The results of which indicate a clay of intermediate plasticity (CI). The results of the Atterberg Limit test is included within Appendix C and are summarised in the table below.

Hole ID / Depth (m bgl)	Water Content (%)	Liquid Limit (%)	Plasticity Limit (%)	Unmodified Plasticity Index (%)
BH03 at 19.2m	12	36	17	19

Due to the nature of the rock materials encountered their strength was determined through laboratory testing.

A series of Uniaxial Compressive Strength and Point Load Index tests were carried out on selected core sub-samples from the boreholes (BH01 – BH03). The results of these tests are included in Appendix C and a plot of the results of these tests is presented in Figure P1 included in Appendix D. A Summary of Uniaxial Compressive Strength (UCS) and Point Load Indices measured are included in the table below.

Geology	Number of samples tested	Range/Mean	Uniaxial Compressive Strength (MPa)	Point Load Index (MPa)	Comments
Siltstone	13	Range	17.3 – 89.6	0.53 – 6.03	4 No. samples tested for UCS
		Mean	39.2	1.8	9 No. samples tested for Point Load
Sandstone	4	Range	124.2 – 138.1	1.27 – 3.70	2 No. samples tested for UCS
		Mean	131.2	2.5	2 No. samples tested for Point Load
Mudstone	1	Result	Not tested	0.7	1 No. sample tested for Point Load

On the basis of the UCS rock testing undertaken to date, the sample strengths fell within the range of Moderately Weak to Very Strong.

Fracture spacing within the rock materials are not fully represented by cores and, due to the difficulties in distinguishing between nature fractures and those induced by drilling/transport, fracture index has not been included on the borehole logs.

In terms of estimating the Uniaxial Compressive Strength (UCS) from the Point Load Index tests the following relationships between Uniaxial Compressive Strength (UCS) and Point Load Index $I_{s(50)}$ have been adopted:

Geology	Relationship	Comments
Siltstone	$UCS=14 \times I_{s(50)}$	Correlation based on published data. [3]
Sandstone	$UCS=22 \times I_{s(50)}$	Correlation based on published data. [3]
Mudstone	$UCS=12 \times I_{s(50)}$	Correlation based on published data. [3]

It is noted that the designer may wish to adopt a different correlation based on their experience of these soil types.

It is noted that the strength assessed during logging in the field is the material strength between the joints and, therefore, may be the highest strength available. This is assessed using a geological hammer or a knife blade with the description based on the rock strength description and classification terms within the British Standard. The measurement of strength in the laboratory, by whatever test means (Uniaxial Compression or Point Load) will use a larger specimen, which will usually include some defects, so the mass strength will generally be lower than the material strength as determined during logging. Our standard procedure, which is in accordance with the published guidance, is for the field descriptions on the logs to remain unchanged by the results of any other strength tests. Any apparent inconsistencies in assessed and measured strengths would normally be an issue which would be allowed for by the Designer.

Bulk density measurements were also calculated for the siltstone and sandstone samples tested for Uniaxial Compressive Strength, the results of which were within the range $2.63 - 2.66 \text{ Mg/m}^3$. A bulk unit weight (γ_b) of 2.6 Mg/m^3 is therefore, considered appropriate as a characteristic value for the underlying siltstone/sandstone materials at this site. The full results are included in Appendix C.

14 Groundwater Levels

Whilst the investigation was in progress, a standing water level of 4.60m (bgl), was noted within one of the twelve exploratory holes (WLS01), upon completion of drilling.

Gas/groundwater monitoring wells were installed within two of the windowless sampler boreholes (WLS01 & WLS02) and within two of the deeper boreholes (BH01 & BH02), with groundwater levels being measured during the course of the monitoring visits.

The standing water levels from the groundwater monitoring visits, are included in Appendix F and are summarised in the table below.

Hole ID	Total Depth (m bgl)	Standing Water Level (bgl)						
		20/03/2025	14/04/2025	22/04/2025	06/05/2025	19/05/2025	02/06/2025	17/06/2025
BH01	30.0m	N/A	29.52m	29.36m	29.51m	29.79m	29.51m	29.37m
BH02	29.60m	N/A	24.72m	24.41m	23.44m	24.11m	24.28m	23.27m
WLS01	5.0m	4.53m	4.66m	4.41m	4.52m	4.53m	4.54m	4.49m
WLS02	4.0m	3.28m	2.19m	1.69m	1.87m	2.23m	1.92m	1.69m

The standing water levels were also corrected to metres above ordnance datum (m AOD). These are summarised in the table below.

Hole ID	Ground Level (AOD)	Standing Water Level (AOD)						
		20/03/2025	14/04/2025	22/04/2025	06/05/2025	19/05/2025	02/06/2025	17/06/2025
BH01	383.93m	N/A	354.41m	354.57m	354.42m	354.14m	354.42m	354.56m
BH02	384.67m	N/A	359.95m	360.26m	361.23m	360.56m	360.39m	361.40m
WLS01	383.89m	379.36m	379.23m	379.48m	379.37m	379.36m	379.35m	379.40m
WLS02	383.95m	380.67m	381.76m	382.26m	382.08m	381.72m	382.03m	382.26m

Groundwater levels vary considerably from season to season and year to year, often rising close to the ground surface in wet or winter weather, and falling in periods of drought. Groundwater levels measured in Winter months may be significantly higher than those that might be experienced in dry or Summer months and the possibility of a requirement for dewatering or alternative foundation solution that may not have initially been considered should not be overlooked.

Long-term monitoring from boreholes or standpipes is required to assess the ground water regime and this did not form part of the brief for this site investigation. The effects of climate change, particularly the increased likelihood of significant rainfall events and warmer, wetter winters may mean groundwater levels in the future could be higher than those measured during site investigation works.

15 Swelling and Shrinkage

Shrinkable soils are subject to changes in volume as their moisture content is altered. Soil moisture contents vary from season to season and can be influenced by a number of factors including the action of roots. The resulting shrinkage or swelling of the soil can cause subsidence or heave damage to foundations, the structures they support and services.

Atterberg Limit tests were carried out on a total of 9 No. samples of the clayey soils recovered at various depths from across the site (see Section 13). The unmodified plasticity indices for these nine samples were recorded in the range 11-23%. When these samples are amended to allow for the coarse soil particles, then the modified plasticity indices are in the range 10.9-18.3%.

Based on the NHBC classification all nine samples are classified as Low Volume Change Potential (VCP). Therefore, on the basis of the laboratory testing undertaken to date, it is recommended that a NHBC Low Volume Change Potential site classification should be adopted for design purposes.

The designer should be aware that precautions regarding swelling and shrinkage are applicable and, in this respect, NHBC precautions provide a helpful guide with respect to minimum foundation depths and deepening, particularly within the zone of influence of vegetation.

Assessment of foundation depths should take into account trees, hedgerow and shrubs which are to be removed, are to remain or are proposed in any planting scheme; and which may be allowed to reach maturity.

Full details of protective measures are given in NHBC Standards Ref [4], Chapter 4.2, to which the reader is referred.

16 Lateral Pressure & Heave

Where foundations are more than 1.5m deep, and are within the zone of influence of existing or removed trees, then precautions will also need to be taken against the effects of lateral swelling of soils beneath house units due to removal of trees, or cutting tree roots.

A helpful guide with respect to requirements for the relief of lateral pressure is set out in the NHBC Standards Ref [4], Chapter 4.2 to which the reader is referred. The basic requirement is that compressible material or void former should be installed on the inner face of external foundation walls. With piled foundations additional voids are required below ring beams.

17 Soakaways

No soakage testing has been carried out. Due to the depth of the made ground encountered, and their clayey nature, these are considered unsuitable for soakaway drainage and a positive drainage system should be considered for surface water disposal.

18 Sulphates and Acidity

Chemical analysis has been undertaken of selected soils to establish the aggressive chemical environment for concrete, in accordance with the BRE Special Digest 1, Ref [5]. The site category determined is that of a brownfield location that contain pyrites (or potential pyrites), as the underlying soils form part of the South Wales Lower Coal Measures Formation.

The measured pH of the made ground and natural soils analysed were in the range 6.4 – 10.9 (slightly acidic to alkaline).

Including the results within the contamination testing, the soluble sulphate levels recorded within the made ground samples (21 No.) were in the range 5.82 – 826mg/l and within the natural soils analysed (1 No. sample) the soluble sulphate concentration was 241mg/l.

Given the total sample numbers tested (22 No.) the characteristic value for sulphate concentrations has been determined from the mean of the highest 20% of measured concentrations. These results indicate a DS-1 classification. The ACEC site classification is AC-1.

Due to the potential presence of pyrites, Total Potential Sulphate values for 8 No. samples of the soils were also determined, with all these samples classified as DS-1.

19 Foundations and Bearing Capacity

On the basis of the intrusive investigation undertaken to date, the made ground materials on site, extend to depths of between 4.5 – 11.0m (bgl); usually, this would result in the recommendation that any new structures on site be piled. However, the presence of a void encountered within BH03 at a depth of 29.9 – 30.6m, coupled with the site's known history of coal mining, suggests that there is the potential for underground mine workings and associated ground collapse to be present beneath the site. Therefore, piled foundations are not recommended.

Whilst potential workings have been encountered at around 30m bgl (353.8m AOD), even assuming an extraction thickness of 1.4m (double the void), the rock cover above the workings is likely to mitigate the risk from the formation of surface movement or crown holes propagating to the surface. Whilst the risk is therefore considered to be low and no mitigation/remedial measures are considered necessary in the context of the proposed development, a suitably robust foundation solution will help mitigate the risk further.

On the basis of the above and the investigation works undertaken to date, it is recommended that a shallow reinforced raft foundation be utilised for this site. For a shallow reinforced raft foundation an allowable bearing capacity of 30kPa is recommended at a depth of 1.0m. It is noted that there was a significant shallow void in BH03A, so such occurrences will need to be anticipated when foundation excavations are being made and suitable mitigations made.

Given the marked variation in settlement characteristics of the various soils encountered, it is advised that reinforcement be incorporated in all foundations to help reduce the effects of differential settlement. The structural engineer should be consulted with respect to the reinforcement specification.

It is likely that differential settlement of the foundations will be encountered across the site. Consideration could be given to ground improvement/treatment methods, either through compaction or the installation of vibro-stone columns. It is recommended that discussions are undertaken with a specialist contractor, noting the shallow void in BH03A.

A minimum foundation depth of 750mm is anticipated for NHBC Low Volume Change Potential soils. However, the designer should be aware that precautions regarding swelling and shrinkage are applicable and, in this respect, NHBC precautions provide a helpful guide with respect to minimum foundation depths and deepening, particularly within the zone of influence of trees hedgerows or shrubs; existing, proposed or removed.

Subject to the Engineers final design, excessive foundation deepening may be required. Based on NHBC guidance, foundations below 2.5m must be designed individually by an engineer on an individual property basis taking into account soil desiccation, heave, lateral pressure, trench stability and workmanship.

20 Plant Platform

In terms of plant platform design, the site sub-grade is mixed cohesive soils with some granular soils. With a view to preliminary appraisal of the general condition of the natural sub-grades for plant platform design, the following geotechnical parameters might be considered: $\phi'=28^\circ$ and $c_u=25\text{kPa}$. It is stressed, however, that fieldworks to date have been of a generalised nature across the wider area of the site, and specific assessment of bespoke plant locations has not been targeted. Site condition and levels may be entirely different at time of plant platform preparation, for example, and targeted confirmatory works should be considered. Given the variable nature of the natural and made ground materials, consideration should be given to inclusion of a geo-grid reinforcement, and design of the plant platform should be verified by an array of plate bearing tests.

21 Excavations and Dewatering

Excavations should generally be achievable using conventional plant as shown by the trial pits (TP02 – TP04) undertaken to date.

Statutory lateral support will be required in all excavations where personnel must work. Instability of the sides of any excavation carried out must be expected; accordingly, measures should be taken at all times to ensure excavations are adequately supported or battered back. An allowance should be made for breaking out sub-surface obstructions associated with past development/old drain runs etc. on site.

The made ground will be prone to instability and unheralded collapse in open excavation during wet weather, or where seepages are encountered. The shallow void in BH03A (or others present) will need to be anticipated during the groundworks and suitable mitigation measures employed.

Allowance should be made for perched water entries within the made ground and shallow soils from old land drains, service pipe runs, etc. The majority of these should be anticipated to be dealt with using simple dewatering methods, such as pumping from sumps.

Typically, being open for a limited duration, site investigation trial pits are not the most effective way of estimating ground instability and in most cases would give an optimistic view of the *long-term* stability that might be experienced in an actual site groundworks situation. Foundation excavations in particular have a higher aspect ratio, more limited lateral support (from the short ends of the pit) and are typically open for significantly longer durations than site investigation trial pits. Where narrow diameter boreholes are used as the investigation technique, long-term stability can only be crudely estimated from soil type, strength and/or density, but cannot be visually assessed.

Stability notes are provided on trial pit logs but these relate to the stability of the trial pit on that specific day under the prevailing weather conditions for the duration that the pit was open. Notes that state pit sides are collapsing would indicate that vertical or near vertical trench sides may not be achievable. Where no such notes are provided, this does not negate that possibility in any areas of the site.

Therefore, the noted stability during the investigation may well be different than at the time of the required site excavations, particularly where these are carried out at different times of the year. Trial trenches would be advisable prior to the main excavation works to help assess trench stability, groundwater ingress and the requirement for any trench support.

22 Retaining Structures

It is understood that some retaining structures are proposed within the design for the site.

Suggested soil parameters for new retaining walls are provided below. Groundwater levels can be assumed to be below the base of the wall.

Parameters	Made Ground
Bulk Density (Mg/m^3)	1.8

Parameters	Made Ground
Effective Cohesion (kPa)	0
Effective Angle of Friction ϕ' (degrees)	27

23 Slope Stability

Given the topography of the site, particularly in relation to the existing earth bund/embankment on site, consideration should be given to stability of these during design and the development of the site. At this stage no slope stability has been undertaken, and it would be advised that the proposed slopes (particularly if steeper than the existing) are analysed and confirmed once the earthworks design has been progressed.

24 Pavement Construction

It is anticipated that the proposed pavement areas will be formed in the made ground. The results of the Dynamic Cone Penetrometer (DCP) CBR tests indicated CBR values in the range 1.2 – 20% at an anticipated formation depth of around 0.4-0.5m (bgl). However, it should be noted that DCP CBR readings can vary significantly depending on a number of factors, including the presence of granular materials (such as those encountered within the made ground) and moisture content of the soils, which can in turn vary depending on the weather and other site conditions leading up to and during testing.

The results of Atterberg Limits tests might be expected to give a more reliable indication of the CBR value at typical equilibrium water content conditions, and Local Authorities are increasingly requesting such testing where roads are proposed for adoption. Therefore, largely based on the Atterberg Limits test results, a preliminary design CBR value of 2.5-3% can be assumed for pavement foundation design purposes. However, given that the soils are likely to be disturbed by construction plant during the demolition and/or construction phases, it would be suggested that the CBR value is reassessed as construction progresses. Further sampling and laboratory testing may be necessary to satisfy Local Highway Authority design guidance, in terms of frequency and types of testing, if roads are to be submitted for adoption.

Taking these factors into consideration, and given that the results within the made ground may well be falsely elevated by such materials as brick, concrete, limestone etc., a preliminary CBR value of 2.0% can be assumed for pavement foundation design purposes. However, as discussed, given that the soils are likely to be disturbed by construction plant during the development it would be suggested that the CBR value be reassessed as construction progresses.

Given the presence of deep made ground soils at and below the formation level, it is suggested the formation is inspected for soft spots, and these are removed and filled to a minimum of 500mm and proof-rolled prior to construction. Geo-grid reinforcement should also be considered given the depth of made ground present, to help minimise the effects of differential settlement which is likely to occur within untreated deep made ground.

The formation should be considered potentially frost-susceptible.

The most important element of any road construction is drainage and attention must be given not only to the drainage of the subsoil but to the various layers of construction. To this end, the formation should be shaped to a camber or crossfall to allow water movement out of the sub-base. Silty soils soften extremely quickly if allowed to become wet or if they are excavated below the water table and this softening can give rise to a very substantial increase in costs.

Sub-base and coarse capping materials tend to segregate during placing operations, particularly when end-tipped. On soft clay sub-grades this can lead to punching and softening of the formation. The use of an appropriate geotextile or geo-fabric, laid in accordance with manufacturer's recommendations/guidance, should help to minimise this.

The formation should be proof-rolled in a manner appropriate to the sub-grade soils, and any soft spots found should be excavated and replaced with compacted granular material. The surface of the formation should then be appropriately compacted, prior to laying the capping layer and/or sub-base.

Construction traffic should be kept off formations and it is often advisable to leave a protective layer of soil above formation level until the last moment before reducing to formation level and placing the capping and/or sub-base.

E DISCUSSION OF GEOENVIRONMENTAL TEST RESULTS AND RECOMMENDATIONS

25 Analytical Framework

There is no single methodology that covers all the various aspects of the assessment of potentially contaminated land and groundwater. Therefore, the analytical framework adopted for this investigation is made up of a number of procedures, which are outlined below. All of these are based on a Risk Assessment methodology centred on the identification and analysis of Source – Pathway – Receptor linkages.

The CLEA model Ref [6], provides a methodology for quantitative assessment of the long-term risks posed to human health by exposure to contaminated soils. Toxicological data is used to calculate a Soil Guideline Value (SGV) for an individual contaminant, based on the proposed site use; these represent minimal risk concentrations and may be used as screening values.

In the absence of any published SGVs for certain substances, Southern Testing have derived or adopted Tier 1 screening values for initial assessment of the soil, based on available current UK guidance including the LQM/CIEH S4UL's Ref [7] and CL:AIRE Soil Generic Assessment Criteria Ref [8]. In addition, in 2014, DEFRA Ref [9] published the results of a research programme to develop screening values to assist decision making under Part 2A of the Environmental Protection Act. Category 4 screening levels were published for 6 substances, with reference to human health risk only. This guidance includes revisions of the CLEA exposure parameters, presenting parameters for public open space land use scenarios, and also of the toxicological approach. The screening levels represent a low risk scenario, based on a 'Low Level of Toxicological Concern' rather than the 'Minimal Risk' of CLEA. Category 4 screening levels for further substances have been published subsequently. The analytical results of this investigation may be considered relative to these levels.

Site-specific assessments are undertaken wherever possible and/or applicable.

CLEA requires a statistical treatment of the test results to take into account the normal variations in concentration of potential contaminants in the soil and allow comparisons to be made with published guidance.

Ground gases are assessed in accordance with the guidance given in CIRIA C665 Ref [10] and BS8485 Ref [11].

The contamination screening values used are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based upon them. Their validity should be confirmed at the time of site development.

26 Site Investigation – Soils

26.1 Sampling Regime

The number of sample locations was limited and was partly targeted at potential sources of contamination and also intended to provide general coverage.

Access was restricted by hardstanding, underground utility services and an earth bund on site.

26.2 Testing

The potential for contamination by Made Ground was identified in the preliminary conceptual model. Observations made on site. Therefore, the following tests were selected.

Test Suite	Number of Samples	Soil Tested
STL Key Contamination Suite	11	Made Ground
Asbestos Screen	18	Made Ground
Total Petroleum Hydrocarbons (TPH) Texas Split	4	Made Ground
Preliminary Waste Classification Suite	3	Made Ground
Waste Acceptance Criteria (WAC) Analysis	3	Made Ground

Due to the depth of the made ground encountered across the site, no natural soil samples were submitted for general contamination testing.

The test results are presented in full in Appendix E. A summary and discussion of the significance of the results and identified contamination sources is given below.

26.3 Test Results and Identified Contamination Sources

26.3.1 General Contaminants

The results of the key contaminant tests have been analysed in accordance with the CLEA methodology. The samples have been grouped into a single population comprising made ground. For each parameter in each population the sample mean is calculated and compared to a Tier 1 screening value. If the sample mean exceeds the screening value, the soil may be regarded as contaminated and further assessment may be required. If neither the sample mean nor any single value exceeds the screening value, the soil may be regarded as not contaminated, though further confirmatory assessment may be required. Where any single parameter value exceeds the screening value but the sample mean does not, further statistical analysis may be applied to that parameter if the available data is suitable. Such analysis would include an assessment of the Normality of the distribution of the data, consideration of the presence of outliers, and the calculation of a UCL estimate of the mean.

Summary data is presented in the tables below and the laboratory analysis is included in Appendix E. The screening values and source notes are presented in Table 1 "Tier 1 Screening Values" at the front of Appendix E.

Soil Type: Made Ground

Contaminants	Units	No of Samples Tested	Range	Sample Mean	Tier 1 Screening Values
Arsenic (As)	mg/kg	14	7.3 – 22	11.3	170
Cadmium (Cd)	mg/kg	14	<0.2 – 0.4	0.2	190
Trivalent Chromium (CrIII)*	mg/kg	14	7.1 – 19	14	8600
Hexavalent Chromium (CrVI)	mg/kg	14	<1.8	1.8	33
Lead (Pb)	mg/kg	14	17 - 100	30	1300
Mercury (Hg)	mg/kg	14	<0.3	0.3	29
Selenium (Se)	mg/kg	14	<1.0 – 1.2	1.0	1800
Nickel (Ni)	mg/kg	14	9 – 43	26	980
Copper (Cu)	mg/kg	14	23 – 78	50	44,000
Zinc (Zn)	mg/kg	14	16 – 110	79	170,000
Phenol	mg/kg	14	<1.0	1.0	440
Benzo(a)pyrene (BaP)	mg/kg	14	<0.05 – 5.7	0.7	10
Naphthalene	mg/kg	14	<0.05 – 1.6	0.2	77
Total Cyanide (CN)	mg/kg	14	<1.0	1.0	/
Acidity (pH values)	Units	14	7.5 – 10.9	8.5	/
Soil Organic Matter	%	14	0.6 – 6.1	2.2	/

* Assumed as Total Cr minus CrVI

Fourteen samples of the Made Ground soils recovered from across the site, were submitted for testing. The concentrations of the various contaminants tested fall below the corresponding Tier 1 assessment criteria for McDonald's contamination assessments. This concurs with the visual and olfactory evidence.

26.3.2 Asbestos Containing Materials

No asbestos containing materials were detected in the samples analysed and none were observed in the exploratory holes. However, it should be noted that the exploratory holes are of small size relative to the area investigated and the investigation was constrained by hardstanding, underground utility services and an earth bund on site. Therefore, the samples obtained may not reflect the full composition of the soils on the site, and there is always the potential for pockets of asbestos or for asbestos containing materials to be present, which have not been detected in the sampling.

It is also our experience that asbestos containing materials are quite often encountered in buried pockets and beneath slabs (sometimes adhering to the concrete) on older sites.

26.3.3 Organic Contaminants

With the exception of an organic odour noted within WLS01 between 3.8 – 5.0m (bgl), and TP03 between 0.4 – 1.2m (bgl) there was no visual or olfactory evidence of significant fuel/oil contamination in the exploratory holes. As a precaution, due to the potential on site sources highlighted within the Phase 1 Desk Study, and to cover a good range of general contaminants, a total of four samples of made ground recovered from locations across the site were submitted for Total Petroleum Hydrocarbon (TPH Texas Split) analysis.

The results of which are included in Appendix E and summarised in the tables below.

Soil Type: Made Ground

Hydrocarbon Substance or Fraction	Measured Concentrations in mg/kg (µg/kg)					Screening Values*	
	TP03 at 0.5m	TP03 at 1.5m	WLS01 at 4.7m	WLS03 at 0.6m		Screening Values*	
						Aliphatic	Aromatic
TPH C6-C8	<0.01	<0.01	<0.01	<0.01		7,800	26,000
TPH C8-C10	<0.02	<0.02	<0.02	<0.02		2,000	3,500
TPH C10-C12	<2.0	<2.0	<2.0	8.8		9,700	9,100
TPH C12-C16	<4.0	<4.0	11	33		25,000	10,000
TPH C16-EC21	<10	<10	22	63		450,000	7,600
TPH C21-C40	<10	<10	13	150		450,000	7,600
TPH C6-C40	<10	<10	46	250		N/A	
Hazard Index (Aliphatic)*	0.0004	0.0004	0.0007	0.0027		1.0	
Hazard Index (Aromatic)*	0.0033	0.0033	0.0059	0.0323		1.0	

* - For the purposes of this risk assessment, the selected tier 1 screening values are taken from the most conservative of the Generic Assessment Criteria from the LQM S4ULs [7] for the Commercial land use and the Public Park (Open Space) land use for a 1.0% soil organic matter content. The concentrations are compared with the screening values for both the Aliphatic and Aromatic fractions.

A total of four made ground samples recovered from across the site were submitted for testing with respect to Petroleum Hydrocarbons. The concentration of the various Petroleum Hydrocarbon fractions are low and fall below the corresponding Tier 1 assessment criteria for a Commercial land use and Public Park (Open Space), assuming a 1.0% soil organic matter content.

Petroleum hydrocarbon mixtures are assessed using the Hazard Index approach. The calculated Hazard Index values for the samples tested are well below 1.0, indicating that the recorded concentration are below the tolerable limits for long term exposure with regards to human health.

27 Site Investigation - Gas

27.1 Gas Sources

The Phase 1 Desk Study Report (our ref: J15809, dated December 2024), identified potential gas sources in the form of a series of landfill sites, historically infilled quarried/worked ground, coal mining activity and made ground. Deep made ground was also encountered across the site.

These types of sources are characterised as being of Low generation potential, Wilson and Haines Ref [12].

27.2 Sampling Strategy

The number and spacing of the gas monitoring wells was based on coverage of the site, but also targeted within the vicinity of the proposed building.

27.3 Monitoring Programme and Results

The sensitivity of the proposed development is rated as Low and, therefore, six gas readings were taken over a period of two months (CIRIA C665 Ref [10], Table 5.5). The results of the monitoring programme are given in full in Appendix F and are summarised below.

Borehole Gas Monitoring Results				
Monitoring well	BH01	BH02	WLS01	WLS02
Response zone depth (m bgl)	14.0m – 30.0m	12.0m – 29.60m	1.0m – 5.0m	1.0m – 4.0m
Response zone stratum	South Wales Lower Coal Measures Formation	South Wales Lower Coal Measures Formation	Made Ground	Made Ground
Evidence of contamination	Coal Measures	Coal Measures	Made Ground	Made Ground
No. of Monitoring Events	6 No.	6 No.	6 No.	6 No.
Methane range CH ₄ (%)	0.0 – 0.1	0.0 – 0.1	0.0 – 0.1	0.0 – 0.1
Carbon dioxide range CO ₂ (%)	0.0 – 1.2	0.4 – 1.8	0.2 – 1.1	0.0 – 0.7
Oxygen range O ₂ (%)	17.1 – 20.4	18.0 – 19.9	18.3 -20.2	19.5 – 20.6
Flow rate range l/hr	0.0 – 0.3	0.0 – 0.1	0.0 – 0.1	0.0 – 0.1
BH differential pressure range (Pa)	0.0 – 14.0	0.0 – 8.0	0.0 – 12.0	0.0 – 7.0
PID measurement (ppm)	0.1 – 0.7	0.3 - 1.1	0.2 - 0.6	0.1 – 0.4
Water level (m bgl)	29.36 – 29.79	23.27 – 24.72	4.41 – 4.66	1.69 – 2.23
Atmospheric pressure during monitoring (mb)	960 - 1026	959 - 1026	961 - 1026	960 - 1026

27.4 Identified Gas Regime

On the basis of the 6 No. monitoring visits undertaken to date a maximum Methane (CH₄) measurement of 0.1% has been detected and Carbon Dioxide (CO₂) up to 1.8% has been measured, with negligible flow rates recorded.

In terms of Methane; using a peak Methane reading of 0.1% and a maximum flow rate of 0.3l/hr, a worst-case gas screening value of 0.00003l/hr is calculated, which would place the site in a characteristic situation 1 (CS1) CIRIA C665 Ref [10]. Very Low Risk.

In terms of Carbon Dioxide; using a peak Carbon Dioxide reading 1.8% and a maximum flow rate of 0.3l/hr, a worst-case screening value of 0.054l/hr is calculated, which would place the site in a characteristic situation 1 (CS1) CIRIA C665 Ref [10]. Very Low Risk.

28 Summary of Identified Contamination

The concentrations of the various contaminants tested fall below the corresponding Tier 1 assessment criteria for McDonald's contamination assessments.

29 Risk Evaluation

The object of the risk evaluation is to assess the pollution linkages for specific contaminant groups considered in the conceptual model, identify any unacceptable risks and, therefore establish whether there is a need for further investigation and/or remedial action.

The risks are considered in the context of the specific development proposals for the site and, therefore, the conclusions may not be appropriate for alternative schemes.

29.1 Revised Conceptual Model

The preliminary site model has been refined in light of the findings of this investigation and is summarised below.

Metals	Polyaromatic Hydrocarbons (PAHs)	Petroleum Hydrocarbons	Land Gas	Asbestos	Pathways	Receptors
N	N	N	n/a	N	Ingestion/inhalation of contaminated soil & dust	Human Health
N	N	N	n/a	n/a	Dermal contact with contaminated soil & dust	
n/a	N	N	N	n/a	Inhalation of vapours or gases	
n/a	n/a	n/a	n/a	n/a	Uptake into edible fruit and vegetables	
N	N	N	n/a	n/a	Surface water run-off into surface water features	Water Environment
N	N	N	n/a	n/a	Migration through ground into surface water or groundwater	
N	N	N	N	n/a	Off-site migration of contaminated groundwater	
N	N	N	n/a	n/a	Vegetation on site growing in contaminated soil	Flora and Fauna
n/a	n/a	n/a	n/a	n/a	Aquatic life in affected waters	
N	P	P	n/a	n/a	Contact with contaminated soils	Building materials / buried services
n/a	N	N	N	n/a	Fire or explosion	

Key:

Y Pollutant linkage likely
 N Pollutant linkage not likely
 P Pollutant linkage possible
 n/a Pathway not applicable to contaminant

29.2 Relevant Pollutant Linkages

On the basis of the intrusive site investigation works and laboratory analysis undertaken to date, and the development proposals, the only possible relevant pollutant linkage may be in terms of the new water supply pipes and the minor organic contamination identified.

30 Discussion and Conclusions

The purpose of the sampling/laboratory testing undertaken was to provide general site coverage and an initial contamination assessment of the soils in relation to the Conceptual Model presented in the Phase I Desk Study. On the basis of the investigation and laboratory testing undertaken to date, the measured contaminant concentrations all fall below the tier 1 screening values for the development proposed and, therefore, the soils are considered suitable to remain on site, particularly given that the majority of the proposed development appears to predominately comprise areas of hardstanding/buildings, with only limited soft-landscaping on the periphery.

This report, including the contamination laboratory test results, should be forwarded to the groundworkers, for their own health & safety appraisal. It is likely that good site practices (appropriate PPE and welfare facilities) will mitigate the risk from any minor contamination present within the soils, although this will need to be confirmed by the contractor.

Where any soft-landscaping areas are proposed as part of the construction, in the absence of any significant existing topsoil, it would be prudent to make allowance for the provision of around 300mm of certified clean, and suitable for use, topsoil within any proposed new soft-landscaping areas to provide a growing medium, it may be necessary to use geo-textile to separate the existing made ground from the imported certified clean topsoil.

The results of the fourteen general contamination suites carried out on the samples of made ground, together with the results of the Asbestos Screening tests, TPH testing and Preliminary Waste Classification Suite tests and WAC testing are appended for information and should be forwarded to the tips for classification prior to removal.

On the basis of the gas monitoring undertaken, the gas regime for the site is assessed as Characteristic Situation 1 (CS1), and therefore, gas protection measures will not be required.

Organic contaminants present in the soils, particularly PAH's and petroleum hydrocarbons, could affect plastic underground service pipes (such as the types used by water and gas supply companies). Guidance should be sought from the relevant companies regarding any proposed plant in the affected area. Many water supply companies now require higher specification pipe on contaminated sites, even following remediation.

As with any site, areas of contamination not identified during site investigation works may come to light in the course of redevelopment. Accordingly, a discovery strategy must be in place during the redevelopment to ensure that any hitherto unknown contamination is identified and dealt with in an appropriate manner. Depending on the nature of any such contamination, it may prove necessary to reassess the remedial strategy for the site.

A formal remediation strategy and verification plan should be agreed with the regulatory authorities prior to commencement of any remedial works.

The existing monitoring wells on the site should be decommissioned, to prevent the upward migration of gas/downward migration of contamination to the groundwater.

31 General Guidance

Allowance should be made for experienced verification of any remedial works.

It may be that specific local requirements apply to this site, of which we are not aware at this time.

In general terms, the workforce and general public should be protected from contact with contaminated material. There is a range of relevant documents published by the Health and Safety Executive, and organisations such as CIRIA, and the BRE.

F WASTE DISPOSAL

32 Introduction

The Landfill Directive, introduced to the UK via the Landfill Regulations (England and Wales) 2002 aims to reduce reliance on landfill as a disposal option. The Regulations include updated Waste Acceptance Criteria (WAC) as limit values for waste destined to various classes of landfill. The developer has a statutory responsibility under the Duty of Care Regulations of the Environmental Protection Act 1990 to ensure that contaminated soil and water is disposed of offsite to a suitably licensed waste management facility in a safe and approved manner.

To comply with the Duty of Care, all wastes taken off site, in solid or liquid form, must be handled by a registered waste carrier and be accompanied by a consignment note that describes the waste.

33 Preliminary Waste Classification and WAC Analysis

If arisings from the constructions works are intended for disposal, then there is a requirement to determine prior to disposal whether these would classify as:

- Hazardous
- Non hazardous

The current relevant waste legislation and technical guidance (WM3 v1.2.GB Oct 2021) on the assessment and classification of hazardous waste, sets out the requirement for classification and provides the basis for the methodology employed to ensure compliance with the regulations. This report sets out to fulfil the requirements of basic characterisation.

Waste classification indicates whether the material is hazardous or non-hazardous. If material is classified as non-hazardous, there is a choice of sending the material to a non-hazardous or an inert landfill (subject to meeting inert waste acceptance levels based on WAC analysis). Where the waste is classified as hazardous, WAC analysis will be required to demonstrate that the concentrations meet the acceptance levels for hazardous landfill or stable non-reactive hazardous (SNRH) landfill.

The List of Wastes (England) Regulations 2005 shows those wastes that are absolute entries (i.e. hazardous waste regardless of their concentration) and mirror entries (hazardous waste only if hazardous substances are present above the specified threshold concentrations). Section 17 of the List of Wastes relates to Construction and Demolition Wastes (including Excavated Soil from Contaminated Sites, stones and dredging spoil). Contaminated soil is a "mirror entry", and is not automatically assigned a hazardous or non-hazardous nature.

Instead, an assessment of the composition of the soil is undertaken to determine the concentrations of hazardous substances, and the waste classified accordingly. The assessment of contaminated soil to determine whether it is hazardous waste is dependent on the presence of "hazardous substances" exceeding particular thresholds.

34 Results of the Preliminary Assessment

The waste classification assessment has been undertaken using the results of the chemical analyses on the samples analysed. The classification of the materials was conducted using the concentration of each identified substance attributed to its 'worst-case' compound (where relevant), as per Environment Agency (EA) document WM3 v1.2.BG (2021) and The Classification, Labelling and Packaging of Substances and Mixtures Regulation 1272/2008 (CLP). The assessment was carried out using the HazWaste Online Toolkit. The details of the waste classification are presented in Appendix E.

The results of the chemical analysis carried out indicate that the recorded concentrations for PAHs, metals and TPH with the made ground were below the non-hazardous waste thresholds. No visible pieces of asbestos were recorded on site or by the later laboratory analysis. It should be noted that given the depth of the made ground encountered across the site, no natural soils were tested.

A summary of the assessment results is presented below:

Sample Location	Sample Depth (m bgl)	Material	Classification	EWC	Hazardous Properties
HA01	0.3m	Made Ground	Non-Hazardous	17 05 04	n/a
HA01*	1.5m	Made Ground	Non-Hazardous	17 05 04	n/a
HA02	0.3m	Made Ground	Non-Hazardous	17 05 04	n/a
HA02*	1.0m	Made Ground	Non-Hazardous	17 05 04	n/a
TP01	0.1m	Made Ground	Non-Hazardous	17 05 04	n/a
TP01*	1.0m	Made Ground	Non-Hazardous	17 05 04	n/a
TP02	0.4m	Made Ground	Non-Hazardous	17 05 04	n/a
TP02	1.0m	Made Ground	Non-Hazardous	17 05 04	n/a
TP03	0.5m	Made Ground	Non-Hazardous	17 05 04	n/a
TP03	1.5m	Made Ground	Non-Hazardous	17 05 04	n/a
WLS01	0.5m	Made Ground	Non-Hazardous	17 05 04	n/a
WLS01	1.2m	Made Ground	Non-Hazardous	17 05 04	n/a
WLS02	0.7m	Made Ground	Non-Hazardous	17 05 04	n/a
WLS03	0.6m	Made Ground	Non-Hazardous	17 05 04	n/a

* WAC Test also undertaken on sample.

Based on the results of the chemical analysis, the shallow Made Ground have been classified as Non-Hazardous Waste with EWC code 17 05 04.

35 Results of Waste Acceptance Criteria (WAC) Analysis

Waste Acceptance Criteria Analysis was carried out on three Made Ground samples (HA01 at 1.5m, HA02 at 1.0m & TP01 1.0m). The results of the WAC analysis are summarised below:

Made Ground: (HA01 at 1.5m, HA02 at 1.0m & TP01 1.0m)

The WAC analysis carried out indicates that the made ground material can be disposed of as INERT.

36 Recommendations

The chemical analyses undertaken in the course of this investigation have been used to carry out a preliminary waste classification of the materials on site. This report should be forwarded to waste receiving sites for their final decision. Additional testing and Waste Acceptance Criteria (WAC) testing may be needed for confirmation of material's classification.

If more significant contamination is encountered during the construction works, this may affect the waste classification.

REFERENCES

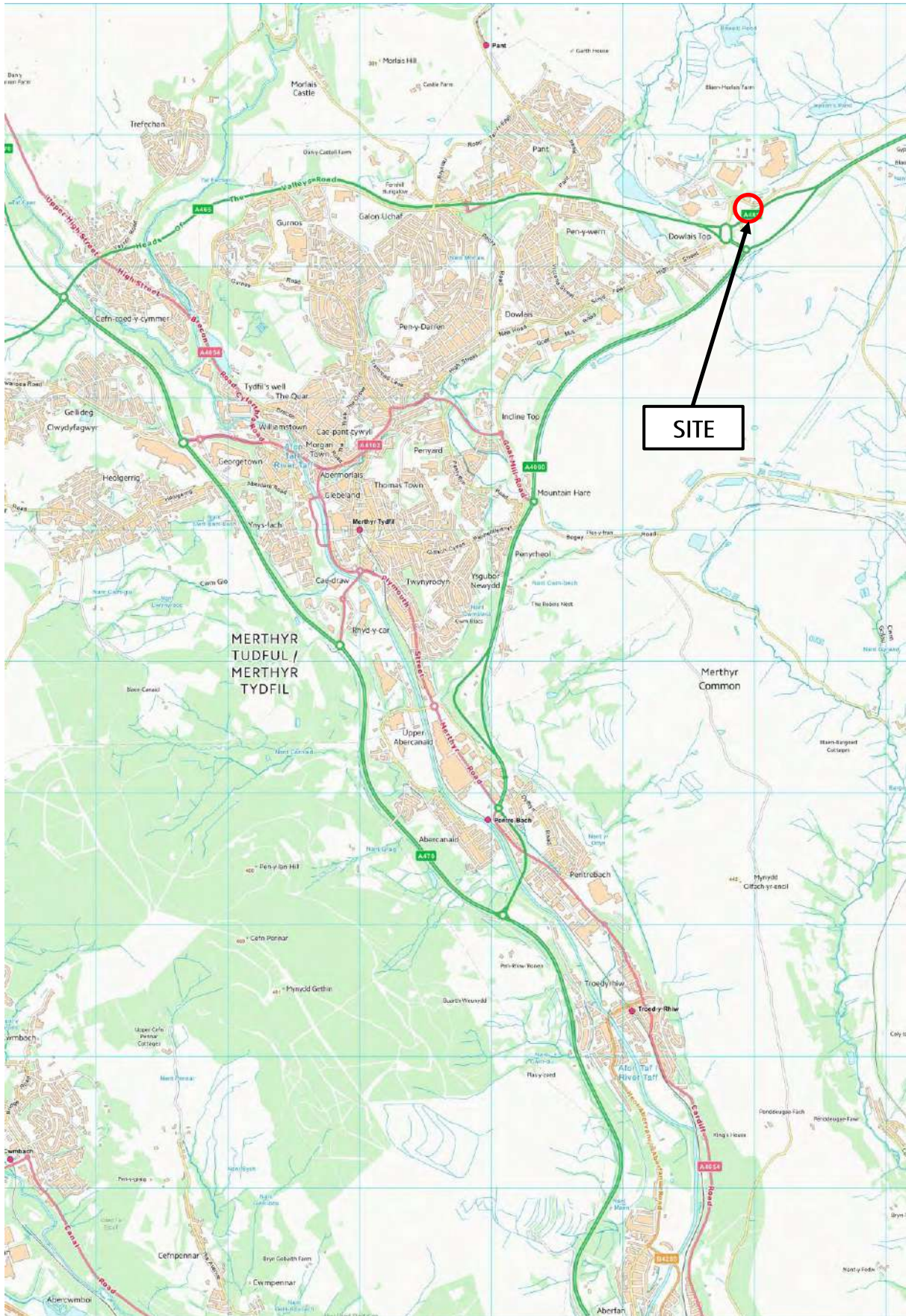
- [1] BSI Standards, "BS 5930 Code of practice for ground investigations," 2015.
- [2] BSI Standards, "BS10175 Investigation of potentially contaminated sites – Code of practice," 2013.
- [3] J. R. & C. Mark, "Using the point load test to determine the uniaxial compressive strength of coal measure rock.," in *19th International Conference on Ground Control in Mining*, Morgantown, West Virginia, 2000.
- [4] NHBC, "NHBC Standards Plus," [Online]. Available:
<http://www.nhbc.co.uk/Builders/ProductsandServices/TechZone/nhbcstandards/>.
- [5] Building Research Establishment (BRE), "SD1 Concrete in aggressive ground," 2005.
- [6] Environment Agency, "Updated technical background to the CLEA model," 2009.
- [7] C. Nathanail, C. McCaffrey, A. Gillett and R. & N. J. Ogden, "The LQM/CIEH S4ULs for Human Health Risk Assessment," Land Quality Press, Nottingham, 2015.
- [8] EIC/AGS/CL:AIRE, "Soil Generic Assessment Criteria for Human Health Risk Assessment," 2010.
- [9] DEFRA, "SP1010 Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination," 2014.
- [10] CIRIA, "C665 Assessing risks posed by hazardous ground gases to buildings," 2007.
- [11] BSI Standards, "BS 8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings," 2015.
- [12] S. Wilson and S. Haines, "Site investigation and monitoring for ground gas assessment - Back to basics," *Land Contamination & Reclamation*, vol. 13(3), pp. 211-222, 2005.
- [13] BSI Standards, "BS 3882:2015 Specification for Topsoil," 2015.
- [14] CIRIA, "C574 Engineering in Chalk," 2002.
- [15] R. N. Mortimore, *Logging the Chalk*, 2014.
- [16] BSI Standards, "BS EN ISO 22476-3:2005+A1:2011 Geotechnical investigation and testing. Field testing. Standard penetration test," 2011.
- [17] E. & V. H. Klyen, "Proceedings of Annual Transportation Convention; Using DCP soundings to optimize pavement rehabilitation.," *Report LS/83 Materials Branch, South Africa: Transvaal Roads Department.*, 1983.
- [18] Transport and Road Research Laboratory, "A user's manual for a program to analyse dynamic cone penetrometer data.," *Road Note 8*, 1990.
- [19] BSI Standards, "BS EN ISO 22475-1:2006 Geotechnical investigation and testing. Sampling methods and groundwater measurements. Technical principles for execution.," 2006.

- [20] BSI Standards, "BS ISO 18400-100:2017 Soil quality. Sampling. Guidance on the selection of sampling standards," 2017.
- [21] BSI Standards, "BS ISO 18400-101:2017 Soil quality. Sampling. Framework for the preparation and application of a sampling plan," 2017.
- [22] BSI Standards, "BS ISO 18400-103:2017 Soil quality. Sampling. Safety," 2017.
- [23] BSI Standards, "BS ISO 18400-105:2017 Soil quality. Sampling. Packaging, transport, storage and preservation of samples," 2017.
- [24] BSI Standards, "BS ISO 18400-107:2017 Soil quality. Sampling. Recording and reporting," 2017.

APPENDIX A

Site Plans and Exploratory Hole Logs





Contains Ordnance Survey data© Crown copyright and database right 2025.

Site: Penyarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA

STL: J15809

Fig No: 1

Date: 18th March 2025

Site location plan.



Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twigden Barns, Brixworth Road, Creaton, Northampton NN6 8NN



LIDL



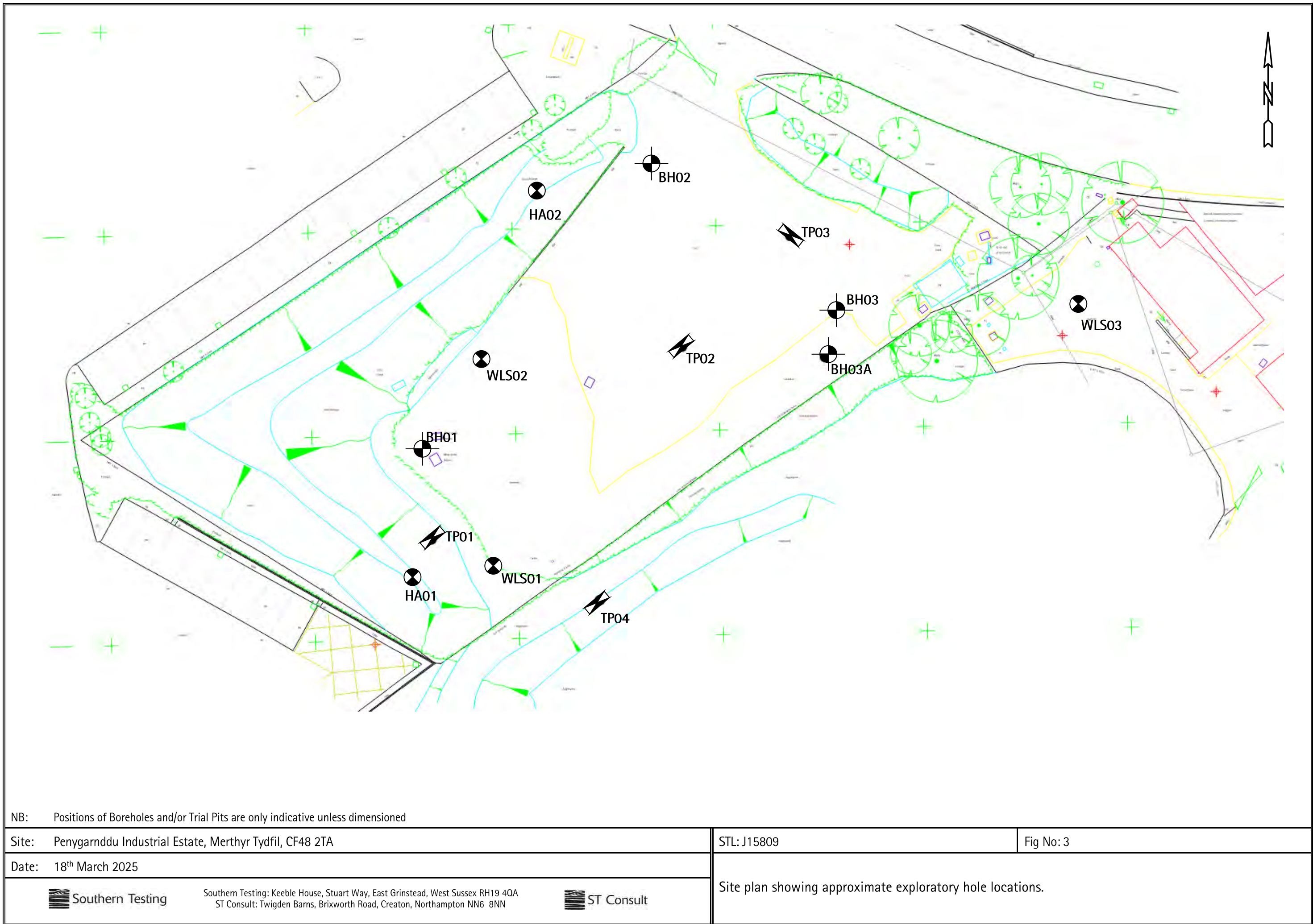
Site: Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA

Date: 18th March 2025

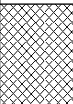
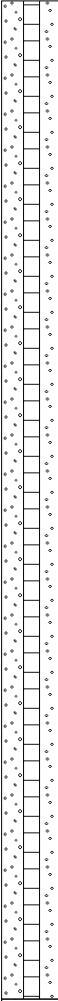
STL: J15809

Fig No: 2

Site plan showing proposed development.



				Start - End Date:		Project ID:		Hole Type:		BH01																																																																																																																																																																																																															
				21/03/2025 - 25/03/2025		J15809		CP+RC		Sheet 1 of 3																																																																																																																																																																																																															
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:																																																																																																																																																																																																															
						E 307911 - N 208439		383.93		SM																																																																																																																																																																																																															
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA																																																																																																																																																																																																																	
		Samples and Insitu Testing			Coring																																																																																																																																																																																																																				</

				Start - End Date:		Project ID:		Hole Type:		BH01				
				21/03/2025 - 25/03/2025		J15809		CP+RC		Sheet 2 of 3				
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:				
						E 307911 - N 208439		383.93		SM				
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA						
Well	Water Strikes	Samples and Insitu Testing			Coring			Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type/FI	Results	TCR	SCR	RQD							
		11.00	B SPT	N=29 (4,6/6,8,7,8)				11.00	372.93		Dark grey to orange brown, silty, gravelly, CLAY. Gravel comprises fine to coarse, sub-angular, siltstone, mudstone and coal. REWORKED GROUND	11		
									(1.30)		Firm, dark grey, silty, gravelly, CLAY. Gravel comprises fine to coarse, sub-angular, siltstone and mudstone. (Potentially Reworked)	12		
		12.00	B					12.30	371.63		Strong to very strong, thinly laminated, black, SILTSTONE.	13		
		12.50	SPT	N=49 (4,5/11,12,13,13)					(2.00)					
		12.70	C											
				13.50 - 15.00			▼ 1			14.30	369.63 (0.25)		Black, non-intact, vitrain, COAL.	14
							93	15	15	14.55	369.38 (0.25)		Moderately strong, dark grey, SILTSTONE.	
							▼ 2		▲ 1	14.80	369.13		Moderately strong to strong, pale grey, SILTSTONE, with iron strained surfaces. [15.0m (bgl) - fossil plant fragment.]	15
				15.00 - 16.50			87	40	25		(2.45)			16
					▼ 3		▲ 2							
16.50 - 18.00					83	39	32	17.25	366.68		Moderately strong to strong, thinly laminated, pale grey to grey, SILTSTONE, with frequent thin laminations of coal. [17.8-18.0m (bgl) - Sub-vertical fracture with iron stained surfaces.][18.2-18.35m (bgl) - Sub-vertical fracture with iron stained surfaces.]		17	
					▼ 4		▲ 3		(2.25)			18		
18.60	C				60	55	28					19		
18.00 - 19.50														
				19.50 - 21.00			▼ 5		▲ 4	19.50	364.43 (1.20)		Moderately strong to strong, very fractured, dark grey to grey, SILSTONE. [20.4-20.55m (bgl) - Sub-vertical fracture.]	20
					91	69	11							
Remarks:														
Status:		FINAL		Log Print Date and Time:		30/07/2025 02:19		Log Approved By:		JNR				

Logger:

SM

Merthyr Tydfil, CF48 2TA

Remarks:					
Status:	FINAL	Log Print Date and Time:	30/07/2025 02:19	Log Approved By:	JNR

	Start - End Date:	Project ID:	Hole Type:	BH01
	21/03/2025 - 25/03/2025	J15809	CP+RC	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Barrel Type	Logged By	Remarks
0.00 13.50	13.50 30.00	CP RC	20/03/2025 24/03/2025	24/03/2025 25/03/2025		Dando 2000 KLEMM KR802-2		SM SM	

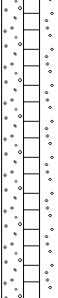
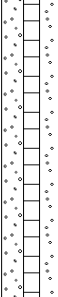
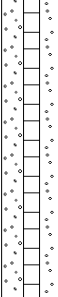
Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks
200 110	13.50 30.00		200 110	8.80 13.50	

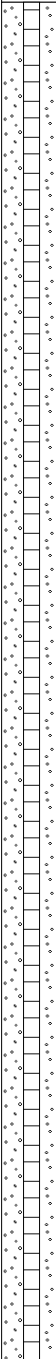
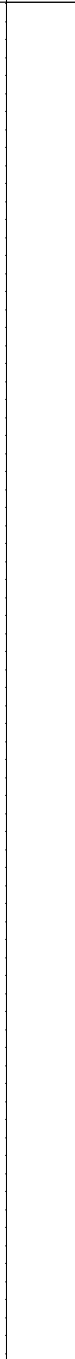
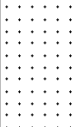
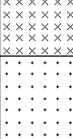
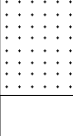
Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks
				21/03/2025 16:00:00	7.20	4.30		1. Borehole dry at end of shift.
				24/03/2025 09:00:00	7.20	4.30		1. Borehole dry at start of shift.
				24/03/2025 12:00:00	13.50	8.80		1. Borehole dry upon completion of Cable Percussive drilling.
				24/03/2025 13:00:00	13.50	13.50		1. Borehole dry at start of rotary drilling.
				25/03/2025 08:30:00	21.00	13.50	19.5	1. Start of shift.

Core Drill Run Information								
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	TCR (%)	SCR (%)	RQD (%)	Remarks
1	13.50	15.00		75	93	15	15	
2	15.00	16.50		75	87	40	25	
3	16.50	18.00		75	83	39	32	
4	18.00	19.50		75	60	55	28	
5	19.50	21.00		75	91	69	11	
6	21.00	22.50		75	100	94	82	
7	22.50	24.00		75	97	88	39	
8	24.00	25.50		75	47	32	17	
9	25.50	27.00		75	97	85	39	
10	27.00	28.50		75	90	77	46	
11	28.50	30.00		75	95	70	69	

Status:	FINAL	Log Print Date and Time:	30/07/2025 02:19	Log Approved By:	JNR
---------	-------	--------------------------	------------------	------------------	-----

Southern Testing ST Consult						Start - End Date:		Project ID:	Hole Type:	BH02
						20/03/2025 - 24/03/2025		J15809	CFA+RC	Sheet 1 of 3
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)	Logger:	
						E 307934 - N 208466		384.67	SM	
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA		
Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type/Fl	Results	Window Run					
						0.50	(0.50) 384.17		Concrete/Sub-base (DRILLERS DESCRIPTION)	1 2 3 4 5 6 7 8 9 10
Remarks:										
Status:		FINAL		Log Print Date and Time:		30/07/2025 02:19		Log Approved by:		JNR

				Start - End Date:		Project ID:		Hole Type:		BH02			
				20/03/2025 - 24/03/2025		J15809		CFA+RC		Sheet 2 of 3			
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:			
						E 307934 - N 208466		384.67		SM			
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA					
Well	Water Strikes	Samples and Insitu Testing			Progress			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type/FI	Results	Window Run								
								10.50	374.17		Sandy Till/Reworked Ground (DRILLERS DESCRIPTION)		
											Weak to moderately strong, thinly laminated, dark grey, MUDSTONE, with orange brown ironstained surfaces.		
		11.00 - 12.00			90	39	10		(1.85)			11	
					2		1				[12.0 - 12.35m (bgl) - Quartz veins.]	12	
		12.00 - 13.50			89	69	15	12.35	372.32				
									(0.95)			13	
								13.30	371.37		Black, non-intact, vitrain, COAL.		
		14.05 13.50 - 15.00	C		94	79	53		13.50		371.17	Weak to moderately strong, dark grey, thinly laminated, MUDSTONE/SILTSTONE, with occasional plant fossils.	14
		15.35	C						(2.95)			15	
		15.00 - 16.50			95	82	51					16	
		16.50	C		98	87	63	16.45	368.22		Moderately strong to strong, pale grey to grey, SILTSTONE.	17	
		16.50 - 18.00			98	87	63					18	
		18.00 - 19.50			86	53	7		(3.45)			19	
					6		5					20	
		19.50 - 21.00			100	77	44	19.90	364.77		Moderately strong to strong, thinly laminated, dark grey to black, SILTSTONE.		
		20.45	C					20.30	364.37		Moderately strong to strong, thinly laminated, dark grey, SILTSTONE.		
Remarks:													
Status:			FINAL			Log Print Date and Time:			30/07/2025 02:19				
						Log Approved by:			JNR				

				Start - End Date:		Project ID:	Hole Type:	BH02				
				20/03/2025 - 24/03/2025		J15809	CFA+RC	Sheet 3 of 3				
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)	Logger:			
						E 307934 - N 208466		384.67	SM			
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA				
Well	Water Strikes	Samples and Insitu Testing			Coring			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type/FI	Results	TCR	SCR	RQD					
		21.00 - 22.00	C		▼ 8		7 ▲	20.90	363.77		Moderately strong to strong, thinly laminated, dark grey, SILTSTONE.	21
					84	68	60		(0.90)		Moderately strong to strong, thinly laminated, pale grey, SILTSTONE.	
		22.00 - 23.00	C		▼ 9		8 ▲	21.80	362.87		Strong, pale grey to grey, SANDSTONE, with occasional quartz veining.	22
					97	42	11		(1.60)			
		23.00 - 24.50	C		▼ 10		9 ▲	23.40	361.27		Moderately strong to strong, thinly laminated, dark grey, SILTSTONE, with frequent black laminations.	24
					80	61	18		(1.75)			
		24.50 - 26.00	C		▼ 11		10 ▲	25.15	359.52		Weak to moderately strong, thinly laminated, dark grey, MUDSTONE.	25
					70	45	8		(0.85)			
		26.00 - 27.50	C		▼ 12		11 ▲	26.00	358.67		Moderately strong to strong, thinly laminated, dark grey to black, SILTSTONE.	26
					95	63	34		(0.55)			
		27.30	C		▼ 13		12 ▲	26.55	358.12		Moderately strong to strong, thinly laminated, dark grey, SILTSTONE.	27
									(1.60)			
		28.15	C		▼ 14		13 ▲	28.15	356.52		Strong to very strong, dark grey to grey, SANDSTONE.	28
100					87	65		(1.45)				
27.50 - 29.00		C		▼ 14		13 ▲	28.15	356.52		Strong to very strong, dark grey to grey, SANDSTONE.	29	
				100	27	0		(1.45)				
29.00 - 29.60					14 ▲	29.60	355.07		End of Borehole at 29.60m	30		
Remarks:												
Status:		FINAL			Log Print Date and Time:		30/07/2025 02:19		Log Approved By:		JNR	

JNR

				Start - End Date:		Project ID:		Hole Type:		BH03								
				18/03/2025 - 20/03/2025		J15809		CFA+RC		Sheet 2 of 4								
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:								
						E 307952 - N 208451		383.69		SM								
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA										
Well	Water Strikes	Samples and Insitu Testing			Coring			Depth (m)	Level (m AOD)	Legend	Stratum Description							
		Depth (m)	Type/FI	Results	TCR	SCR	RQD											
		11.10 10.50 - 12.00	D		2		1	11.00	372.69 (0.40)		Very weak to weak, dark grey, MUDSTONE, with frequent patches of clay.	11						
					77	27	0											
					11.40 11.50 11.70	372.29 (0.10) 372.19 (0.20)							Moderately strong, dark grey, SILTSTONE.					
		12.00 - 13.50			3		2	12.30	371.99 (0.60) 371.39 (0.40)		Moderately strong, dark grey, SILTSTONE.	12						
					87	40	0											
					12.70 12.80 12.90	370.99 (0.10) 370.89 (0.10)							Very weak to weak, dark grey, MUDSTONE, with frequent patches of clay.					
		13.50 - 15.00			4		3	13.50	370.79 (0.60) 370.19 (0.80)		Weak to moderately strong, thinly laminated, dark grey to black, SILTSTONE, with occasional bands of coal.	14						
					90	75	11											
					14.30 14.55 14.60	369.39 (0.25) 369.14 (0.05)							Black, non-intact, vitrain, COAL.					
		15.50 15.00 - 16.50	D		5		4	15.50	369.09 (0.90) 368.19		Moderately strong to strong, dark grey, SILTSTONE, with frequent fossil plant fragments.	15						
					71	33	0											
					16.35 16.50	367.34 (0.15) 367.19							Weak to moderately strong, dark grey to grey, SILTSTONE.					
		16.50 - 18.00			6		5	16.50	367.19 (1.20) 365.99		Weak to moderately strong, thinly laminated, dark grey, shaley, MUDSTONE/ SILTSTONE.	17						
					87	25	0											
					17.70	365.99							Moderately strong to strong, dark grey, SILTSTONE.					
18.00 - 19.50			7		6	18.00	365.99 (1.50) 364.49 (0.30)		Moderately strong to strong, dark grey, SILTSTONE.	18								
			53	31	11													
			19.20 19.80 19.50 - 21.00	C HP C	UCS(kPa)=350						8		7	19.20 19.50	364.49 (0.30) 364.19 (0.35)		Firm, thinly laminated, grey to dark grey, CLAY.	19
20.60	C					19.85	363.84 (0.55) 363.29		Moderately strong, thinly laminated, dark grey to black, SILTSTONE.	20								
											97	87	63					
											20.40	363.29		Moderately strong to strong, thinly laminated, dark grey to pale grey, SILTSTONE.				
									Strong to very strong, pale grey to grey, SANDSTONE.									
Remarks:																		
Status:		FINAL			Log Print Date and Time:		30/07/2025 02:19		Log Approved By:		JNR							

				Start - End Date:		Project ID:		Hole Type:		BH03					
				18/03/2025 - 20/03/2025		J15809		CFA+RC		Sheet 3 of 4					
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:					
						E 307952 - N 208451		383.69		SM					
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA							
Well	Water Strikes	Samples and Insitu Testing			Coring			Depth (m)	Level (m AOD)	Legend	Stratum Description				
		Depth (m)	Type/FI	Results	TCR	SCR	RQD								
		21.00 - 22.00			▼ 9		8 ▲	23.20	360.49		Strong to very strong, pale grey to grey, SANDSTONE.	21			
					90	73	28								
		▼ 10				9 ▲									
			22.65 22.00 - 23.50	C			95	77	63					22	
			23.20	C										23	
			23.50 - 25.00			▼ 11		10 ▲	25.10	358.59	xxxxxx	Moderately strong, thinly laminated, dark grey, SILTSTONE.	24		
						88	75	34							
		▼ 12				11 ▲									
			25.60 25.00 - 26.50	C			97	71	33		(0.90)		Moderately strong, thinly laminated, dark grey to black, SILTSTONE.	25	
			26.00	C											
		▼ 13		12 ▲											
			26.50 - 28.00 27.45	C									Moderately strong, pale grey to grey, SANDSTONE, with black laminations.	27	
			28.00 - 28.90												
		▼ 14				13 ▲									
													Moderately strong, dark grey, SANDSTONE.	29	
			29.40 28.90 - 29.90												
		▼ 15		14 ▲											
													Weak to moderately strong, thinly laminated, dark grey to grey, SILTSTONE.	30	
▼ 16		15 ▲													
											VOID.				
▼ 16															
											Moderately strong to strong, thinly laminated, dark grey, SILTSTONE. [30.6 - 33.6m (bgl) - Intermittent cavities noted.]				
▼ 16															
Remarks:															
Status:		FINAL		Log Print Date and Time:		30/07/2025 02:19		Log Approved By:		JNR					

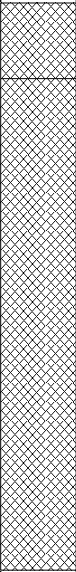
Logger:

SM

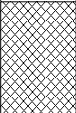
Merthyr Tydfil, CF48 2TA

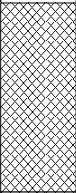
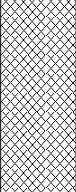
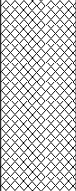
Remarks:					
Status:	FINAL	Log Print Date and Time:	30/07/2025 02:19	Log Approved By:	JNR

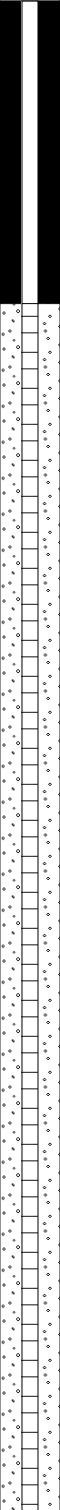
						Start - End Date:		Project ID:		Hole Type:		BH03A	
						18/03/2025		J15809		HA		Sheet 1 of 1	
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:			
						E 307950 - N 208447		383.61		SM			
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA					
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type/Fl	Results	Window Run								
						0.20	(0.20)		Reddish brown to greyish brown, sandy, medium to coarse, sub-angular limestone GRAVEL (sub-base).		1		
							383.41 (0.10)		CONCRETE.				
							0.30	383.31		Void.			
							(2.10)				2		
						2.40	381.21		End of Borehole at 2.40m		3		
Remarks:													
1. Borehole terminated, due to presence of void.													
2. Borehole position moved, see BH03 log.													
3. Standing water level at 0.65m (bgl).													
Status:		FINAL		Log Print Date and Time:		14/07/2025 09:41		Log Approved By:		JNR			

				Start - End Date:		Project ID:		Hole Type:		TP01	
				21/03/2025		J15809		TP		Sheet 1 of 1	
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:	
Project Name:						E 307912 - N 208430		384.72		SM	
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA			
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m bgl)	Type	Results									
0.10	ES		384.52	(0.20)		0.20	Dark grey to black, silty, sandy, CLAY, with frequent roots and rootlets. MADE GROUND Dark grey to grey, gravelly, CLAY. Gravel comprises fine to medium, sub-angular, brick, wood, plastic, siltstone and mudstone. MADE GROUND				
1.00	ES		383.22	(1.30)		1.50					
							Pit terminated at 1.50m				
Pit Dimension (m)		Pit Stability:		1. Trial pit sides stable upon completion of excavation.			Water Strikes				
		Weather:		Overcast and raining.			Depth (m)	Date/Time	Remarks		
Width:	0.60	Remarks: 1. Trial pit through bund. 2. Trial pit dry upon completion of excavation.									
Length:	1.60										
Depth:	1.50										
Status:		FINAL		Log Print Date and Time:		14/07/2025 09:38		Log Approved By:		JNR	

				Start - End Date:		Project ID:		Hole Type:		TP02		
				21/03/2025		J15809		TP		Sheet 1 of 1		
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:		
Project Name:						E 307936 - N 208448		383.44		SM		
Penygarnddu Industrial Estate		Location:		Merthyr Tydfil, CF48 2TA								
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description					
Depth (m bgl)	Type	Results										
0.40	ES		383.34	(0.10)		0.10	CONCRETE with 5mm steel mesh reinforcement.					
			382.84	(0.50)		0.60	Dark grey to greyish brown, gravelly, SAND. Gravel comprises fine to medium, sub-angular, brick, concrete, tile, limestone, siltstone, mudstone. MADE GROUND					
1.00	ES						Firm, grey mottled yellowish brown, silty, gravelly, CLAY. Gravel comprises fine to medium, sub-angular, mudstone and siltstone, with occasional fragments of coal. REWORKED GROUND					
			[1.0m (bgl) - Water pipe & Cable.]									
2.00	D HP			(2.40)								
3.00	D		380.44				Pit terminated at 3.00m					
Pit Dimension (m)		Pit Stability:		1. Trial pit sides stable upon completion of excavation.			Water Strikes					
		Weather:		Overcast and raining.			Depth (m)		Date/Time		Remarks	
Width:		0.60		Remarks:								
Length:		2.60										
Depth:		3.00										
Status:		FINAL		Log Print Date and Time:		14/07/2025 09:38		Log Approved By:		JNR		

				Start - End Date:		Project ID:		Hole Type:		TP03	
				21/03/2025		J15809		TP		Sheet 1 of 1	
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:	
Project Name:						E 307947 - N 208459		383.98		SM	
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA			
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m bgl)	Type	Results									
0.30	ES		383.88	(0.10)		0.10	CONCRETE with 5mm steel mesh reinforcement.				
			383.58	(0.30)			0.40	Dark grey to greyish brown, gravelly, SAND. Gravel comprises fine to medium, sub-angular, brick, concrete, limestone, siltstone and mudstone. MADE GROUND			
0.50	ES								0.40	Orange brown to dark grey and black, silty, CLAY, with an organic odour and occasional fine to medium, sub-angular, brick, concrete and limestone. MADE GROUND	
			1.50	ES PPT		N=16(450)					
2.00	D HP	UCS(kPa)=200					(1.80)				
			3.00	D HP		UCS(kPa)=300				380.98	
Pit terminated at 3.00m											
Pit Dimension (m)		Pit Stability:		1. Trial pit sides stable upon completion of excavation.			Water Strikes				
		Weather:		Overcast and raining.			Depth (m)		Date/Time		Remarks
Width:		0.70		Remarks:							
Length:		2.10									
Depth:		3.00									
Status:		FINAL		Log Print Date and Time:		14/07/2025 09:38		Log Approved By:		JNR	

				Start - End Date:		Project ID:		Hole Type:		TP04	
				21/03/2025		J15809		TP		Sheet 1 of 1	
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:	
Project Name:						E 307928 - N 208424		382.72		SM	
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA			
Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description				
Depth (m bgl)	Type	Results									
0.70	D		382.22	(0.50)		0.50	Dark grey to black, silty, gravelly, SAND. Gravel comprises fine to coarse, sub-angular limestone. MADE GROUND				
				(0.70)			Greyish brown to dark grey, gravelly, SAND. Gravel comprises fine to medium, sub-angular, brick, concrete, limestone, mudstone and siltstone. MADE GROUND				
1.50	D HP	UCS(kPa)=250	381.52			1.20	Dark grey to yellowish brown, gravelly, CLAY. Gravel comprises medium to coarse, sub-angular, limestone, siltstone and mudstone, with occasional limestone cobbles and boulders. REWORKED GROUND				
1.70	PPT	N=17(450)									
2.50	D HP	UCS(kPa)=160		(1.80)							
			379.72			3.00	Pit terminated at 3.00m				
Pit Dimension (m)		Pit Stability:		1. Trial pit sides stable upon completion of excavation.			Water Strikes				
		Weather:		Overcast and raining.			Depth (m)	Date/Time	Remarks		
Width:	0.70	Remarks: 1. Trial pit dry upon completion of excavation.									
Length:	2.50										
Depth:	3.00										
Status:		FINAL	Log Print Date and Time:		14/07/2025 09:38		Log Approved By:		JNR		

						Start - End Date:		Project ID:		Hole Type:		WLS01	
						19/03/2025		J15809		WLS		Sheet 1 of 1	
Client:		Glanville Consultants Ltd.					Co-ordinates:		Level (m AOD)		Logger:		
							E 307917 - N 208427		383.89		SM		
Project Name:		Penygarnddu Industrial Estate					Location:		Merthyr Tydfil, CF48 2TA				
Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description				
		Depth (m)	Type/Fl	Results	Runs								
							(0.40)		Reddish brown to dark grey, sandy, medium to coarse, sub-angular limestone GRAVEL (sub-base).	1			
	0.50	ES			0.40	383.49	(0.30)		Brown, gravelly, fine to coarse, SAND. Gravel comprises medium to coarse, sub-angular mudstone and siltstone. MADE GROUND				
					0.70	383.19			Dark grey, gravelly, sandy, CLAY. Gravel comprises fine to medium, sub-angular, mudstone, siltstone and limestone. MADE GROUND				
			1.00	SPT	N=12 (1,2/3,3,3,3)			(0.80)					
			1.20	ES									
			1.70	ES		1.50	382.39	(0.30)	Dark grey to black, sandy, GRAVEL. Gravel comprises medium, sub-angular, limestone and clinker. MADE GROUND				
			2.00	SPT	N=7 (1,1/2,2,1,2)	1.80	382.09		Dark grey, gravelly, shaley, CLAY. Gravel comprises fine to medium, sub-angular, siltstone and mudstone. REWORKED GROUND	2			
			2.20	ES				(2.00)					
			3.00	SPT	N=3 (3,1/1,1,1,0)						3		
			3.50	D									
		4.00	SPT	N=9 (3,4/3,2,2,2)	3.80	380.09		Dark grey, slightly clayey, sandy GRAVEL, with a slight organic odour. Gravel comprises medium to coarse, sub-angular, mudstone and siltstone. REWORKED GROUND	4				
		4.70	ES				(1.20)						
		5.00	SPT	N=6 (1,1/2,1,2,1)		5.00	378.89		End of Borehole at 5.00m	5			
Remarks:													
1. Standing water level at 4.60m (bgl) upon completion of drilling.													
Status:		FINAL		Log Print Date and Time:		14/07/2025 09:38		Log Approved By:		JNR			

	Start - End Date:	Project ID:	Hole Type:	WLS01
	19/03/2025	J15809	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	5.00	WLS	19/03/2025	19/03/2025	DT & JS	Prem 110	STL	SM	

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

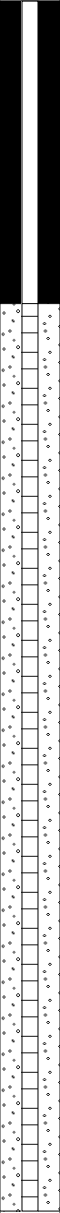
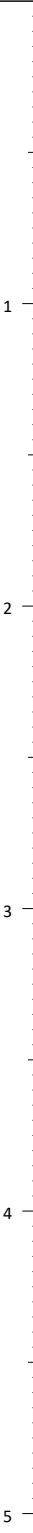
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=12 (1,2/3,3,3,3)	RP11075	78	Dry
2.00	S				N=7 (1,1/2,2,1,2)	RP11075	78	Dry
3.00	S				N=3 (3,1/1,1,1,0)	RP11075	78	Dry
4.00	S				N=9 (3,4/3,2,2,2)	RP11075	78	Dry
5.00	S				N=6 (1,1/2,1,2,1)	RP11075	78	Dry

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
0.00	1	SP	1.00	5.00	1	1	0.00	1.00	50	PLAIN
						1	1.00	5.00	50	SLOTTED

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	1.00	Bentonite	
1.00	5.00	Gravel Backfill	

Status:	FINAL	Log Print Date and Time:	14/07/2025 09:38	Log Approved By:	JNR
---------	-------	--------------------------	------------------	------------------	-----

						Start - End Date:		Project ID:		Hole Type:		WLS02	
						19/03/2025		J15809		WLS		Sheet 1 of 1	
Client:		Glanville Consultants Ltd.					Co-ordinates:		Level (m AOD)		Logger:		
							E 307917 - N 208447		383.95		SM		
Project Name:		Penygarnddu Industrial Estate					Location:		Merthyr Tydfil, CF48 2TA				
Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description				
		Depth (m)	Type/Fl	Results	Runs								
						0.20	(0.20) 383.75		Reddish brown, sandy, medium to coarse, sub-angular, limestone GRAVEL (Sub-base).				
	0.30	ES				(0.30) 383.45	Dark grey, gravelly, CLAY. Gravel comprises fine to medium, sub-angular, limestone, ash and concrete. MADE GROUND						
	0.70	ES				(0.80)	Dark grey to black, gravelly, SAND. Gravel comprises fine to medium, sub-angular, siltstone, mudstone and limestone. MADE GROUND						
	1.00	SPT	N=8 (1,1/2,2,2,2)		1.30	382.65	Firm, pale grey to grey, gravelly, shaley, CLAY. Gravel comprises fine to medium, sub-angular, mudstone, siltstone and limestone. REWORKED GROUND						
	1.50	ES				(2.50)			2				
	2.00	D HP SPT	UCS(kPa)=200 N=6 (1,1/2,1,1,2)						3				
	2.50	D HP	UCS(kPa)=90						4				
	3.00	D HP SPT	UCS(kPa)=140 N=20 (1,1/3,6,5,6)						5				
	3.50	D											
	4.00	D SPT	N=8 (1,1/2,1,3,2)			3.80 4.00	380.15 379.95	(0.20)	Firm, orange brown mottled bluish grey, silty, sandy, CLAY. REWORKED GROUND End of Borehole at 4.00m				
Remarks:													
1. Borehole dry upon completion of drilling.													
Status:		FINAL			Log Print Date and Time:		14/07/2025 09:38		Log Approved By:		JNR		

	Start - End Date:	Project ID:	Hole Type:	WLS02
	19/03/2025	J15809	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	4.00	WLS	19/03/2025	19/03/2025	DT & JS	Prem 110	STL	SM	

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

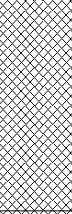
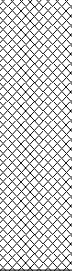
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=8 (1,1/2,2,2,2)	RP11075	78	Dry
2.00	S				N=6 (1,1/2,1,1,2)	RP11075	78	Dry
3.00	S				N=20 (1,1/3,6,5,6)	RP11075	78	Dry
4.00	S				N=8 (1,1/2,1,3,2)	RP11075	78	Dry

Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
0.00	1	SP	1.00	4.00	1	1	0.00	1.00	50	PLAIN
						1	1.00	4.00	50	SLOTTED

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	1.00	Bentonite	
1.00	4.00	Gravel Backfill	

Status:	FINAL	Log Print Date and Time:	14/07/2025 09:38	Log Approved By:	JNR
---------	-------	--------------------------	------------------	------------------	-----

						Start - End Date:		Project ID:		Hole Type:		WLS03	
20/03/2025						J15809		WLS		Sheet 1 of 1			
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:			
						E 307975 - N 208452		383.51		SM			
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA					
Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description				
		Depth (m)	Type/FI	Results	Runs								
		0.60	ES	N=6 (3,2/1,1,2,2)		0.20	383.31		BLACKTOP.	1			
									(0.20)		CONCRETE.		
									(0.40)		383.11		Dark grey to black, sandy, gravelly, CLAY. Gravel comprises fine to medium, sub-angular, ash, clinker, limestone and siltstone. MADE GROUND
(0.70)	382.41		Pale grey mottled orange brown, silty, CLAY, with occasional medium to coarse, sub-angular limestone, siltstone and mudstone gravel. REWORKED GROUND										
(0.90)	381.51		End of Borehole at 2.00m	2									
		2.00	D SPT	N=51 (3,2/51 for 260mm)		2.00	381.51			3			
										4			
										5			

Remarks:

1. Borehole refused at 2.0m (bgl).

2. Borehole dry upon completion of drilling.

Status:	FINAL	Log Print Date and Time:	14/07/2025 09:38	Log Approved By:	JNR
---------	-------	--------------------------	------------------	------------------	-----

	Start - End Date:	Project ID:	Hole Type:	WLS03
	20/03/2025	J15809	WLS	Sheet 1 of 1

Depth Related Hole Information									
Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	2.00	WLS	20/03/2025	20/03/2025	DT & JS	Prem 110	STL	SM	

Hole Diameter			Casing Diameter		
Hole Diameter (mm)	Depth to Base (m)	Remarks	Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information						
Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks				Drilling Progress by Time				
Date Time Start	Date Time End	Duration	Remarks	Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

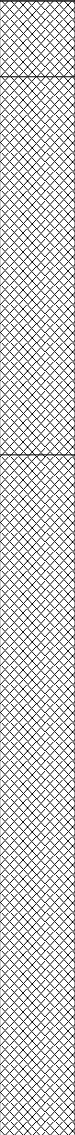
SPT								
Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00 2.00	S S				N=6 (3,2/1,1,2,2) N=51 (3,2/51 for 260mm)	RP11075 RP11075	78 78	Dry Dry

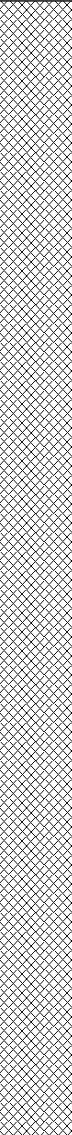
Water Strikes and Details							
Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details						Pipe Construction				
Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.	Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details			
Depth Top	Depth Base	Material	Remarks
0.00	2.00	Arisings	

Status:	FINAL	Log Print Date and Time:	14/07/2025 09:38	Log Approved By:	JNR
---------	-------	--------------------------	------------------	------------------	-----

						Start - End Date:		Project ID:		Hole Type:		HA01	
						19/03/2025		J15809		HA		Sheet 1 of 1	
Client:		Glanville Consultants Ltd.				Co-ordinates:		Level (m AOD)		Logger:			
						E 307922 - N 208464		387.00		SM			
Project Name:		Penygarnddu Industrial Estate				Location:		Merthyr Tydfil, CF48 2TA					
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type/Fl	Results	Window Run								
		0.30	ES			0.10	(0.10)		Dark grey to black, silty, SAND, with frequent roots and rootlets. MADE GROUND		1		
							386.90		Dark grey, sandy, gravelly, CLAY. Gravel comprises fine to medium, sub-angular, limestone, siltstone and mudstone. MADE GROUND				
		0.70	ES			0.60	386.40	Greyish brown to grey, gravelly, CLAY. Gravel comprises fine to medium, sub-angular, brick, sandstone, mudstone, siltstone and limestone, with occasional limestone cobbles. MADE GROUND					
							(0.90)						
		1.50	ES			1.50	385.50	End of Borehole at 1.50m		2			
Remarks:													
1. Hand auger unable to progress past 1.5m (bgl). 2. Borehole dry upon completion of excavation.													
Status:		FINAL		Log Print Date and Time:		14/07/2025 09:36		Log Approved By:		JNR			

					Start - End Date:		Project ID:		Hole Type:		HA02	
					19/03/2025		J15809		HA		Sheet 1 of 1	
Client:		Glanville Consultants Ltd.					Co-ordinates:		Level (m AOD)		Logger:	
							E 307910 - N 208426		386.48		SM	
Project Name:		Penygarnddu Industrial Estate					Location:		Merthyr Tydfil, CF48 2TA			
Well	Water Strikes	Samples and Insitu Testing			Progress		Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type/Fl	Results	Window Run							
		0.30	ES						Dark grey, sandy, gravelly, CLAY. Gravel comprises fine to coarse, sub-angular, concrete, limestone, siltstone and mudstone, with occasional limestone cobbles. MADE GROUND		1	
		1.00	ES				(1.50)					
		1.50	ES			1.50	384.98		End of Borehole at 1.50m		2	
Remarks:												
1. Hand auger unable to progress past 1.5m (bgl). 2. Borehole dry upon completion of excavation.												
Status:		FINAL			Log Print Date and Time:		14/07/2025 09:36		Log Approved By:		JNR	

Key to Exploratory Hole Logs, Plans and Sections

Backfill Symbols		Pipe Symbols		Principal Soil Types		Principal Rock Types		Drilling Records	
Arisings		Plain Pipe		Topsoil		Mudstone		Water Strike	
Concrete		Slotted Pipe		Made Ground		Claystone		Depth Water Rose	
Blacktop		Piezometer		Clay		Siltstone		Total Core Recovery (%) [TCR]	
Bentonite		Piezometer Tip		Silt		Sandstone		Solid Core Recovery (%) [SCR]	
Gravel Filter		Filter Tip		Sand		Limestone		Rock Quality Index (%) RQD]	
Sand Filter		Extensometer		Gravel		Chalk		Fracture Index (fractures / m) [FI]	
		Inclinometers		Peat					

All soil and rock descriptions are in general accordance with BS5930 2015, BS EN ISO 14688-1:2002+A1:2013 and BS EN ISO 14689-1:2003. Chalk descriptions are also based on CIRIA C574 and "Logging the Chalk – R.N. Mortimer 2015". The Geology Code is only provided where a positive identification of the sample strata has been made.

Location / Method Identifiers		In-situ Test Location / Method	
BH	Borehole (undefined)	DP	Dynamic Probe
CP	Cable Percussive	CPT	Cone Penetration Test
RC	Rotary Core	CBR	In-situ CBR Test
RO	Rotary Open Hole	DCP	CBR using Dynamic Cone Penetrometer
ODC	Rotary Odex/Symmetrix drilling cased	CBRT	CBR using TRL Probe
CP+RC	Cable Percussive to Rotary Core	PB	Plate Bearing Test
SNC	Sonic	SPT (S)	Standard Penetration Test (Split Barrel Sampler)
CFA	Continuous Flight Auger	SPT (C)	Standard Penetration Test (Solid Cone)
FA	Flight Auger	N	SPT Result
VC	Vibro Core	-/-	Blows/Penetration (mm) after seating drive
WLS+RC	Windowless (Dynamic) Sampler to Rotary Core	-*/-	Total Blows / Penetration (mm)
WLS	Windowless Sampler	()	Extrapolated Value
WS	Window Sampler	PPT	Perth Penetration (In-House Method - Equivalent N Value)
HA	Hand Auger	HP / UCS	Strength from Hand Penetrometer (kN/m ²)
C	Road / Pavement Core	IVN	Strength from Hand Vane ((kN/m ²) P = peak, R = residual
IP	Inspection Pit (Hand Excavation)	PID	Photo Ionisation Detector (ppm)
TP	Trial Pit (Machine Excavated)	MEXE	Mexi-Cone CBR (%)
OP	Observation Pit (Supported Excavation Hand or Machine)		

Samples / Test Type	
B	Bulk Sample
BLK	Block Sample
C	Core Sample
CBRS	CBR Mould Sample
D	Small Disturbed Sample
ES	Environmental Sample (Soil)
EW	Environmental Sample (Water)
GS	Environmental Sample (Gas)

Samples / Test Type	
SPTLS	Standard Penetration Test Split Barrel Sample
TW	Thin Wall Push In Sample (e.g. Shelby Sampler)
U	Undisturbed Open Drive Sample (blows to take)
UT	Thin Wall Undisturbed Open Drive Sample (blows to take)
W	Water Sample (Geotechnical)
SP	Sample from Stockpile
P	Piston Sample
AMAL	Amalgamated Sample

APPENDIX B

**Field Sampling and In-Situ
Test Methods and Results**

B

Soil and Rock Descriptions

All soil and rock descriptions are in general accordance with BS5930 Ref [1].

Anthropogenic soils ('made ground' or 'fill') describe materials which have been placed by man and can be divided into those composed of reworked natural soils and those composed of or containing man-made materials. 'Fill' is used to describe material placed in a controlled manner and 'made ground' is used to describe materials placed without strict engineering control.

The classification of materials such as topsoil is based on visual description only and should not be interpreted to mean that the material complies with criteria used in BS 3882 Ref [13].

Chalk descriptions are based on CIRIA C574 Ref [14] and Mortimore Ref [15].

The geology code is only provided on logs where a positive identification of the sample strata has been made.

Trial Pits and Trenches

Trial pits and trenches are unsupported excavations, mechanically excavated by machine to the required depth to enable visual examination, in situ testing and sampling as required from outside the excavation.

Dynamic Sampling - Window or Windowless

Window sampling is carried out by driving hollow steel tubes incorporating a longitudinal access slot (window) and a cutting shoe into the ground using a percussive 'breaker'. This enables recovery of a continuous soil sample for examination and sub-sampling.

Windowless samplers are designed for taking disturbed, continuous soil samples to depths up to 10 metres (depending on ground conditions). The samplers comprise steel tubes of about 50-100mm diameter with a rigid plastic liner (no window) and are driven into the ground with a sliding hammer mounted on a tracked purpose-designed soil sampling rig. After driving and extracting the sampler from the ground, the plastic liner is extracted together with the enclosed soil sample. The sample can then either be extracted, split and sub-sampled or plastic end caps may be fitted, the tube labelled and transported for future examination and sub-sampling.

Soil samples are disturbed by the driving process with both techniques and can be regarded as being between Class 5 up to Class 3 samples at best (in favourable ground).

The major advantage of using windowless samplers is that the plastic liner greatly reduces the possibility of cross-contamination between successive samples.

An equivalent in-situ test to the Standard Penetration Test can be carried out with the windowless sampler rig.

Rotary Drilling - With Core Recovery

Rotary coring is undertaken with a triple tube core barrel and water or air/mist flush system using a rotary drilling rig. Cores within their plastic liners are placed in wooden core boxes for transportation.

All cores were photographed, carefully measured, described and logged in general accordance with BS 5930 Ref [1].

Rotary Drilling – Without Core Recovery

Where required the borehole can be drilled through rock strata using the 'down the hole hammer' technique. The Symmetrix system allows the casing to be installed simultaneously as the hole is drilled and prevents the hole from collapsing within loose superficial deposits.

Both processes involve flushing out rock fragments from the borehole with a mixture of compressed air and/or water or drilling foam. For this operation a separate air compressor is required to power the hammer along with a bowser for water/foam. The flush created will normally be contained within bunds and then pumped into a suitable container for disposal.

Due to the hammering action of the drilling process the sample recovery is very poor and restricted to flush returns.

Standard Penetration Test (SPT)

The Standard Penetration Test (SPT) is specified in BS EN ISO 22476-3 Ref [16]. In this test, an open-ended tube is driven into the ground by blows from a free-falling hammer (with specified sizes, weights and distances).

The tube is seated by driving to a penetration of 150mm, or by 25 blows, whichever occurs first. It is then driven for a maximum of a further 300mm and the number of blows is termed the penetration resistance (N). If 300mm penetration cannot be achieved in 50 blows, the test drive is terminated and penetration depth is recorded.

When testing in gravels, a conical end piece is attached to the tube. The test is then called an SPT(C).

A classification of relative density descriptions as used on borehole logs, based upon uncorrected SPT N values, is given within BS5930 Ref [1] and set out as follows:

Classification based on uncorrected SPT N Value	Term
0 - 4	Very Loose
4 - 10	Loose
10 – 30	Medium Dense
30 – 50	Dense
Over 50	Very Dense

Perth Penetrometer Test

The Perth Penetrometer is a non-standard test used for assessing the relative density of sands. It consists of a 16 mm diameter hardened steel probe, which is driven into the soil by successive blows of a 9.09 kg weight, which freely falls over a distance of 600 mm. The number of blows required for each 50 mm of penetration is recorded, and the test is continued for a total depth of 450 mm, according to soil type.

The energy input is roughly the same as that from the Standard Penetration Test (SPT), and experience by this laboratory indicate that in sand the Perth Penetrometer readings correlate fairly well with SPT blow counts (this relationship does not hold for coarse or cohesive soils). A classification of relative density descriptions as used on trial pit logs is given below.

Perth Correlation with uncorrected SPT N Value	Term
0 - 4	Very Loose
4 - 10	Loose
10 – 30	Medium Dense
30 – 50	Dense
Over 50	Very Dense

Hand Penetrometer Test

The handheld soil penetrometer consists of a spring loaded and calibrated plunger which is forced into cohesive soil. A reading of unconfined compression strength (equal to twice cohesion) is given on a calibrated scale. The average of a set of three readings shall be recorded.

In common with other hand methods of strength assessment it does not give an accurate indication of bearing capacity in stiff or fissured soils, because of the small test area.

Dynamic Cone Penetrometer (DCP) CBR Test (Modified)

The dynamic cone CBR test uses light portable equipment and is used to provide a continuous record of the penetration resistance of each layer in the ground for a depth of a metre from the surface. The penetration resistance provides a measure from which CBR values may be calculated.

In the test a 22 mm diameter 60° cone is driven into the ground to a depth of up to one metre by a 9.09 kg weight, freely falling over 600 mm. The number of blows is recorded for each successive 50mm penetration increment.

A plot of the cumulative number of blows versus depth penetrated is drawn. This plot usually takes the form of a series of straight lines, the slopes of which are measured and expressed as penetration in mm per blow. It is the practice of this laboratory to adopt the lower of two values derived from formulae established by Kleyn & Van Heerden Ref [17]

$$CBR = 10^{(2.632 - 1.28 \log_{10} (mm / blow))}$$

& TRL Ref [18]

$$CBR = 10^{(2.48 - 1.057 \log_{10} (mm / blow))}$$

The test is an adaptation of the Perth Penetrometer Test developed for the granular soils in Perth West Australia in the 1960s, and in the UK by this laboratory since 1973. It is similar to the TRL dynamic cone penetrometer. Local experience by this laboratory has shown in UK conditions it has been found to give consistent results for granular soils.

Disturbed Samples

Disturbed samples were taken from exploratory holes in general accordance with BS 5930 [1] and BS EN ISO 22475-1 Ref [19] as required and stored in appropriately labelled containers. Details of the type, size and depth of sample will be recorded within the exploratory hole record. Such samples can be regarded as being between Class 5 up to Class 3 quality depending upon their method of sampling.

Environmental Samples

Environmental samples were taken from the boreholes at regular intervals in the made ground and natural soils as indicated on the exploratory hole logs. The sampling strategy was in general accordance with BS10175 Ref [2] and BS ISO 18400 Refs [20], [21], [22], [23] & [24].

These samples were collected and stored in glass jars or plastic pots and transferred to the laboratory in cool boxes as appropriate to the proposed laboratory testing.

Monitoring Well

A groundwater and/or ground gas monitoring well consists of a perforated pipe, which is installed in the ground. The standpipe is typically 50mm nominal in diameter and is installed in a lined borehole. It is perforated from the base with a sand/gravel surround through the soil horizon of interest to an appropriate depth below ground level. Above this there is a bentonite seal with solid pipework and is provided with an end cap or a gas valve at the top as appropriate.

Gas monitoring is carried out via the gas tap. Water sampling/purging can be undertaken by removing the gas tap and bung.

The well is usually completed at the surface with a flush cast iron cover or raised lockable cover.

Groundwater Monitoring – Dip Meter

The dip meter is used to measure standing water levels within boreholes. The probe is lowered into the borehole until the meter detects the groundwater with an audible 'beep'. The level is then read from the tape.

Dynamic Cone Penetrometer (DCP) Test Results

Test No: DCP01

Chainage:

Tested By: SM

Start Layer:

Checked By: SM

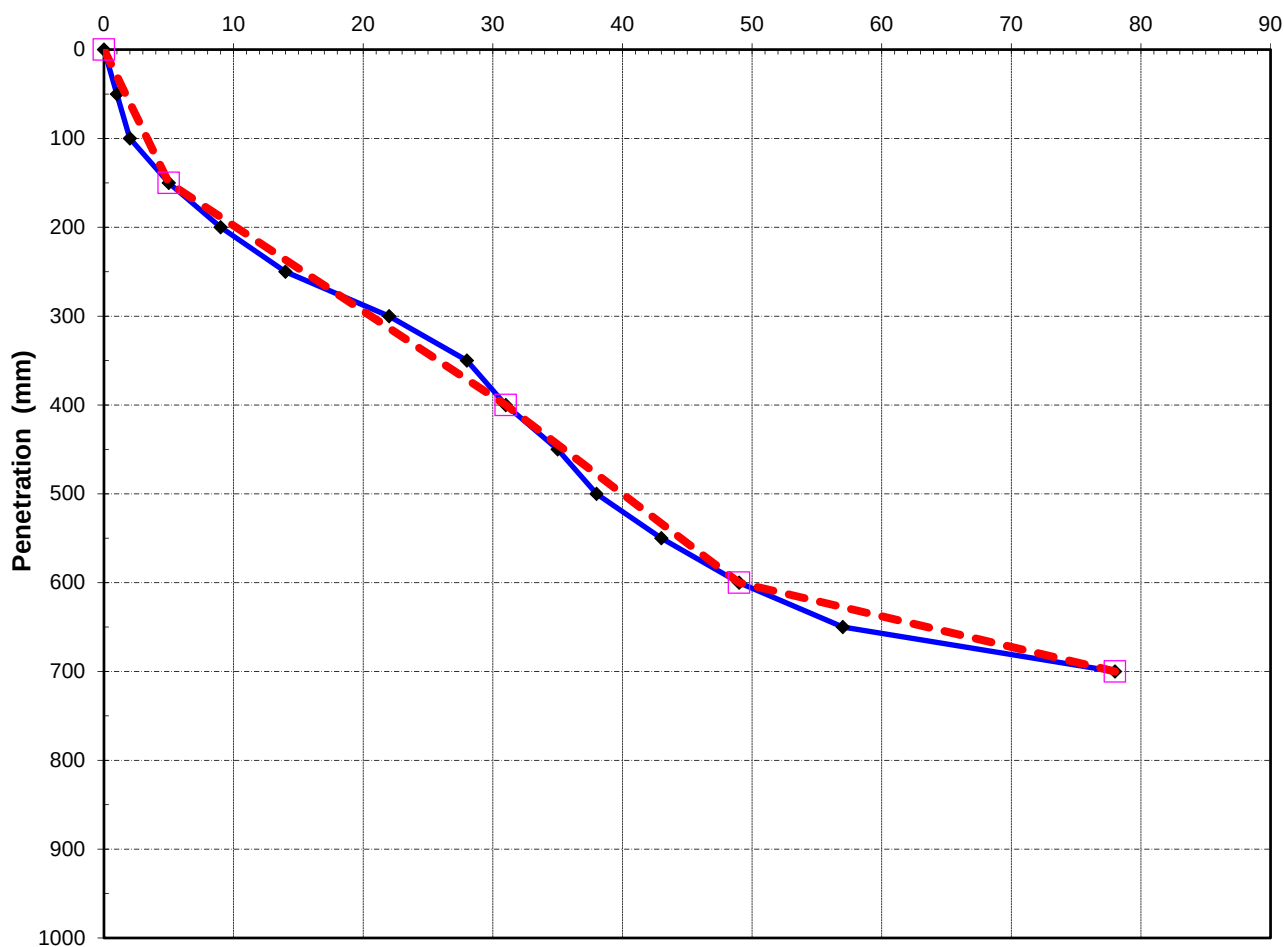
Soil Condition:

Test Date: 18-Mar-25

Notes: Undertake adjacent to WLS01

Perth Cone CBR Penetration vs Cumulative Blow Count

Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	150	150	5	5	30.0	5.5		
2	150	400	250	31	26	9.6	24		
3	400	600	200	49	18	11.1	20		
4	600	700	100	78	29	3.4	82		

Client: Glanville Consultants Ltd.

Job No: J15809

Site: Penygarnddu Industrial Estate, Merthyr Tydfil

Date: 18/03/2025

Fig.

Dynamic Cone Penetrometer (DCP) Test Results

Test No: DCP02

Chainage:

Tested By: SM

Start Layer:

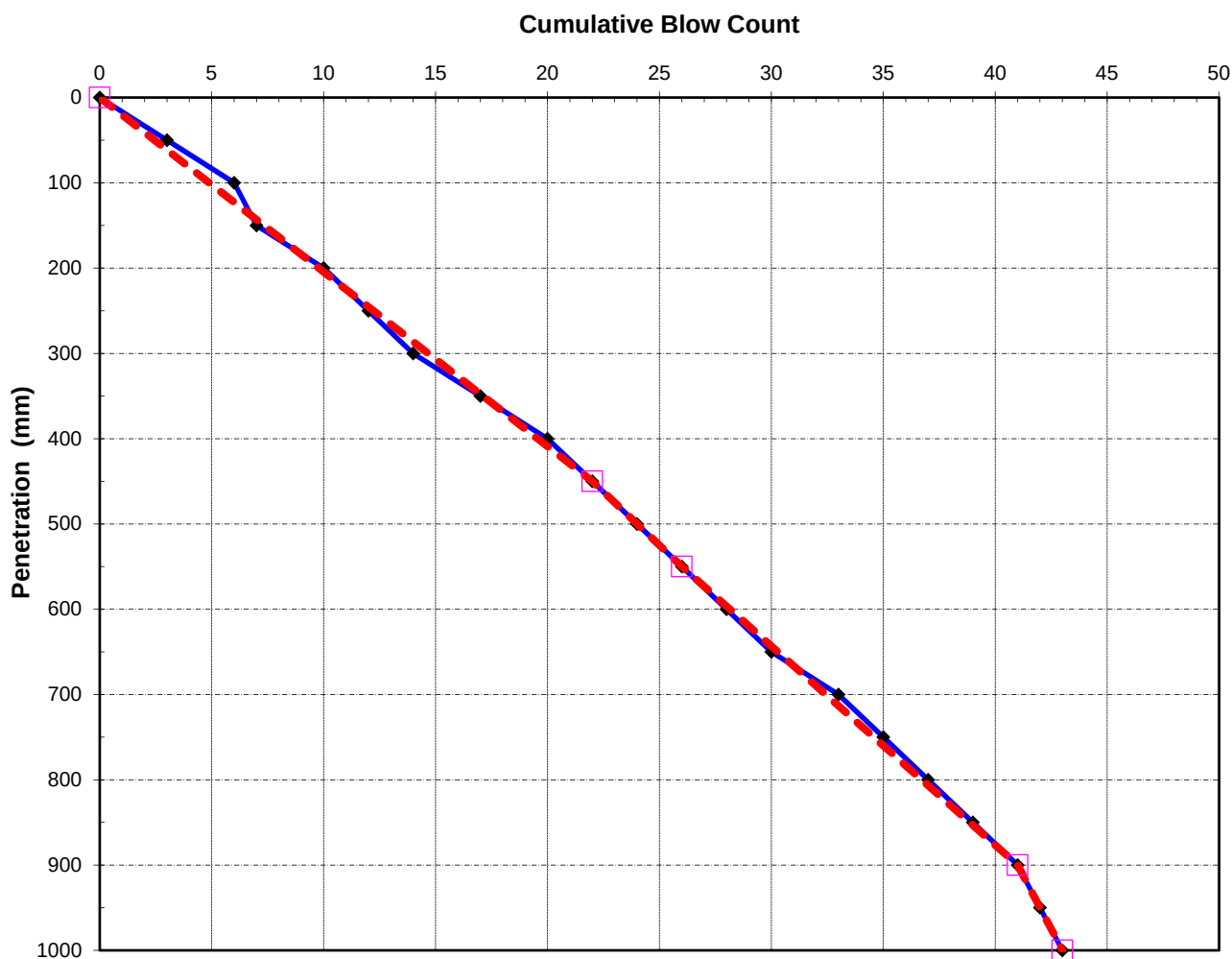
Checked By: SM

Soil Condition:

Test Date: 18-Mar-25

Notes: Undertaken adjacent to WLS02

Perth Cone CBR Penetration vs Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	450	450	22	22	20.5	9.0		
2	450	550	100	26	4	25.0	7.0		
3	550	900	350	41	15	23.3	7.6		
4	900	1000	100	43	2	50.0	2.9		

Client: Glanville Consultants Ltd.

Job No: J15809

Site: Penygarnddu Industrial Estate, Merthyr Tydfil

Date: 18/03/2025

Fig.

Dynamic Cone Penetrometer (DCP) Test Results

Test No: DCP03

Chainage:

Tested By: SM

Start Layer:

Checked By: SM

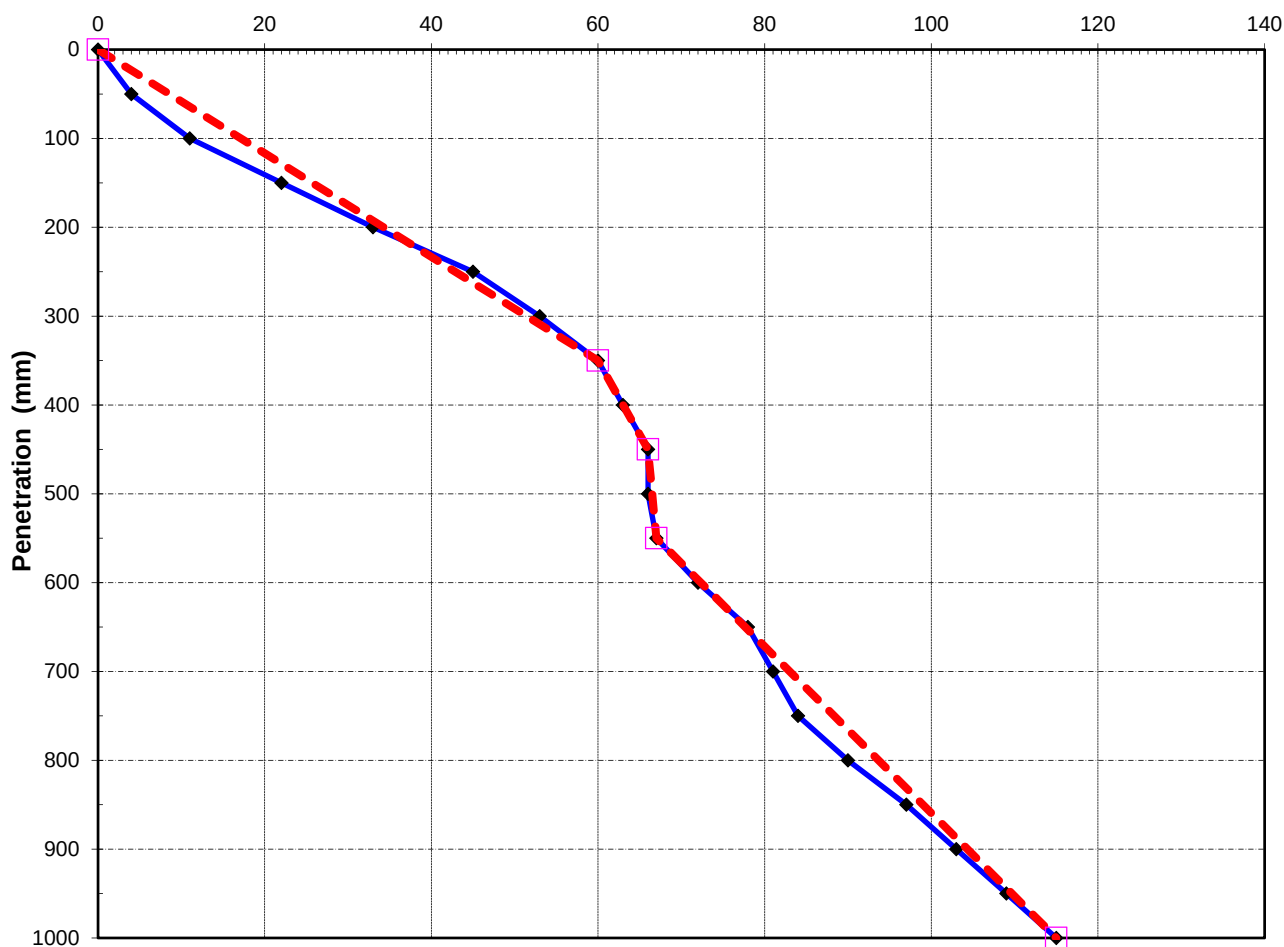
Soil Condition:

Test Date: 21-Mar-25

Notes: Undertaken adjacent to TP04

Perth Cone CBR Penetration vs Cumulative Blow Count

Cumulative Blow Count



Evaluated CBR Values from DCP Test Results

Layer No	From (mm)	To (mm)	Depth (mm)	Blow Count	No. of Blows	DCP mm/blow	CBR %	Soil Type	Remarks
1	0	350	350	60	60	5.8	45		
2	350	450	100	66	6	16.7	12		
3	450	550	100	67	1	100.0	1.2		
4	550	1000	450	115	48	9.4	24		

Client: Glanville Consultants Ltd.

Job No: J15809

Site: Penygarnddu Industrial Estate, Merthyr Tydfil

Date: 18/03/2025

Fig.

Project Name: Penygarnddu Industrial Estate

Location: Merthyr Tydfil, CF48 2TA

Client: Glanville Consultants Ltd.

Project Number: J15809

Engineer: SM

STANDARD PENETRATION TEST RESULTS

Location ID	Test Depth (m bgl)	Test Type	Seating Blows/Penetration				Main Test Blows/Penetration								N Value	Reported Result
			SB1	SP1	SB2	SP2	MB1	MP1	MB2	MP2	MB3	MP3	MB4	MP4		
BH01	1	C	2	75	4	75	4	75	2	75	2	75	2	75	10	N=10 (2,4/4,2,2,2)
BH01	2	C	1	75	1	75	1	75	2	75	1	75	2	75	6	N=6 (1,1/1,2,1,2)
BH01	3	C	2	75	2	75	1	75	2	75	3	75	3	75	9	N=9 (2,2/1,2,3,3)
BH01	4	C	1	75	2	75	1	75	2	75	3	75	2	75	8	N=8 (1,2/1,2,3,2)
BH01	5	C	2	75	2	75	2	75	3	75	2	75	2	75	9	N=9 (2,2/2,3,2,2)
BH01	6.5	C	1	75	2	75	3	75	3	75	3	75	3	75	12	N=12 (1,2/3,3,3,3)
BH01	8	C	2	75	3	75	6	75	6	75	3	75	3	75	18	N=18 (2,3/6,6,3,3)
BH01	9.5	C	2	75	1	75	1	75	2	75	3	75	2	75	8	N=8 (2,1/1,2,3,2)
BH01	11	C	4	75	6	75	6	75	8	75	7	75	8	75	29	N=29 (4,6/6,8,7,8)
BH01	12.5	C	4	75	5	75	11	75	12	75	13	75	13	75	49	N=49 (4,5/11,12,13,13)
WLS01	1	S	1	75	2	75	3	75	3	75	3	75	3	75	12	N=12 (1,2/3,3,3,3)
WLS01	2	S	1	75	1	75	2	75	2	75	1	75	2	75	7	N=7 (1,1/2,2,1,2)
WLS01	3	S	3	75	1	75	1	75	1	75	1	75	0	75	3	N=3 (3,1/1,1,1,0)
WLS01	4	S	3	75	4	75	3	75	2	75	2	75	2	75	9	N=9 (3,4/3,2,2,2)
WLS01	5	S	1	75	1	75	2	75	1	75	2	75	1	75	6	N=6 (1,1/2,1,2,1)
WLS02	1	S	1	75	1	75	2	75	2	75	2	75	2	75	8	N=8 (1,1/2,2,2,2)
WLS02	2	S	1	75	1	75	2	75	1	75	1	75	2	75	6	N=6 (1,1/2,1,1,2)
WLS02	3	S	1	75	1	75	3	75	6	75	5	75	6	75	20	N=20 (1,1/3,6,5,6)
WLS02	4	S	1	75	1	75	2	75	1	75	3	75	2	75	8	N=8 (1,1/2,1,3,2)
WLS03	1	S	3	75	2	75	1	75	1	75	2	75	2	75	6	N=6 (3,2/1,1,2,2)
WLS03	2	S	3	75	2	75	6	75	24	75	17	75	4	35		N=51 (3,2/51 for 260mm)

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref: RP11075
Test Date: 04/06/2024
Report Date: 04/06/2024
File Name: RP11075.spt
Test Operator: BOB

Instrumented Rod Data

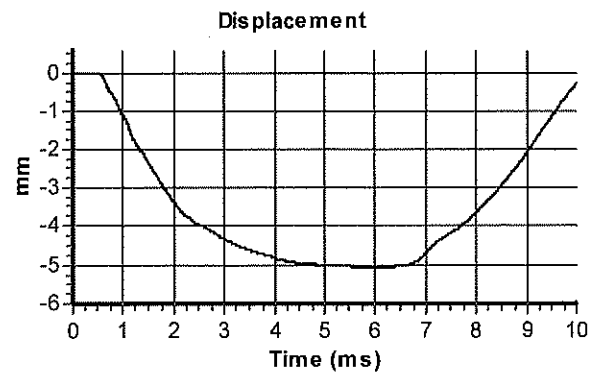
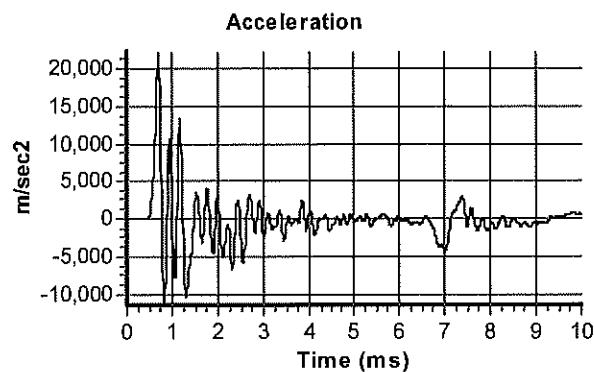
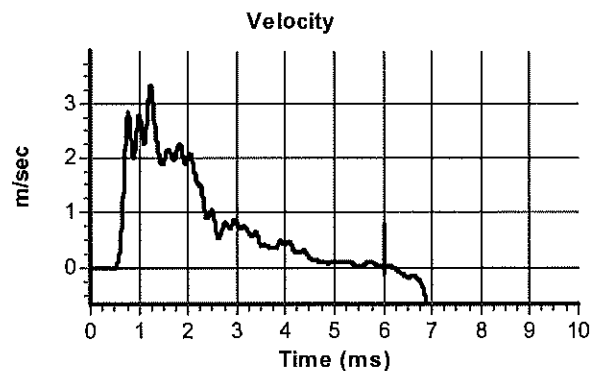
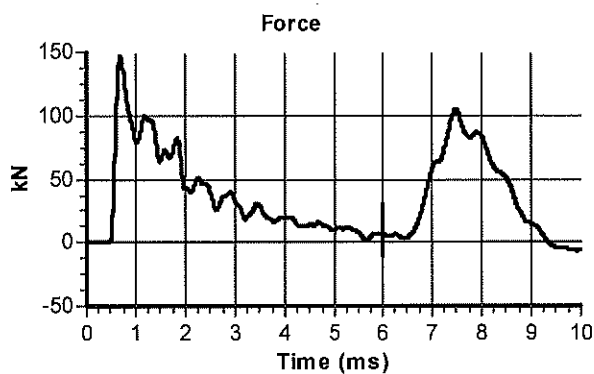
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.4
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 73547
Accelerometer No.2: 64789

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 14.7

Comments / Location

CHARLSWOOD



Calculations

Area of Rod A (mm^2): 957
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 367

Energy Ratio E_r (%): **78**

Signed: Bob Stewart

Title: Technician

The recommended calibration interval is 12 months

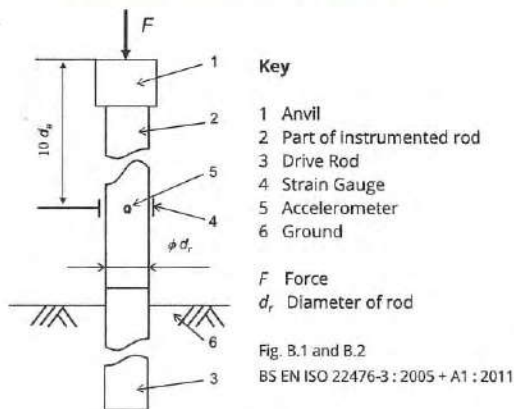
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer SPT HAMMER
Test No EQU2024_101
Client Apex Drilling

Test Depth (m) 11.70
Mass of hammer $m = 63.5\text{kg}$
Falling height $h = 0.76\text{m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{J}$

Characteristics of the instrumented rod



Diameter $d_r = 0.052\text{ m}$
Length of instrumented rod 0.558 m
Area $A = 11.61\text{ cm}^2$
Modulus $E_s = 206843\text{ MPa}$

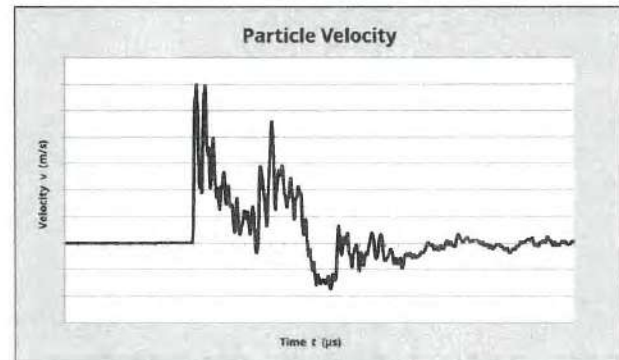
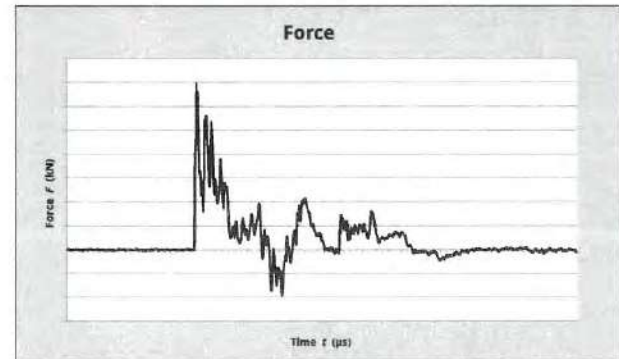
$E_{\text{meas}} = 0.346\text{ kN-m}$

$E_{\text{theor}} = 0.473\text{ kN-m}$

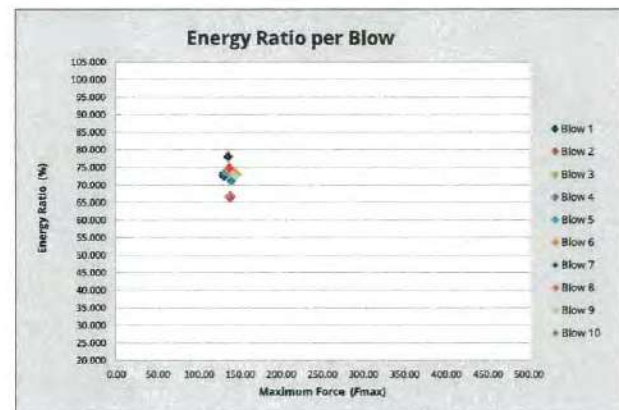
Comments

DATE OF TEST VALID UNTIL HAMMER ID

15/11/2024	15/11/2025	AP3
------------	------------	-----



Energy Ratio (Er) = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$ **73.06%**



Equipe SPT Analyzer Operator

JL

Certificate prepared by

[Signature]

Certificate checked by

[Signature]

Certificate date

26/11/2024

APPENDIX C

**Geotechnical Laboratory Test
Methods and Results**





TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 24/03/2025
Date Received: 27/05/2025
Date Tested: 10/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

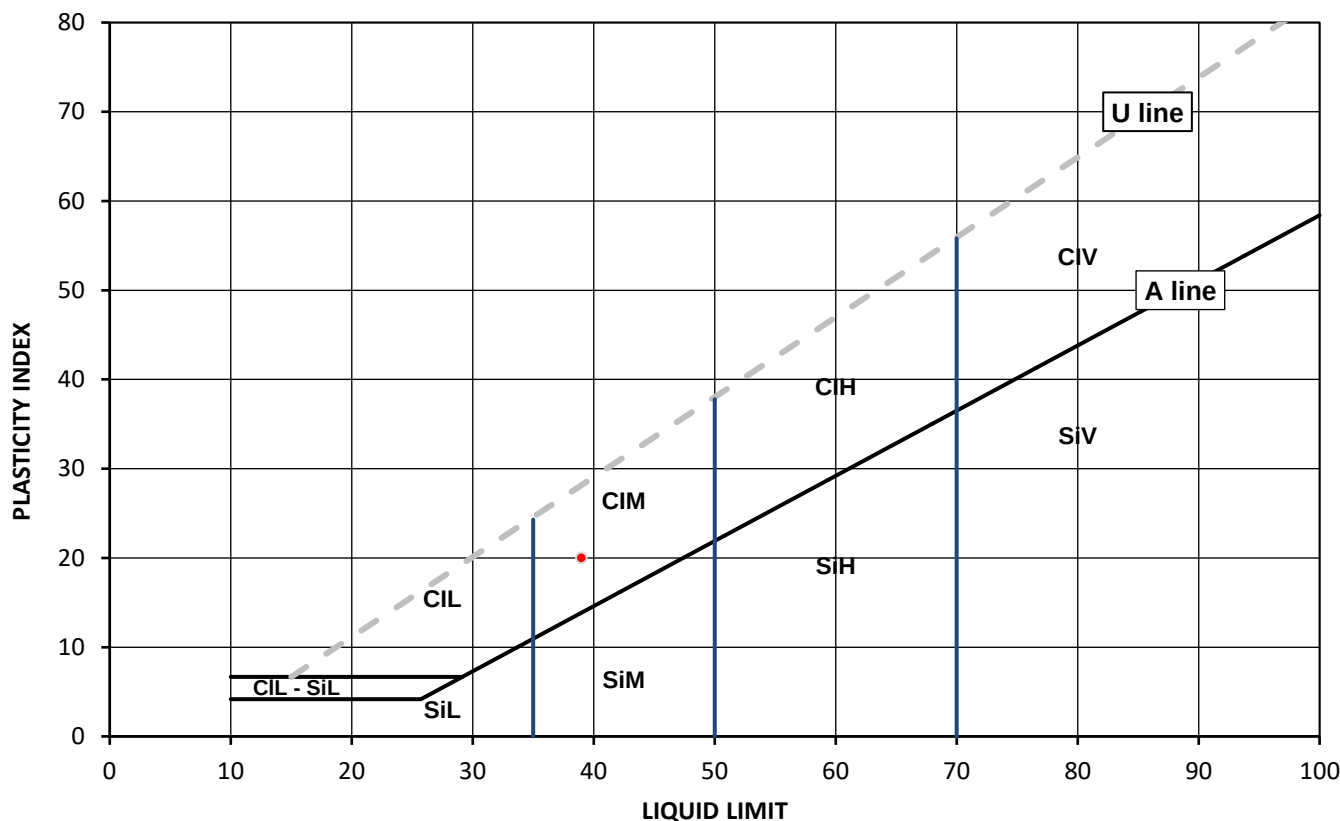
Test Results:

Laboratory Reference: 558641
Hole No.: BH01
Sample Reference: B
Sample Description: Grey gravelly sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: 3.00
Sample Type: B

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
11.5	39	19	20	-0.35	1.35	65



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Banyś
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



4041

**TEST CERTIFICATE****DETERMINATION OF LIQUID AND PLASTIC LIMITS**

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 24/03/2025
Date Received: 27/05/2025
Date Tested: 05/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

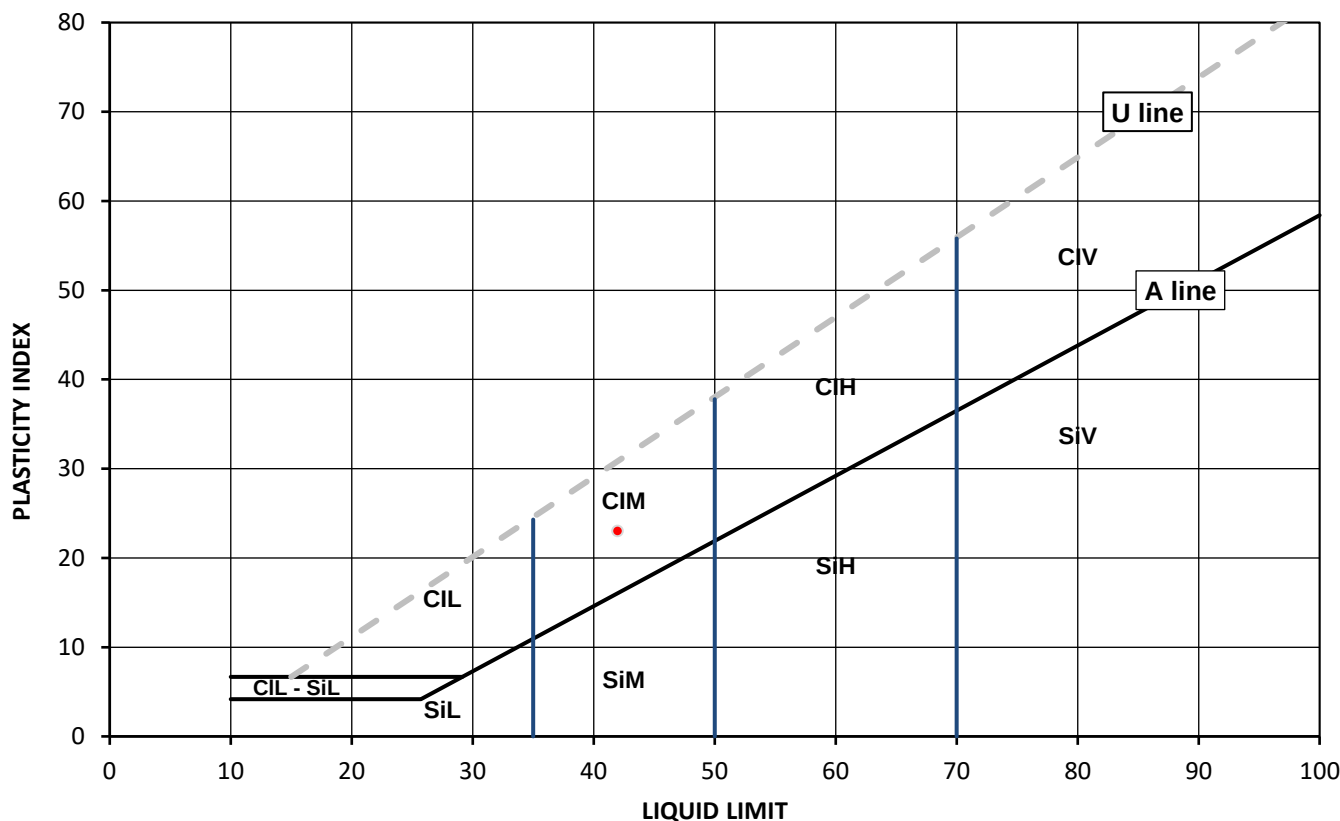
Test Results:

Laboratory Reference: 558642
Hole No.: BH01
Sample Reference: B
Sample Description: Dark grey slightly gravelly sandy CLAY

Depth Top [m]: 12.00
Depth Base [m]: 13.00
Sample Type: B

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
18.5	42	19	23	0.00	1.00	69



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	append to classification for organic material (eg ClHO)
	V Very high	
	O Organic	

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Banyś

Katarzyna Banyś
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



4041

**TEST CERTIFICATE****DETERMINATION OF LIQUID AND PLASTIC LIMITS**

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 21/03/2025
Date Received: 27/05/2025
Date Tested: 05/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

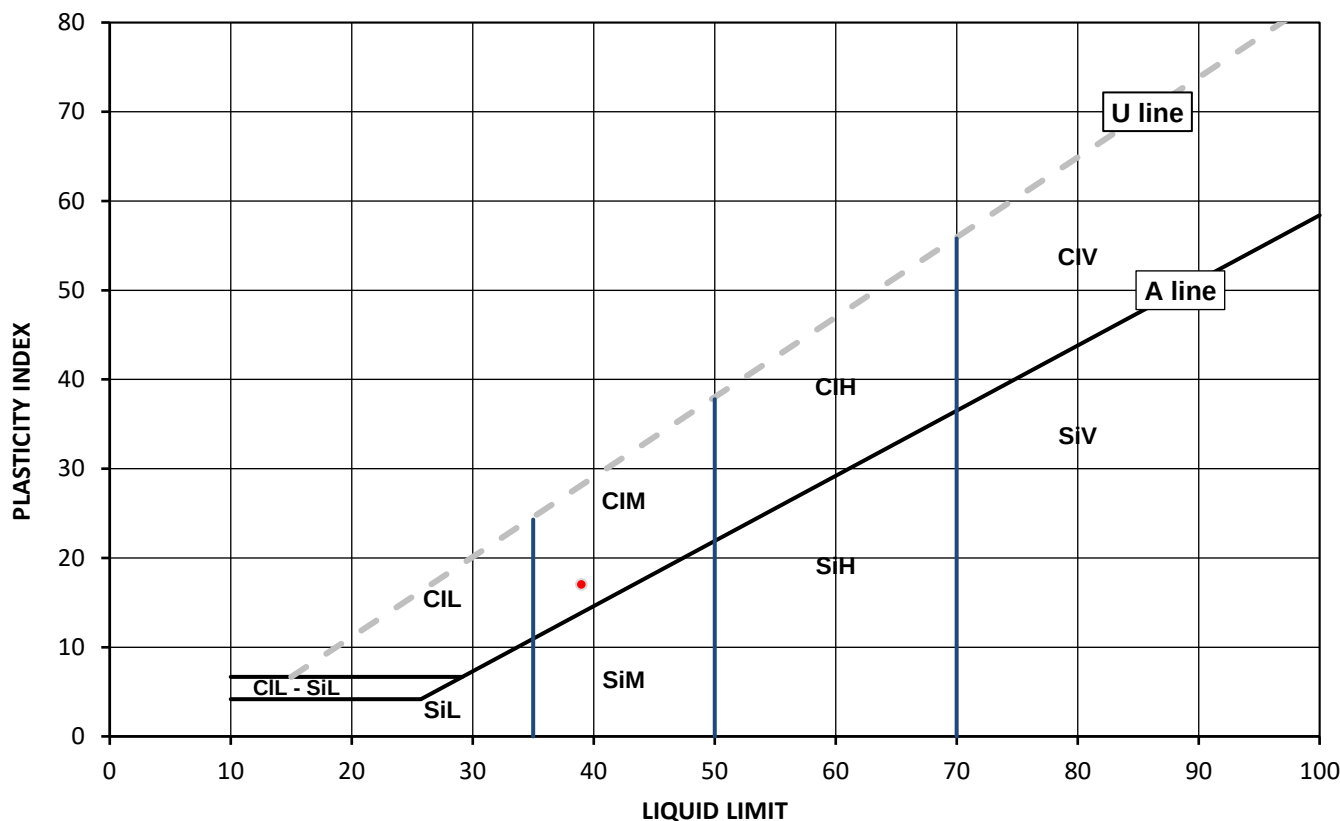
Test Results:

Laboratory Reference: 558643
Hole No.: TP03
Sample Reference: D
Sample Description: Greyish brown slightly gravelly sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
17.7	39	22	17	-0.24	1.24	79



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Banyś

Katarzyna Banyś
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 21/03/2025
Date Received: 27/05/2025
Date Tested: 05/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

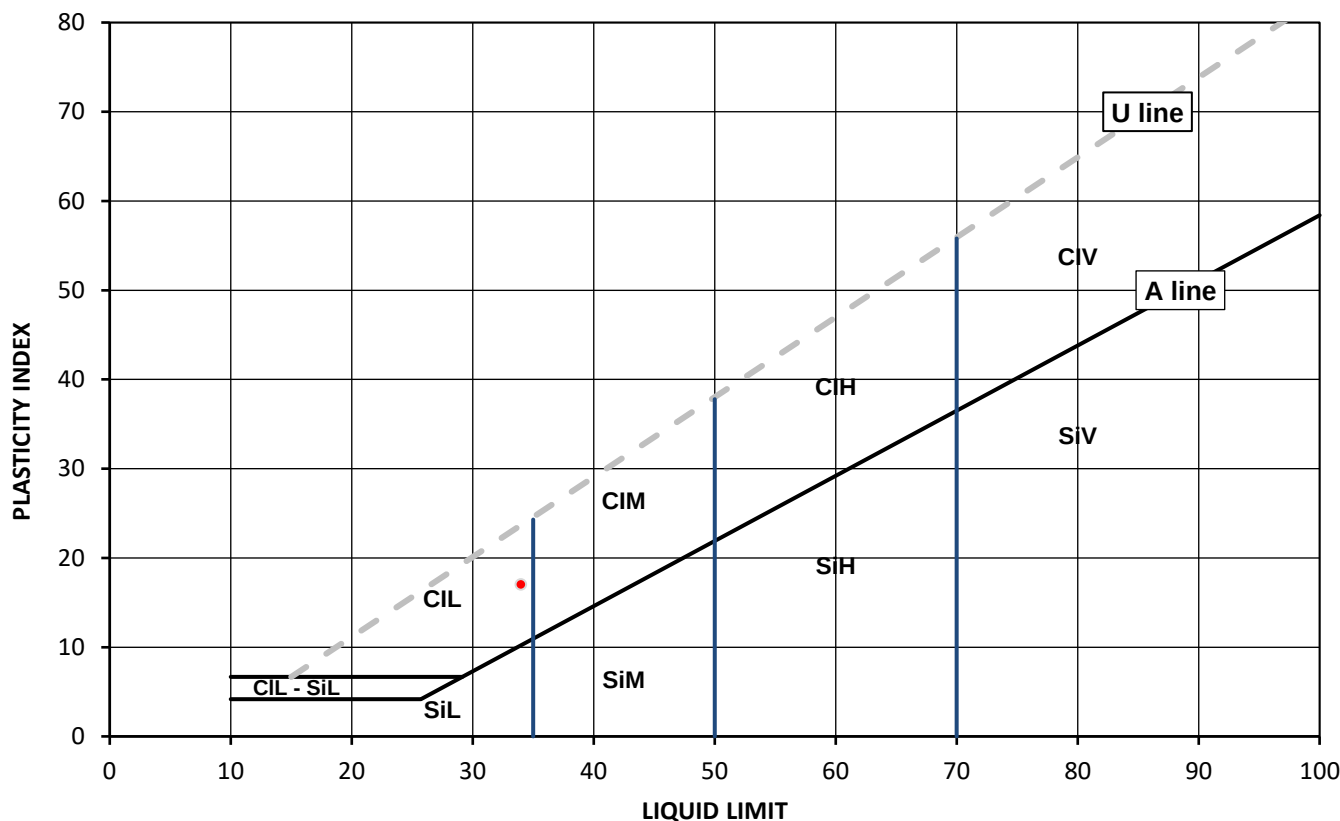
Test Results:

Laboratory Reference: 558644
Hole No.: TP04
Sample Reference: D
Sample Description: Greyish brown slightly gravelly very sandy CLAY

Depth Top [m]: 2.50
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
15.2	34	17	17	-0.12	1.12	76



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Banys
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



4041

**TEST CERTIFICATE****DETERMINATION OF LIQUID AND PLASTIC LIMITS**

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 19/03/2025
Date Received: 27/05/2025
Date Tested: 05/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

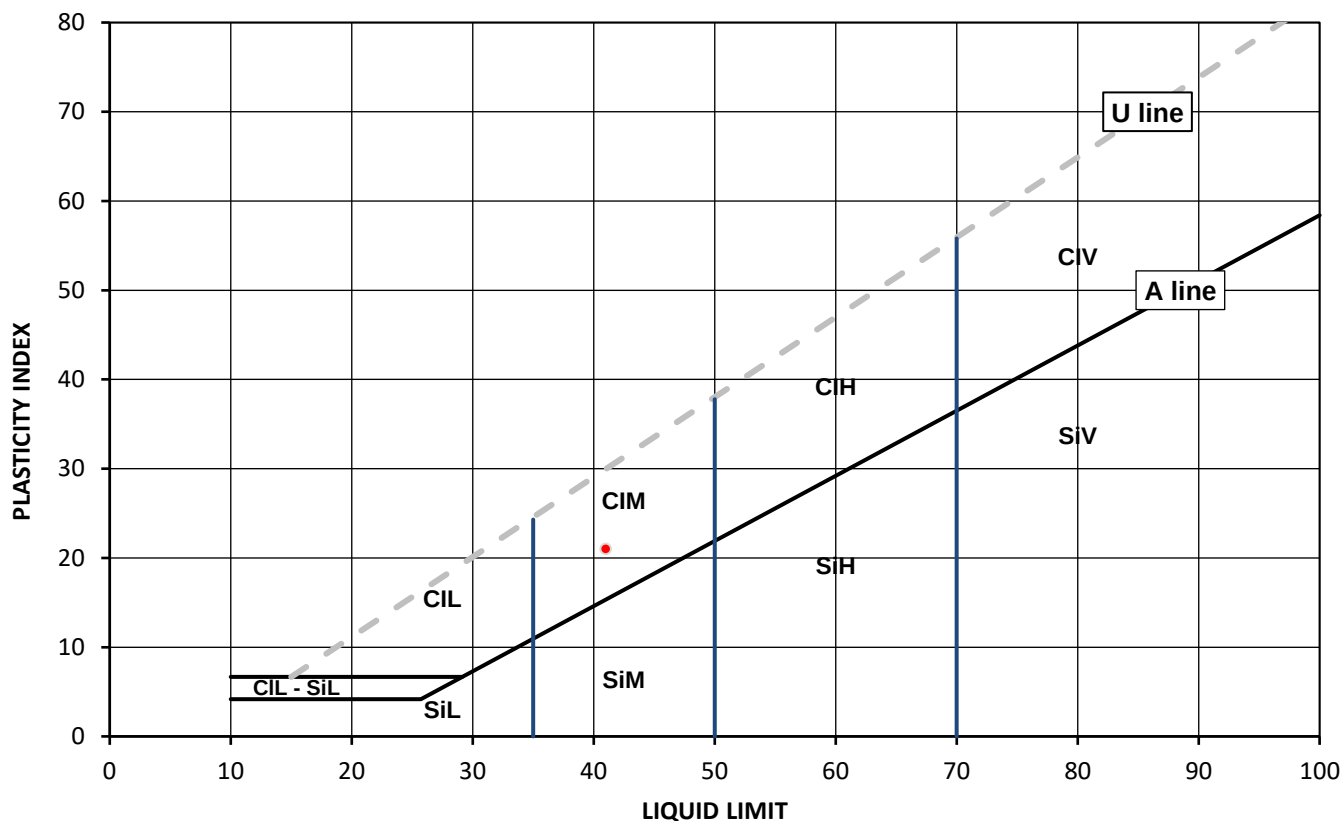
Test Results:

Laboratory Reference: 558645
Hole No.: WLS01
Sample Reference: D
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 3.50
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
20.0	41	20	21	0.00	1.00	67



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity	Liquid Limit
Cl	Clay	L Low	below 35
Si	Silt	M Medium	35 to 50
		H High	50 to 70
		V Very high	exceeding 70
		O Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Banys
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



4041

**TEST CERTIFICATE****DETERMINATION OF LIQUID AND PLASTIC LIMITS**

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 19/03/2025
Date Received: 27/05/2025
Date Tested: 05/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

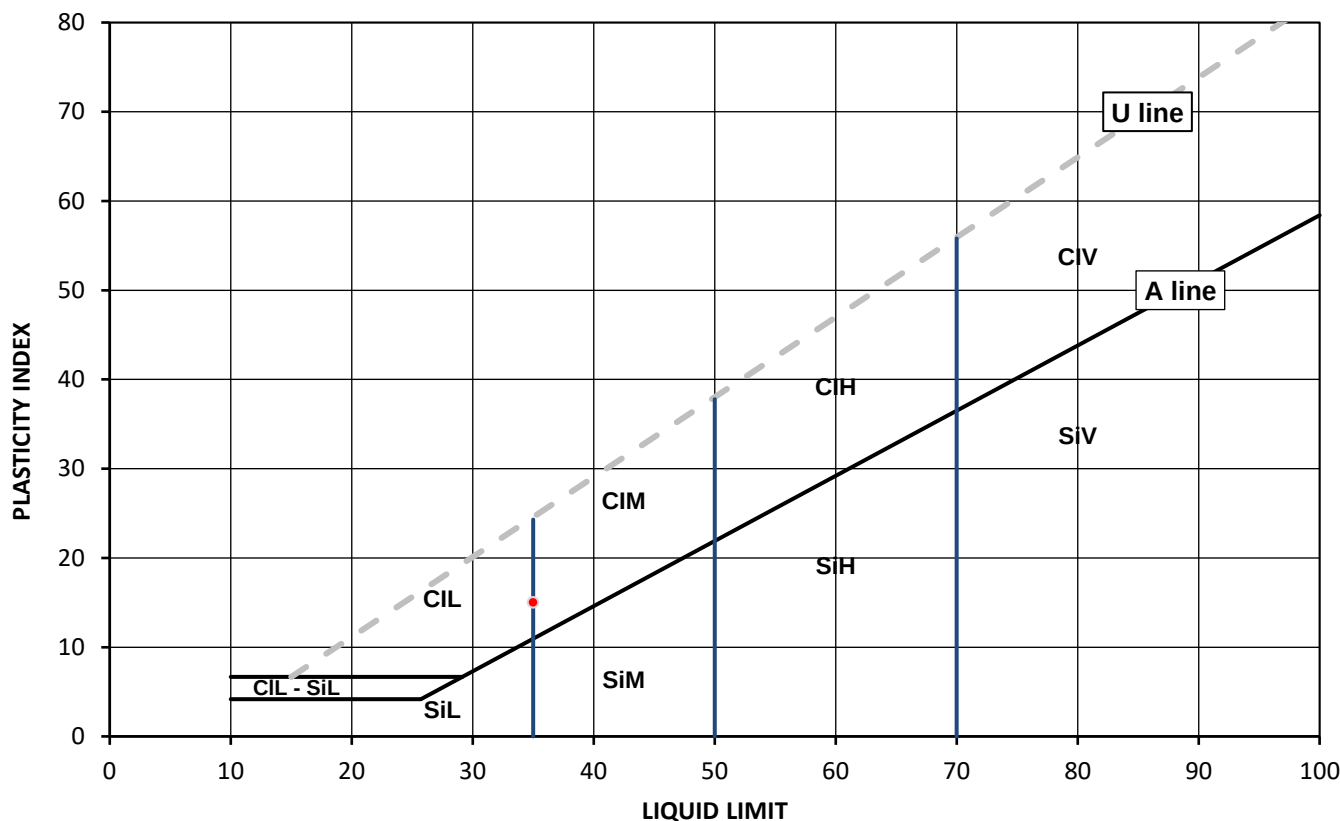
Test Results:

Laboratory Reference: 558646
Hole No.: WLS02
Sample Reference: D
Sample Description: Greyish brown slightly gravelly very sandy CLAY with fragments of shales

Depth Top [m]: 2.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >0.425mm removed by hand; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
15.0	35	20	15	-0.33	1.33	74



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity	Liquid Limit
Cl	Clay	L Low	below 35
Si	Silt	M Medium	35 to 50
		H High	50 to 70
		V Very high	exceeding 70
		O Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Banyś

Katarzyna Banyś
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 19/03/2025
Date Received: 27/05/2025
Date Tested: 05/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

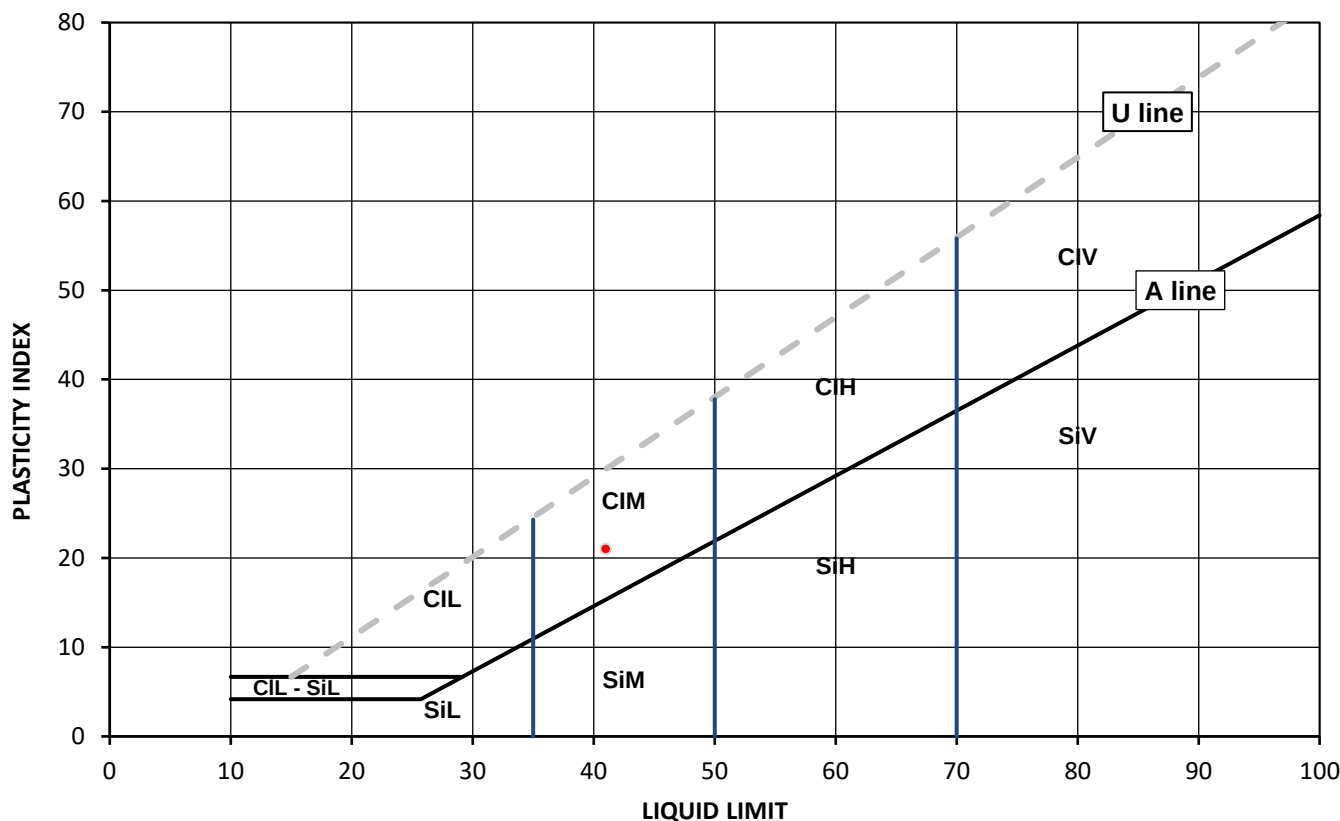
Test Results:

Laboratory Reference: 558647
Hole No.: WLS02
Sample Reference: D
Sample Description: Greyish brown slightly gravelly sandy CLAY

Depth Top [m]: 4.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
25.4	41	20	21	0.24	0.76	87



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Banys
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



4041

**TEST CERTIFICATE****DETERMINATION OF LIQUID AND PLASTIC LIMITS**

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,
cl 5.2 and 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 20/03/2025
Date Received: 27/05/2025
Date Tested: 05/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

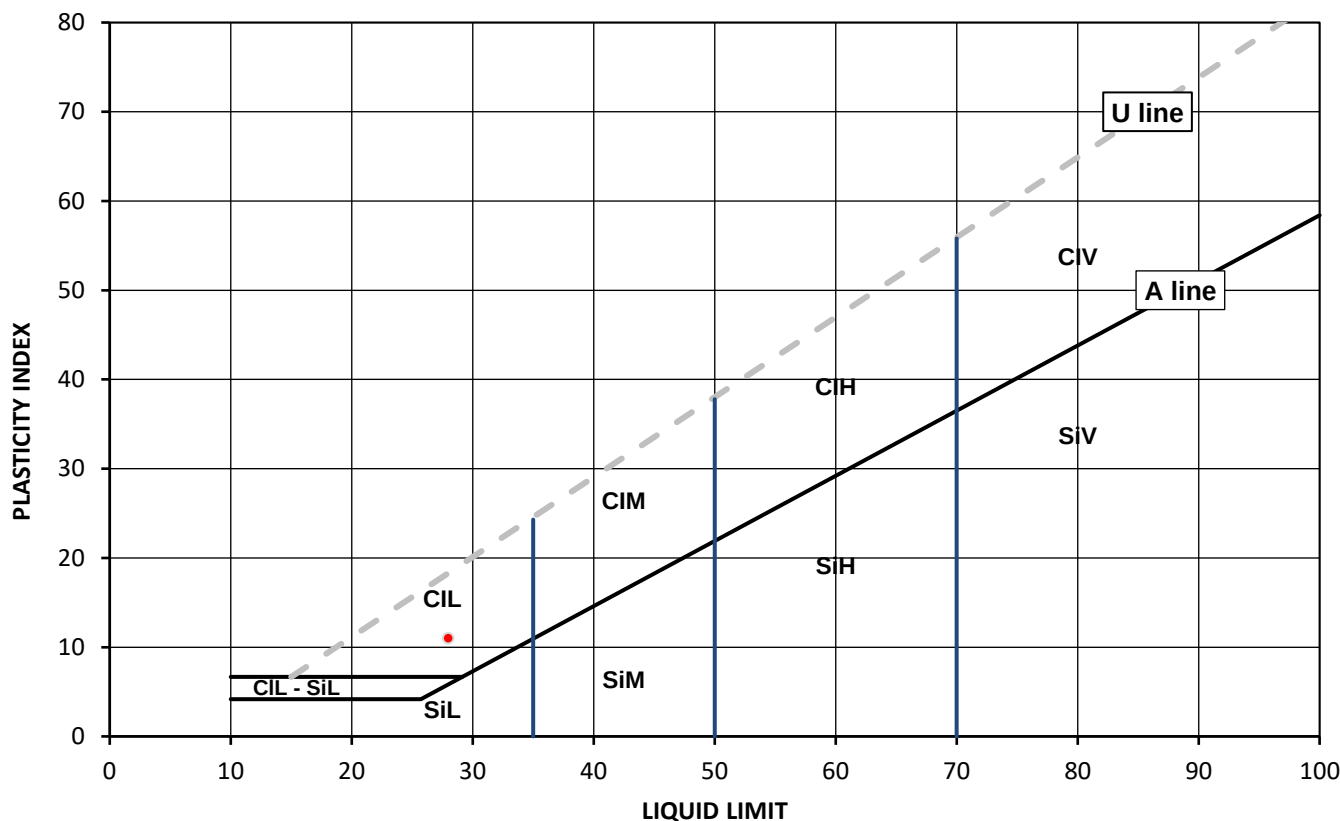
Test Results:

Laboratory Reference: 558648
Hole No.: WLS03
Sample Reference: D
Sample Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >0.425mm removed by hand; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
18.8	28	17	11	0.18	0.82	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		50 to 70
		exceeding 70
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Banys

Katarzyna Banys
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Southern Testing Laboratories Ltd

Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA

Contact: Sam Marshall

Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

BS EN ISO 17892-12:2018+A2:2022 cl 5.3 and 5.5, Fall Cone Method, 4 Pt
Test, BS 1377-2:2022, cl 5.2 and 6. W by BS EN ISO 17892-1:2014+A1:2022.

Client Reference: J15809

Job Number: 25-027292-1

Date Sampled: 19/03 - 24/03/2025

Date Received: 27/05/2025

Date Tested: 05/06 - 10/06/2025

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit							Density		
		Reference	Depth Top	Depth Base	Type				% Passing 425um	WL*	Correlation Factor	Wp	Ip	Cone type	Sample Preparation	bulk	dry	PD
			m	m					%	%		%	%			Mg/m3	Mg/m3	Mg/m3
558641	BH01	B	2.00	3.00	B	Grey gravelly sandy CLAY	Atterberg 4 Point	11.5	65	39	-	19	20	80g/30 deg	WR / I			
558642	BH01	B	12.00	13.00	B	Dark grey slightly gravelly sandy CLAY	Atterberg 4 Point	18.5	69	42	-	19	23	80g/30 deg	WR / I			
558643	TP03	D	2.00	Not Given	D	Greyish brown slightly gravelly sandy CLAY	Atterberg 4 Point	17.7	79	39	-	22	17	80g/30 deg	WR / I			
558644	TP04	D	2.50	Not Given	D	Greyish brown slightly gravelly very sandy CLAY	Atterberg 4 Point	15.2	76	34	-	17	17	80g/30 deg	WR / I			
558645	WLS01	D	3.50	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	20.0	67	41	-	20	21	80g/30 deg	WR / I			
558646	WLS02	D	2.00	Not Given	D	Greyish brown slightly gravelly very sandy CLAY with fragments of shales	Atterberg 4 Point	15.0	74	35	-	20	15	80g/30 deg	R / I			
558647	WLS02	D	4.00	Not Given	D	Greyish brown slightly gravelly sandy CLAY	Atterberg 4 Point	25.4	87	41	-	20	21	80g/30 deg	WR / I			
558648	WLS03	D	2.00	Not Given	D	Brown slightly gravelly very sandy CLAY	Atterberg 4 Point	18.8	99	28	-	17	11	80g/30 deg	R / I			

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0,425mm removed by hand, WR - Tested after washing to remove >425mm; I - The water content in the sample was increased, D - The water content in the sample was decreased; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments:

Signed:

Katarzyna Banyś

Katarzyna Banyś
Reporting Specialist

for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022, clause 4.1

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Client: Southern Testing Laboratories Ltd
Client Address: Keeble House, Stuart Way,
East Grinstead, West Sussex,
RH19 4QA
Contact: Sam Marshall
Site Address: Penygarnddu Industrial Estate, Merthyr Tydfil

Client Reference: J15809
Job Number: 25-027292-1
Date Sampled: 19/03 - 24/03/2025
Date Received: 27/05/2025
Date Tested: 05/06 - 10/06/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC											
		Reference	Depth Top m	Depth Base m	Type														
558641	BH01	B	2.00	3.00	B	Grey gravelly sandy CLAY		11.5											
558642	BH01	B	12.00	13.00	B	Dark grey slightly gravelly sandy CLAY		18.5											
558643	TP03	D	2.00	Not Given	D	Greyish brown slightly gravelly sandy CLAY		17.7											
558644	TP04	D	2.50	Not Given	D	Greyish brown slightly gravelly very sandy CLAY		15.2											
558645	WLS01	D	3.50	Not Given	D	Brown slightly gravelly sandy CLAY		20.0											
558646	WLS02	D	2.00	Not Given	D	Greyish brown slightly gravelly very sandy CLAY with fragments of shales		15.0											
558647	WLS02	D	4.00	Not Given	D	Greyish brown slightly gravelly sandy CLAY		25.4											
558648	WLS03	D	2.00	Not Given	D	Brown slightly gravelly very sandy CLAY		18.8											

Comments:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

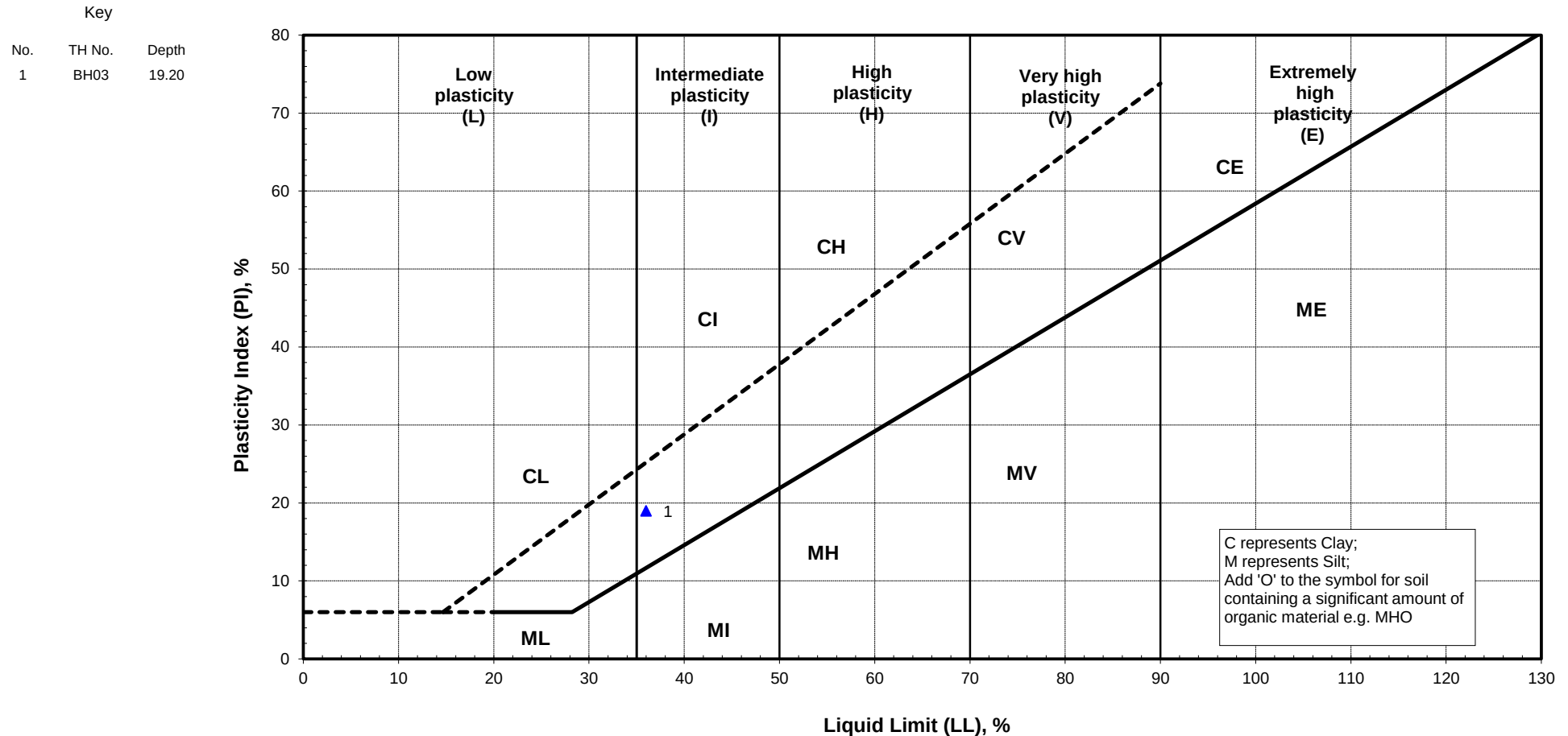
Katarzyna Banyś

Katarzyna Banyś
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Plasticity Chart for Atterberg Limit Tests



Project Name	Penygarnddu Industrial Estate, Merthyr Tydfil			Project Number	J15809
Client Name	Glanville Consultants Limited	PE	SM	Date Issued	17-Apr-25



Liquid Limit		Plastic Limit		Plasticity Index	
Maximum Value	36	Maximum Value	17	Maximum Value	19
Minimum Value	36	Minimum Value	17	Minimum Value	19
Average Value	36	Average Value	17	Average Value	19

Plasticity Index and Water Content Summary

BS1377-2:2022 cl. 5, BS EN ISO 17892-1:2014 + A1:2022, BS EN ISO 17892-12:2018 + A2:2022

Project Name		Penygarnddu Industrial Estate, Merthyr Tydfil					Project Number		J15809	
Client		Glanville Consultants Limited			PE	SM	Date Issued		17-Apr-25	
Location ID	Depth m	Sample Type	Visual Description	Comments	Initial WC %	Liquid Limit %	Plastic Limit %	Plasticity Index	Classi- fication	Passing 425 micron %
BH03	19.20	C	Very stiff dark grey slightly sandy slightly gravelly CLAY. Gravel consists of fine and medium angular siltstone.	Sample passed through 425µm sieve	12	36	17	19	CI	72

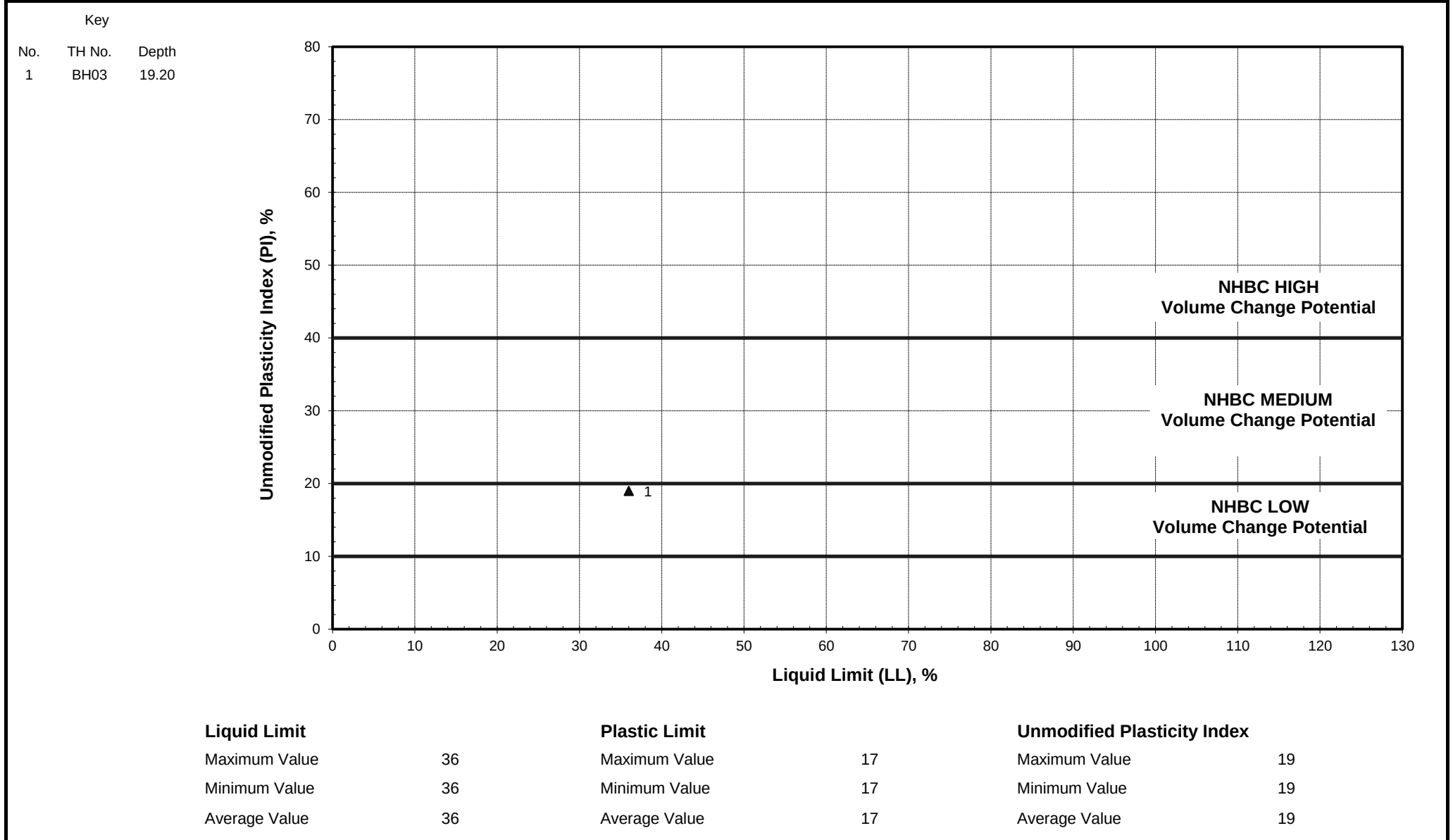
Registered office Southern Testing Laboratories Ltd, Keeble House, Stuart Way, East Grinstead RH19 4QA. Testing carried out at Units 20A & B, Durkins Road, East Grinstead RH19 2RW. BSI Ref: FS29280 under BS EN ISO 9001.

Jun 13

NHBC Classification for Volume Change Potential



Project Name	<i>Penygarnddu Industrial Estate, Merthyr Tydfil</i>			Project Number	<i>J15809</i>
Client Name	<i>Glanville Consultants Limited</i>	PE	<i>SM</i>	Date Issued	<i>17-Apr-25</i>



Project Name		Penygarnddu Industrial Estate, Merthyr Tydfil								Project Number		J15809		
Client		Glanville Consultants Limited						PE	SM	Date Issued		17-Apr-25		
Location ID	Depth m	Sample Type	Visual Description	Comments	Direction of test in relation to planes of weakness	WC %	Bulk Density Mg/m ³	Width mm	Height mm	Diameter to Length Ratio	Uniaxial Compressive Strength MPa	Type of Failure	Point Load Test Type	Point Load Index I _{S(50)} MPa
BH01	17.70	C			Perpendicular - Pd			72	44				Axial - A	0.60
BH01	18.60	C	Grey black SILTSTONE.		Perpendicular - Pd			72	50				Axial - A	0.53
BH01	21.10	C	Grey black banded pale grey SANDSTONE.		Perpendicular - Pd			72	55				Axial - A	1.53
BH01	21.80	C	Dark grey SILTSTONE.			1	2.64	72	161	1:2.24	24.8	Splitting		
BH01	22.80	C	Grey black banded pale grey SANDSTONE.		Perpendicular - Pd			72	38				Axial - A	3.70
BH01	25.50	C	Dark grey speckled black SILTSTONE.			2	2.63	72	129	1:1.79	17.3	Splitting		
BH01	28.00	C	Dark grey speckled black SILTSTONE.			2	2.64	72	166	1:2.31	25.0	Splitting		
BH01	28.50	C	Pale grey SANDSTONE. With vertical quartz vein.			1	2.66	72	167	1:2.32	138.1	Splitting		
BH01	29.35	C	Pale grey SANDSTONE. With vertical quartz veins.			1	2.65	72	165	1:2.29	124.2	Splitting		
BH02	14.05	C	Black SILTSTONE. With lignite.		Perpendicular - Pd			72	61				Axial - A	0.77

Project Name		Penygarnddu Industrial Estate, Merthyr Tydfil								Project Number		J15809		
Client		Glanville Consultants Limited						PE	SM	Date Issued		17-Apr-25		
Location ID	Depth m	Sample Type	Visual Description	Comments	Direction of test in relation to planes of weakness	WC %	Bulk Density Mg/m ³	Width mm	Height mm	Diameter to Length Ratio	Uniaxial Compressive Strength MPa	Type of Failure	Point Load Test Type	Point Load Index I _{s(50)} MPa
BH02	15.35	C			Perpendicular - Pd			72	44				Axial - A	6.03
BH02	16.50	C	Dark grey SILTSTONE.		Perpendicular - Pd			72	45				Axial - A	0.76
BH02	20.45	C	Grey black SILTSTONE. With lignite.		Perpendicular - Pd			72	39				Axial - A	2.06
BH02	21.80	C	Dark grey and light grey SANDSTONE.		Perpendicular - Pd			72	36				Axial - A	1.27
BH02	27.30	C	Dark grey and light grey SANDSTONE.		Perpendicular - Pd			72	54				Axial - A	1.18
BH02	28.15	C	Pale grey SANDSTONE. With vertical quartz veins.			1	2.64	72	165	1:2.29	89.6	Splitting		
BH03	19.80	C	Dark grey SANDSTONE. With lignite.		Perpendicular - Pd			72	58				Axial - A	2.63
BH03	36.00	C	Grey black SILTSTONE.		Perpendicular - Pd			72	56				Axial - A	0.70

Registered office Southern Testing Laboratories Ltd, Keeble House, Stuart Way, East Grinstead RH19 4QA. Testing carried out at Units 20A & B, Durkins Road, East Grinstead RH19 2RW. BSI Ref: FS29280 under BS EN ISO 9001.

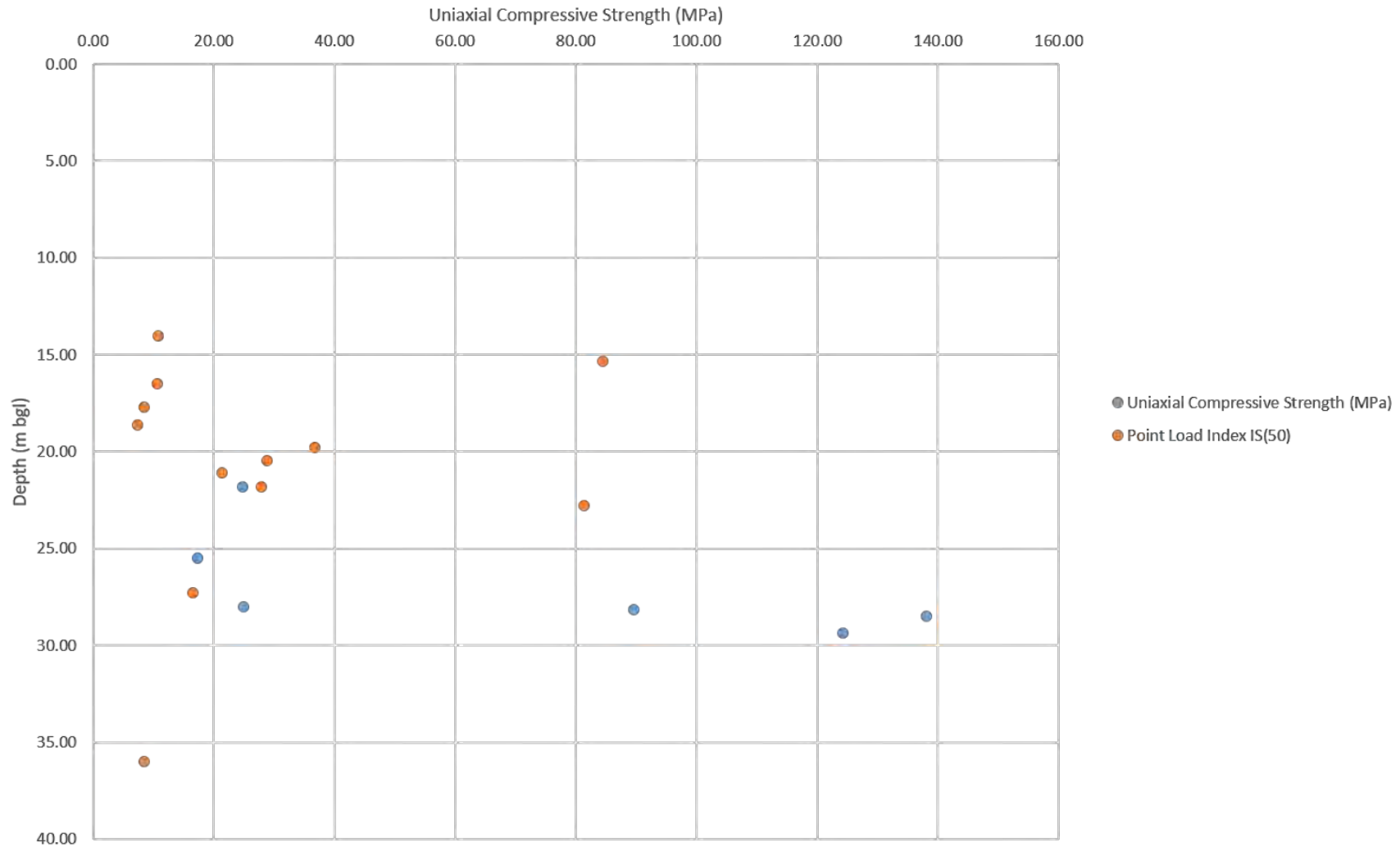
Apr 16

APPENDIX D

**Geotechnical Figures and
Tables**



Plot of UCS (MPa) vs Depth (m bgl)



Site: Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA

STL: J15809

Fig No: P1

Date: 18th March 2025

Plot of UCS (MPa) vs depth (m bgl).



Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twigden Barns, Brixworth Road, Creton, Northampton NN6 8NN



APPENDIX E

Contamination Laboratory Test Methods and Results



These screening values are valid at the time of writing but may be subject to change and any such changes will have implications for the assessments based on them. Their validity should be confirmed at the time of site development.

Table 1 – Tier 1 Screening Values							
Contaminant	Units	Proposed Land Use					
		Residential with home grown produce consumption	Residential without home grown produce consumption	Open Space * (Residential)	Open Space * (Park)	Allotments	Commercial / Industrial
Arsenic (As) [2]	mg/kg	37	40	79	170	43	640
Cadmium (Cd) [2]	mg/kg	11	85	120	555	1.9	190
Trivalent Chromium (CrIII) [2]	mg/kg	910	910	1,500	33,000	18,000	8600
Hexavalent Chromium (CrVI) [2]	mg/kg	6	6	7.7	220	1.8	33
Lead (Pb) [3]	mg/kg	200	310	630	1300	80	2330
Mercury (Hg) [1,2,7]	mg/kg	7.6-11	9.2-15	40	68-71	6.0	29-320
Selenium (Se) [2]	mg/kg	250	430	1,100	1,800	88	12,000
Nickel (Ni) [2,4]	mg/kg	130	180	230	800	53	980
Copper (Cu) [2,4]	mg/kg	2,400	7,100	12,000	44,000	520	68,000
Zinc (Zn) [2,4]	mg/kg	3,700	40,000	81,000	170,000	620	730,000
Phenol [1,2]	mg/kg	120-380	440-1200	440-1300	440-1300	23-83	440-1300
Benzo[a]pyrene [1,5]	mg/kg	1.7-2.4	2.6	4.9	10	0.67-2.7	36
Naphthalene [1,2]	mg/kg	2.3-13	2.3-13	77-430*	77-430*	4.1-24	77-430*
Total Cyanide (CN) [6]	mg/kg	/	/	/	/	/	/
Free Cyanide [6]	mg/kg	/	/	/	/	/	/
Complex Cyanides [6]	mg/kg	/	/	/	/	/	/
Thiocyanate [6]	mg/kg	/	/	/	/	/	/

Notes:

* Open Space levels calculated on the basis of the exposure modelling developed in the C4SL research.

+ Screening values constrained to saturation limit. Higher values may be acceptable on a site specific basis.

[1] Where ranges of values are given for organic contaminants the screening value is dependent on the Soil +Organic Matter.

[2] LQM/CIEH S4UL (2014). Copyright Land Quality Management Ltd. reproduced with permission; Publication Number S4UL 3116. All rights reserved.

[3] C4SL (DEFRA 2014).

[4] Copper, Zinc and Nickel may have phototoxic effects at the given concentrations. Alternative criteria should be adopted for importation of Topsoil or other soils for cultivation. BS3882:2015 and BS8601:2013 suggest values of 200 to 300mg/kg for Zn, 100 to 200mg/kg for Cu, and 60 to 110mg/kg for Ni, for topsoil and subsoil, depending on pH.

[5] Based on the Surrogate Marker approach and modelled using the modified exposure parameters of C4SL but retaining 'minimal risk' HCV.

[6] Screening criteria derived on a site specific basis if test results indicate.

[7] S4UL for Methyl Mercury, higher concentrations may be tolerable if inorganic mercury is the only species present. Lower concentrations apply for elemental Mercury.

Southern Testing Laboratories Ltd
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

t: 01342 333100

e: contamresults@southerntesting.co.uk

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

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 25-017450

Project / Site name:	Penygarnddu Industrial Estate, Merthyr Tydfil	Samples received on:	07/04/2025
Your job number:	J15809	Samples instructed on / Analysis started on:	07/04/2025
Your order number:	J15809_2	Analysis completed by:	15/04/2025
Report Issue Number:	1	Report issued on:	15/04/2025
Samples Analysed:	15 soil samples		



Signed:

Anna Goc
PL Head of Reporting Team
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: 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505776	505777	505778	505779	505780
Sample Reference	HA01	HA01	HA02	HA02	TP01
Sample Number	ES	ES	ES	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.30	1.50	0.30	1.00	0.10
Date Sampled	19/03/2025	19/03/2025	19/03/2025	19/03/2025	21/03/2025
Time Taken	1600	1600	1500	1500	1230
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	40.5	42.9	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.1	16	9.8	12	18
Total mass of sample received	kg	0.1	NONE	0.7	0.6	0.6	0.6	0.8

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	MJN	MJN	MJN	MJN	MJN
Analysis completed	N/A	N/A	N/A	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.3	8.6	8.5	8.6	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	12	27	83	31	23
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.00582	0.0136	0.0414	0.0155	0.0114
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	5.82	13.6	41.4	15.5	11.4
Sulphide	mg/kg	1	MCERTS	< 1.0	2.9	4.9	1.7	< 1.0
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	2.3	1.1	1.6	1.7	6.1

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.06	< 0.05	1.6
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.08
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.1
Fluorene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	0.9
Phenanthrene	mg/kg	0.05	MCERTS	0.26	0.09	0.14	0.1	8.3
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.6
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.13	< 0.05	8.3
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.1	0.05	7.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.07	< 0.05	2.6
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.07	0.11	< 0.05	3.1
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.08	< 0.05	< 0.05	2.8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	1.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	2.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.29
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80	45
-----------------------------	-------	-----	-----------	--------	--------	--------	--------	----

Analytical Report Number: 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505776	505777	505778	505779	505780
Sample Reference	HA01	HA01	HA02	HA02	TP01
Sample Number	ES	ES	ES	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.30	1.50	0.30	1.00	0.10
Date Sampled	19/03/2025	19/03/2025	19/03/2025	19/03/2025	21/03/2025
Time Taken	1600	1600	1500	1500	1230
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	9.5	10	8.4	7.3
Boron (water soluble)	mg/kg	0.2	MCERTS	-	0.8	-	0.7	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	< 0.2	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	16	15	15	16
Copper (aqua regia extractable)	mg/kg	1	MCERTS	73	55	56	49	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	26	25	21	27
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	40	30	32	26	28
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	-	18	-	17	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	86	92	60	100

Petroleum Hydrocarbons

TPH (>EC6 - EC8) HS_1D_TOTAL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPH (>EC8 - EC10) HS_1D_TOTAL	mg/kg	0.02	MCERTS	-	-	-	-	-
TPH (>EC10 - EC12) EH_CU_1D_TOTAL	mg/kg	2	MCERTS	-	-	-	-	-
TPH (>EC12 - EC16) EH_CU_1D_TOTAL	mg/kg	4	MCERTS	-	-	-	-	-
TPH (>EC16 - EC21) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	-	-	-
TPH (>EC21 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	-	-	-

TPH Total >EC6 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	28	-	< 10	-
---	-------	----	------	---	----	---	------	---

Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	-	< 1.0	-	< 1.0	-
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	28	-	< 10	-

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

Analytical Report Number: 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505781	505782	505783	505784	505785
Sample Reference	TP01	TP02	TP02	TP03	TP03
Sample Number	ES	ES	ES	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.00	0.40	1.00	0.50	1.50
Date Sampled	21/03/2025	21/03/2025	21/03/2025	21/03/2025	21/03/2025
Time Taken	1230	1200	1200	1100	1100
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	39.5	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	9.7	15	17	22
Total mass of sample received	kg	0.1	NONE	0.7	0.6	0.8	0.7	0.7

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	KMC	KMC	KMC	KMC	KMC
Analysis completed	N/A	N/A	N/A	14/04/2025	14/04/2025	14/04/2025	14/04/2025	14/04/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.7	10.9	8.3	7.5	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	13	480	140	9.7	7.7
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.00637	0.241	0.0712	0.00484	0.00385
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	6.37	241	71.2	4.84	3.85
Sulphide	mg/kg	1	MCERTS	1.4	2.6	9	4.5	< 1.0
Organic Matter	%	0.1	MCERTS	-	-	-	16	25
Organic Matter (automated)	%	0.1	MCERTS	1.6	1.3	2.2	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.09	0.09	0.09	0.08	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.06	0.19	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.05	0.15	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.09	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.15	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.12	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
-----------------------------	-------	-----	-----------	--------	--------	--------	--------	--------

Analytical Report Number: 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505781	505782	505783	505784	505785
Sample Reference	TP01	TP02	TP02	TP03	TP03
Sample Number	ES	ES	ES	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.00	0.40	1.00	0.50	1.50
Date Sampled	21/03/2025	21/03/2025	21/03/2025	21/03/2025	21/03/2025
Time Taken	1230	1200	1200	1100	1100
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.5	8.3	11	20	22
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	19	19	12	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	53	50	55	46	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	20	25	17	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35	28	30	12	9
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.2
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	17	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	87	78	80	30	16

Petroleum Hydrocarbons

TPH (>EC6 - EC8) HS_1D_TOTAL	mg/kg	0.01	MCERTS	-	-	-	< 0.01	< 0.01
TPH (>EC8 - EC10) HS_1D_TOTAL	mg/kg	0.02	MCERTS	-	-	-	< 0.02	< 0.02
TPH (>EC10 - EC12) EH_CU_1D_TOTAL	mg/kg	2	MCERTS	-	-	-	< 2.0	< 2.0
TPH (>EC12 - EC16) EH_CU_1D_TOTAL	mg/kg	4	MCERTS	-	-	-	< 4.0	< 4.0
TPH (>EC16 - EC21) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	-	< 10	< 10
TPH (>EC21 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	-	< 10	< 10

TPH Total >EC6 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	< 10	-	-	< 10	< 10
---	-------	----	------	------	---	---	------	------

Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	-	-	< 10	< 10

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

Analytical Report Number: 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505786	505787	505788	505789	505790
Sample Reference	WLS01	WLS01	WLS01	WLS02	WLS03
Sample Number	ES	ES	ES	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.50	1.20	4.70	0.70	0.60
Date Sampled	19/03/2025	19/03/2025	19/03/2025	19/03/2025	21/03/2025
Time Taken	1300	1300	1300	1100	1000
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	38.2	< 0.1	38.4	41.8	54.4
Moisture Content	%	0.01	NONE	6.6	12	11	6.8	7.8
Total mass of sample received	kg	0.1	NONE	0.7	0.7	0.7	0.7	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DOC	DOC	-	DOC	DOC
Analysis completed	N/A	N/A	N/A	14/04/2025	14/04/2025	-	14/04/2025	14/04/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.8	8.5	-	8.5	8.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	39	18	-	55	200
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0196	0.00881	-	0.0277	0.102
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	19.6	8.81	-	27.7	102
Sulphide	mg/kg	1	MCERTS	9	< 1.0	-	2.1	87
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	0.6	1.3	-	2.9	3.7

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	---	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.05	-	0.43	0.38
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	0.08
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	1.6
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	2
Phenanthrene	mg/kg	0.05	MCERTS	0.21	0.13	-	0.66	8.9
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	1.7
Fluoranthene	mg/kg	0.05	MCERTS	0.28	< 0.05	-	0.18	12
Pyrene	mg/kg	0.05	MCERTS	0.21	< 0.05	-	0.13	9.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.11	< 0.05	-	0.06	5.9
Chrysene	mg/kg	0.05	MCERTS	0.16	< 0.05	-	0.25	6.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.15	< 0.05	-	0.15	8.8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.06	< 0.05	-	< 0.05	2.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.06	< 0.05	-	< 0.05	5.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	2.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	0.68
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	2.9

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.24	< 0.80	-	1.87	72.6
-----------------------------	-------	-----	-----------	------	--------	---	------	------

Analytical Report Number: 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505786	505787	505788	505789	505790
Sample Reference	WLS01	WLS01	WLS01	WLS02	WLS03
Sample Number	ES	ES	ES	ES	ES
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.50	1.20	4.70	0.70	0.60
Date Sampled	19/03/2025	19/03/2025	19/03/2025	19/03/2025	21/03/2025
Time Taken	1300	1300	1300	1100	1000
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	8.8	-	12	8.8
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	-	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	9.5	15	-	7.1	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	34	52	-	78	50
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	20	-	27	100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	31	-	43	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	72	79	-	100	110

Petroleum Hydrocarbons

TPH (>EC6 - EC8) HS_1D_TOTAL	mg/kg	0.01	MCERTS	-	-	< 0.01	-	< 0.01
TPH (>EC8 - EC10) HS_1D_TOTAL	mg/kg	0.02	MCERTS	-	-	< 0.02	-	< 0.02
TPH (>EC10 - EC12) EH_CU_1D_TOTAL	mg/kg	2	MCERTS	-	-	< 2.0	-	8.8
TPH (>EC12 - EC16) EH_CU_1D_TOTAL	mg/kg	4	MCERTS	-	-	11	-	33
TPH (>EC16 - EC21) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	22	-	63
TPH (>EC21 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	13	-	150

TPH Total >EC6 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	46	-	250
---	-------	----	------	---	---	----	---	-----

Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	-	-	< 1.0	-	< 1.0
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	46	-	250

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

Analytical Report Number : 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

* 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 *
505776	HA01	ES	0.3	Brown loam and clay with gravel and vegetation
505777	HA01	ES	1.5	Brown loam and clay with gravel and vegetation
505778	HA02	ES	0.3	Brown loam and clay with gravel and vegetation
505779	HA02	ES	1	Brown clay with gravel
505780	TP01	ES	0.1	Brown loam with gravel and vegetation
505781	TP01	ES	1	Brown clay with gravel
505782	TP02	ES	0.4	Brown clay with stones
505783	TP02	ES	1	Brown clay
505784	TP03	ES	0.5	Brown loam and clay
505785	TP03	ES	1.5	Brown clay and loam
505786	WLS01	ES	0.5	Brown sand with stones
505787	WLS01	ES	1.2	Brown clay
505788	WLS01	ES	4.7	Brown loam and clay with stones
505789	WLS02	ES	0.7	Brown loam and clay with stones
505790	WLS03	ES	0.6	Brown loam and clay with stones

Analytical Report Number : 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

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
Organic matter (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
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	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
Organic matter 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	L023B	D	MCERTS
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
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	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
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	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide 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
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	W	ISO 17025

Analytical Report Number : 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

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 in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

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

Analytical Report Number : 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
HA01	ES	S	505776	c	Hexavalent chromium in soil	L080-PL	c
HA01	ES	S	505776	c	Monohydric phenols in soil	L080-PL	c
HA01	ES	S	505776	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HA01	ES	S	505776	c	Sulphide in soil	L010-PL	c
HA01	ES	S	505776	c	Total cyanide in soil	L080-PL	c
HA01	ES	S	505776	c	pH in soil (automated)	L099-PL	c
HA01	ES	S	505777	c	Hexavalent chromium in soil	L080-PL	c
HA01	ES	S	505777	c	Monohydric phenols in soil	L080-PL	c
HA01	ES	S	505777	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HA01	ES	S	505777	c	Sulphide in soil	L010-PL	c
HA01	ES	S	505777	c	Total cyanide in soil	L080-PL	c
HA01	ES	S	505777	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
HA01	ES	S	505777	c	Total petroleum hydrocarbons by HS-GC-MS in soil	L129-PL	c
HA01	ES	S	505777	c	pH in soil (automated)	L099-PL	c
HA02	ES	S	505778	c	Hexavalent chromium in soil	L080-PL	c
HA02	ES	S	505778	c	Monohydric phenols in soil	L080-PL	c
HA02	ES	S	505778	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HA02	ES	S	505778	c	Sulphide in soil	L010-PL	c
HA02	ES	S	505778	c	Total cyanide in soil	L080-PL	c
HA02	ES	S	505778	c	pH in soil (automated)	L099-PL	c
HA02	ES	S	505779	c	Hexavalent chromium in soil	L080-PL	c
HA02	ES	S	505779	c	Monohydric phenols in soil	L080-PL	c
HA02	ES	S	505779	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HA02	ES	S	505779	c	Sulphide in soil	L010-PL	c
HA02	ES	S	505779	c	Total cyanide in soil	L080-PL	c
HA02	ES	S	505779	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
HA02	ES	S	505779	c	Total petroleum hydrocarbons by HS-GC-MS in soil	L129-PL	c
HA02	ES	S	505779	c	pH in soil (automated)	L099-PL	c
TP01	ES	S	505780	c	Monohydric phenols in soil	L080-PL	c
TP01	ES	S	505780	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP01	ES	S	505780	c	Sulphide in soil	L010-PL	c
TP01	ES	S	505780	c	Total cyanide in soil	L080-PL	c
TP01	ES	S	505780	c	pH in soil (automated)	L099-PL	c
TP01	ES	S	505781	c	Monohydric phenols in soil	L080-PL	c
TP01	ES	S	505781	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP01	ES	S	505781	c	Sulphide in soil	L010-PL	c
TP01	ES	S	505781	c	Total cyanide in soil	L080-PL	c
TP01	ES	S	505781	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
TP01	ES	S	505781	c	Total petroleum hydrocarbons by HS-GC-MS in soil	L129-PL	c
TP01	ES	S	505781	c	pH in soil (automated)	L099-PL	c
TP02	ES	S	505782	c	Monohydric phenols in soil	L080-PL	c
TP02	ES	S	505782	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP02	ES	S	505782	c	Sulphide in soil	L010-PL	c
TP02	ES	S	505782	c	Total cyanide in soil	L080-PL	c
TP02	ES	S	505782	c	pH in soil (automated)	L099-PL	c
TP02	ES	S	505783	c	Monohydric phenols in soil	L080-PL	c
TP02	ES	S	505783	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP02	ES	S	505783	c	Sulphide in soil	L010-PL	c
TP02	ES	S	505783	c	Total cyanide in soil	L080-PL	c
TP02	ES	S	505783	c	pH in soil (automated)	L099-PL	c
TP03	ES	S	505784	c	Monohydric phenols in soil	L080-PL	c
TP03	ES	S	505784	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP03	ES	S	505784	c	Sulphide in soil	L010-PL	c
TP03	ES	S	505784	c	Total cyanide in soil	L080-PL	c
TP03	ES	S	505784	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
TP03	ES	S	505784	c	Total petroleum hydrocarbons by HS-GC-MS in soil	L129-PL	c
TP03	ES	S	505784	c	pH in soil (automated)	L099-PL	c

Analytical Report Number : 25-017450

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP03	ES	S	505785	c	Monohydric phenols in soil	L080-PL	c
TP03	ES	S	505785	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP03	ES	S	505785	c	Sulphide in soil	L010-PL	c
TP03	ES	S	505785	c	Total cyanide in soil	L080-PL	c
TP03	ES	S	505785	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
TP03	ES	S	505785	c	Total petroleum hydrocarbons by HS-GC-MS in soil	L129-PL	c
TP03	ES	S	505785	c	pH in soil (automated)	L099-PL	c
WLS01	ES	S	505786	c	Hexavalent chromium in soil	L080-PL	c
WLS01	ES	S	505786	c	Monohydric phenols in soil	L080-PL	c
WLS01	ES	S	505786	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WLS01	ES	S	505786	c	Sulphide in soil	L010-PL	c
WLS01	ES	S	505786	c	Total cyanide in soil	L080-PL	c
WLS01	ES	S	505786	c	pH in soil (automated)	L099-PL	c
WLS01	ES	S	505787	c	Hexavalent chromium in soil	L080-PL	c
WLS01	ES	S	505787	c	Monohydric phenols in soil	L080-PL	c
WLS01	ES	S	505787	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WLS01	ES	S	505787	c	Sulphide in soil	L010-PL	c
WLS01	ES	S	505787	c	Total cyanide in soil	L080-PL	c
WLS01	ES	S	505787	c	pH in soil (automated)	L099-PL	c
WLS01	ES	S	505788	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WLS01	ES	S	505788	c	Total petroleum hydrocarbons by HS-GC-MS in soil	L129-PL	c
WLS02	ES	S	505789	c	Hexavalent chromium in soil	L080-PL	c
WLS02	ES	S	505789	c	Monohydric phenols in soil	L080-PL	c
WLS02	ES	S	505789	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WLS02	ES	S	505789	c	Sulphide in soil	L010-PL	c
WLS02	ES	S	505789	c	Total cyanide in soil	L080-PL	c
WLS02	ES	S	505789	c	pH in soil (automated)	L099-PL	c
WLS03	ES	S	505790	c	Monohydric phenols in soil	L080-PL	c
WLS03	ES	S	505790	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WLS03	ES	S	505790	c	Sulphide in soil	L010-PL	c
WLS03	ES	S	505790	c	Total cyanide in soil	L080-PL	c
WLS03	ES	S	505790	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WLS03	ES	S	505790	c	Total petroleum hydrocarbons by HS-GC-MS in soil	L129-PL	c
WLS03	ES	S	505790	c	pH in soil (automated)	L099-PL	c

Southern Testing Laboratories Ltd
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

t: 01342 333100

e: contamresults@southerntesting.co.uk

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

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 25-017457

Project / Site name:	Penygarnddu Industrial Estate, Merthyr Tydfil	Samples received on:	07/04/2025
Your job number:	J15809	Samples instructed on / Analysis started on:	07/04/2025
Your order number:	J15809_2	Analysis completed by:	15/04/2025
Report Issue Number:	1	Report issued on:	15/04/2025
Samples Analysed:	3 soil samples - 3 2stage samples		



Signed:

Anna Goc
PL Head of Reporting Team
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: 25-017457

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505818	505819	505820
Sample Reference	HA01	HA02	TP01
Sample Number	ES	ES	ES
Water Matrix	N/A	N/A	N/A
Depth (m)	1.50	1.00	1.00
Date Sampled	19/03/2025	19/03/2025	21/03/2025
Time Taken	1600	1500	1230
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Stone Content	%	0.1	NONE	40.5	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	12	11
Total mass of sample received	kg	0.1	NONE	0.6	0.6	0.7

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	8.1	8.1	8.3
Total Organic Carbon (TOC) – Manual	%	0.1	MCERTS	0.8	1	0.5
Loss on Ignition @ 450°C	%	0.2	MCERTS	2.9	2.6	2.3
Acid Neutralisation Capacity	mmol/kg	-9999	NONE	8.4	4.9	3.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.09	0.1	0.09
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85	< 0.85
-------------------	-------	------	------	--------	--------	--------

Petroleum Hydrocarbons

Mineral Oil (EC10 - EC40) EH_CU_ID_AL	mg/kg	10	NONE	26	< 10	< 10
--	-------	----	------	----	------	------

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: 25-017457

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505818	505819	505820
Sample Reference	HA01	HA02	TP01
Sample Number	ES	ES	ES
Water Matrix	N/A	N/A	N/A
Depth (m)	1.50	1.00	1.00
Date Sampled	19/03/2025	19/03/2025	21/03/2025
Time Taken	1600	1500	1230
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

Analytical Report Number: 25-017457

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505818	505819	505820
Sample Reference	HA01	HA02	TP01
Sample Number	ES	ES	ES
Water Matrix	N/A	N/A	N/A
Depth (m)	1.50	1.00	1.00
Date Sampled	19/03/2025	19/03/2025	21/03/2025
Time Taken	1600	1500	1230
Analytical Parameter (Two-stage Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status

Dry matter	%	0.1	NONE	86	86	88
Moisture of sample	%	N/A	NONE	17	16	14
Recovered volume A	l	N/A	NONE	0.16	0.19	0.16
Volume used first stage	l	N/A	NONE	0.321	0.322	0.325

General 2:1

Sulphate as SO ₄	mg/l	0.045	ISO 17025	6.6	5.3	1.6
Monohydric Phenols	mg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16
Chloride	mg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0
Fluoride	mg/l	0.05	ISO 17025	0.38	0.39	0.4
Dissolved Organic Carbon	mg/l	0.1	NONE	8.65	7.58	8.58
Total Dissolved Solids	mg/l	6	ISO 17025	85	87	76
Arsenic	mg/l	0.002	ISO 17025	< 0.0020	< 0.0020	< 0.0020
Cadmium	mg/l	0.0001	ISO 17025	< 0.00010	< 0.00010	< 0.00010
Chromium	mg/l	0.0006	ISO 17025	0.0023	< 0.00060	< 0.00060
Lead	mg/l	0.0017	ISO 17025	0.0053	0.0022	< 0.0017
Mercury	mg/l	0.0007	ISO 17025	< 0.00070	< 0.00070	< 0.00070
Selenium	mg/l	0.005	ISO 17025	< 0.0050	< 0.0050	< 0.0050
Copper	mg/l	0.0007	ISO 17025	0.022	0.0086	0.011
Nickel	mg/l	0.0009	ISO 17025	0.0022	< 0.00090	0.001
Zinc	mg/l	0.0009	ISO 17025	0.017	0.0057	0.0068
Antimony	mg/l	0.002	ISO 17025	0.0032	< 0.0020	< 0.0020
Molybdenum	mg/l	0.0014	ISO 17025	< 0.0014	< 0.0014	0.0023
Barium	mg/l	0.0012	ISO 17025	0.081	0.039	0.037

General 8:1

Sulphate as SO ₄	mg/l	0.045	ISO 17025	1.8	2	1.7
Monohydric Phenols	mg/l	0.13	ISO 17025	< 0.13	< 0.13	< 0.13
Chloride	mg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0
Fluoride	mg/l	0.05	ISO 17025	0.21	0.41	0.27
Dissolved Organic Carbon	mg/l	0.1	NONE	7.1	7.2	9.2
Total Dissolved Solids	mg/l	6	ISO 17025	38	48	42
Arsenic	mg/l	0.002	ISO 17025	< 0.0020	< 0.0020	< 0.0020
Cadmium	mg/l	0.0001	ISO 17025	0.00012	0.00012	< 0.00010
Chromium	mg/l	0.0006	ISO 17025	0.00067	< 0.00060	< 0.00060
Lead	mg/l	0.0017	ISO 17025	< 0.0017	< 0.0017	< 0.0017
Mercury	mg/l	0.0007	ISO 17025	< 0.0007	< 0.0007	< 0.0007
Selenium	mg/l	0.005	ISO 17025	< 0.0050	< 0.0050	< 0.0050
Copper	mg/l	0.0007	ISO 17025	0.0062	0.003	0.0034
Nickel	mg/l	0.0009	ISO 17025	< 0.00090	< 0.00090	< 0.00090
Zinc	mg/l	0.0009	ISO 17025	0.0035	0.0013	0.0032
Antimony	mg/l	0.002	ISO 17025	< 0.0020	0.0054	0.0047
Molybdenum	mg/l	0.0014	ISO 17025	< 0.0014	< 0.0014	< 0.0014
Barium	mg/l	0.0012	ISO 17025	0.026	0.016	0.016

Analytical Report Number: 25-017457

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809_2

Lab Sample Number	505818	505819	505820
Sample Reference	HA01	HA02	TP01
Sample Number	ES	ES	ES
Water Matrix	N/A	N/A	N/A
Depth (m)	1.50	1.00	1.00
Date Sampled	19/03/2025	19/03/2025	21/03/2025
Time Taken	1600	1500	1230
Analytical Parameter (Two-stage Leachate Analysis)	Units	Test Limit of detection	Test Accreditation Status

General 10:1

Sulphate as SO ₄	mg/kg	0.45	NONE	22	23	17
Monohydric Phenols	mg/kg	0.5	NONE	< 0.50	< 0.50	< 0.50
Chloride	mg/kg	15	NONE	< 15	< 15	< 15
Fluoride	mg/kg	0.2	NONE	2.3	4.1	2.9
Dissolved Organic Carbon	mg/kg	1	NONE	72	72.1	91.1
Total Dissolved Solids	mg/kg	60	NONE	420	520	450
Arsenic	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020
Cadmium	mg/kg	0.001	NONE	0.0011	0.001	< 0.0010
Chromium	mg/kg	0.006	NONE	0.0082	< 0.0060	< 0.0060
Lead	mg/kg	0.017	NONE	< 0.017	< 0.017	< 0.017
Mercury	mg/kg	0.007	NONE	< 0.0070	< 0.0070	< 0.0070
Selenium	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050
Copper	mg/kg	0.007	NONE	0.077	0.036	0.042
Nickel	mg/kg	0.009	NONE	< 0.0090	< 0.0090	< 0.0090
Zinc	mg/kg	0.009	NONE	0.047	0.018	0.035
Antimony	mg/kg	0.02	NONE	< 0.020	0.048	0.043
Molybdenum	mg/kg	0.014	NONE	< 0.014	< 0.014	< 0.014
Barium	mg/kg	0.012	NONE	0.31	0.19	0.18

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

i2 Analytical

7 Woodshots Meadow
Croxtley Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results									
Report No:		25-017457							
						Client: SOUTHERNT			
Location		Penygarnddu Industrial Estate, Merthyr Tydfil							
Lab Reference (Sample Number)		505818				Landfill Waste Acceptance Criteria			
Sampling Date		19/03/2025				Limits			
Sample ID		HA01 ES				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Depth (m)		1.50							
Solid Waste Analysis									
TOC (%)**		0.8				3%	5%	6%	
Loss on Ignition (%) **		2.9				--	--	10%	
BTEX (µg/kg)**		< 10				6000	--	--	
Sum of PCBs (mg/kg)**		< 0.007				1	--	--	
Mineral Oil (mg/kg) EH_10_CU_AL		26				500	--	--	
Total PAH (WAC-17) (mg/kg)		< 0.85				100	--	--	
pH (units)**		8.1				--	>6	--	
Acid Neutralisation Capacity (mmol / kg)		8.4				--	To be evaluated	To be evaluated	
Eluate Analysis		2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test			
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)		mg/l		mg/l	mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)			
Arsenic *		< 0.0020	< 0.0020		< 0.020	0.5	2	25	
Barium *		0.081	0.026		0.31	20	100	300	
Cadmium *		< 0.00010	0.00012		0.0011	0.04	1	5	
Chromium *		0.0023	0.00067		0.0082	0.5	10	70	
Copper *		0.022	0.0062		0.077	2	50	100	
Mercury *		< 0.00070	< 0.0007		< 0.0070	0.01	0.2	2	
Molybdenum *		< 0.0014	< 0.0014		< 0.014	0.5	10	30	
Nickel *		0.0022	< 0.00090		< 0.0090	0.4	10	40	
Lead *		0.0053	< 0.0017		< 0.017	0.5	10	50	
Antimony *		0.0032	< 0.0020		< 0.020	0.06	0.7	5	
Selenium *		< 0.0050	< 0.0050		< 0.050	0.1	0.5	7	
Zinc *		0.017	0.0035		0.047	4	50	200	
Chloride *		< 4.0	< 4.0		< 15	800	15000	25000	
Fluoride*		0.38	0.21		2.3	10	150	500	
Sulphate *		6.6	1.8		22	1000	20000	50000	
TDS*		85	38		420	4000	60000	100000	
Phenol Index (Monohydric Phenols) *		< 0.16	< 0.13		< 0.50	1	-	-	
DOC		8.65	7.1		72.0	500	800	1000	
Leach Test Information									
Stone Content (%)		40.5							
Sample Mass (kg)		0.6							
Dry Matter (%)		84							
Moisture (%)		16							
Stage 1									
Volume Eluate L2 (litres)		0.321							
Filtered Eluate VE1 (litres)		0.16							
Results are expressed on a dry weight basis, after correction for moisture content where applicable. ** = UKAS accredited (liquid eluate analysis only)									
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = 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.

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results							
Report No:	25-017457						
					Client: SOUTHERNT		
Location	Penygarnddu Industrial Estate, Merthyr Tydfil						
Lab Reference (Sample Number)	505819				Landfill Waste Acceptance Criteria		
Sampling Date	19/03/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	HA02 ES						
Depth (m)	1.00						
Solid Waste Analysis							
TOC (%)**	1.0				3%	5%	6%
Loss on Ignition (%) **	2.6				--	--	10%
BTEX (µg/kg)**	< 10				6000	--	--
Sum of PCBs (mg/kg)**	< 0.007				1	--	--
Mineral Oil (mg/kg) EH, 10, CU, AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.85				100	--	--
pH (units)**	8.1				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	4.9				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l		mg/l	mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.0020	< 0.0020		< 0.020	0.5	2	25
Barium *	0.039	0.016		0.19	20	100	300
Cadmium *	< 0.00010	0.00012		0.0010	0.04	1	5
Chromium *	< 0.00060	< 0.00060		< 0.0060	0.5	10	70
Copper *	0.0086	0.0030		0.036	2	50	100
Mercury *	< 0.00070	< 0.0007		< 0.0070	0.01	0.2	2
Molybdenum *	< 0.0014	< 0.0014		< 0.014	0.5	10	30
Nickel *	< 0.00090	< 0.00090		< 0.0090	0.4	10	40
Lead *	0.0022	< 0.0017		< 0.017	0.5	10	50
Antimony *	< 0.0020	0.0054		0.048	0.06	0.7	5
Selenium *	< 0.0050	< 0.0050		< 0.050	0.1	0.5	7
Zinc *	0.0057	0.0013		0.018	4	50	200
Chloride *	< 4.0	< 4.0		< 15	800	15000	25000
Fluoride*	0.39	0.41		4.1	10	150	500
Sulphate *	5.3	2.0		23	1000	20000	50000
TDS*	87	48		520	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.16	< 0.13		< 0.50	1	-	-
DOC	7.58	7.2		72.1	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.6						
Dry Matter (%)	88						
Moisture (%)	12						
Stage 1							
Volume Eluate L2 (litres)	0.322						
Filtered Eluate VE1 (litres)	0.19						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.							
				* = UKAS accredited (liquid eluate analysis only)			
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation							
** = 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.							

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

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results								
Report No:		25-017457						
					Client: SOUTHERNT			
Location		Penygarnddu Industrial Estate, Merthyr Tydfil						
Lab Reference (Sample Number)		505820			Landfill Waste Acceptance Criteria			
					Limits			
Sampling Date		21/03/2025			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID		TP01 ES						
Depth (m)		1.00						
Solid Waste Analysis								
TOC (%)**		0.5				3%	5%	6%
Loss on Ignition (%) **		2.3				--	--	10%
BTEX (µg/kg)**		< 10				6000	--	--
Sum of PCBs (mg/kg)**		< 0.007				1	--	--
Mineral Oil (mg/kg) EH, 10, CU, AL		< 10				500	--	--
Total PAH (WAC-17) (mg/kg)		< 0.85				100	--	--
pH (units)**		8.3				--	>6	--
Acid Neutralisation Capacity (mmol / kg)		3.1				--	To be evaluated	To be evaluated
Eluate Analysis		2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)		mg/l		mg/l	mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *		< 0.0020	< 0.0020		< 0.020	0.5	2	25
Barium *		0.037	0.016		0.18	20	100	300
Cadmium *		< 0.00010	< 0.00010		< 0.0010	0.04	1	5
Chromium *		< 0.00060	< 0.00060		< 0.0060	0.5	10	70
Copper *		0.011	0.0034		0.042	2	50	100
Mercury *		< 0.00070	< 0.0007		< 0.0070	0.01	0.2	2
Molybdenum *		0.0023	< 0.0014		< 0.014	0.5	10	30
Nickel *		0.0010	< 0.00090		< 0.0090	0.4	10	40
Lead *		< 0.0017	< 0.0017		< 0.017	0.5	10	50
Antimony *		< 0.0020	0.0047		0.043	0.06	0.7	5
Selenium *		< 0.0050	< 0.0050		< 0.050	0.1	0.5	7
Zinc *		0.0068	0.0032		0.035	4	50	200
Chloride *		< 4.0	< 4.0		< 15	800	15000	25000
Fluoride*		0.40	0.27		2.9	10	150	500
Sulphate *		1.6	1.7		17	1000	20000	50000
TDS*		76	42		450	4000	60000	100000
Phenol Index (Monohydric Phenols) *		< 0.16	< 0.13		< 0.50	1	-	-
DOC		8.58	9.2		91.1	500	800	1000
Leach Test Information								
Stone Content (%)		< 0.1						
Sample Mass (kg)		0.7						
Dry Matter (%)		89						
Moisture (%)		11						
Stage 1								
Volume Eluate L2 (litres)		0.325						
Filtered Eluate VE1 (litres)		0.16						
Results are expressed on a dry weight basis, after correction for moisture content where applicable. * = UKAS accredited (liquid eluate analysis only)								
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation ** = 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.								

Analytical Report Number : 25-017457

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

* 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 *
505818	HA01	ES	1.5	Brown loam and clay with gravel and vegetation
505819	HA02	ES	1	Brown clay with gravel
505820	TP01	ES	1	Brown clay with gravel

Analytical Report Number : 25-017457

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

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
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
Total organic carbon 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	L023B	D	MCERTS
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
TDS in WAC leachate (BS EN 12457-3 Prep)	Determination of total dissolved solids in leachate by electrometric measurement	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L031B	W	ISO 17025
Fluoride in WAC leachate (BS EN 12457-3 Prep)	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L033B	W	ISO 17025
DOC in WAC leachate (BS EN 12457-3 Prep)	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L037B	W	NONE
Metals in WAC leachate (BS EN 12457-3 Prep)	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed	L039B	W	ISO 17025
Sulphate in WAC leachate (BS EN 12457-3 Prep)	Determination of sulphate in leachate by acidification followed by ICP-OES	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed	L039B	W	ISO 17025
Preparation WAC leachate		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

Analytical Report Number : 25-017457

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

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
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
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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

The result for sum should be interpreted with caution

Analytical Report Number : 25-017457

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
HA01	ES	S	505818	c	BTEX and/or Volatile organic compounds in soil	L073B	c
HA01	ES	S	505818	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HA01	ES	S	505818	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
HA01	ES	S	505818	c	pH at 20°C in soil	L005B	c
HA02	ES	S	505819	c	BTEX and/or Volatile organic compounds in soil	L073B	c
HA02	ES	S	505819	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HA02	ES	S	505819	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
HA02	ES	S	505819	c	pH at 20°C in soil	L005B	c
TP01	ES	S	505820	c	BTEX and/or Volatile organic compounds in soil	L073B	c
TP01	ES	S	505820	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP01	ES	S	505820	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
TP01	ES	S	505820	c	pH at 20°C in soil	L005B	c

Southern Testing Laboratories Ltd
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

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

t: 01342 333100

t: 01923 225404

e: smarshall@southerntesting.co.uk; contamresults@southerntesting.co.uk

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 25-020155

Project / Site name:	Penygarnddu Industrial Estate, Merthyr Tydfil	Samples received on:	22/04/2025
Your job number:	J15809	Samples instructed on / Analysis started on:	22/04/2025
Your order number:	J15809 3	Analysis completed by:	29/04/2025
Report Issue Number:	1	Report issued on:	29/04/2025
Samples Analysed:	8 soil samples		



Signed:

Anna Goc
PL Head of Reporting Team
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: 25-020155

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809 3

Lab Sample Number	519936	519937	519938	519939	519940
Sample Reference	BH01	BH03	TP02	TP03	TP04
Sample Number	B	D	D	D	D
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	1.00-2.00	11.10-11.40	2.00	3.00	0.70
Date Sampled	24/04/2025	27/04/2025	21/04/2025	21/04/2025	21/04/2025
Time Taken	1200	1600	1200	1100	1300
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	84.1	< 0.1	< 0.1	69.8
Moisture Content	%	0.01	NONE	11	3.8	9	16	5.9
Total mass of sample received	kg	0.1	NONE	2	1.3	1.9	1.7	1.6

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.6	6.4	8.3	8.5	8.3
Total Sulphate as SO ₄	%	0.005	MCERTS	0.165	0.05	0.018	0.018	0.073
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1700	480	110	60	220
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	826	241	53	29.9	109
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	2.5	0.9	3.4	17	13
Total Sulphur	mg/kg	50	MCERTS	710	470	160	260	530
Total Sulphur	%	0.005	MCERTS	0.071	0.047	0.016	0.026	0.053
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	< 2.0	< 2.0	< 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	< 5.0	< 5.0

Heavy Metals / Metalloids

Magnesium (leachate equivalent)	mg/l	2.5	NONE	57	15	3.2	3.2	6
Magnesium (water soluble)	mg/kg	5	NONE	110	30	6.4	6.4	12

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

Analytical Report Number: 25-020155

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

Your Order No: J15809 3

Lab Sample Number	519941	519942	519943
Sample Reference	TP04	WLS01	WLS02
Sample Number	D	ES	ES
Water Matrix	N/A	N/A	N/A
Depth (m)	1.50	2.20	1.50
Date Sampled	21/04/2025	19/04/2025	19/04/2025
Time Taken	1300	1300	1100
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	10	9.4	12
Total mass of sample received	kg	0.1	NONE	2	0.7	0.7

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.7	8.8	7.5
Total Sulphate as SO ₄	%	0.005	MCERTS	0.033	0.016	0.018
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	200	38	85
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	101	19.2	42.5
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	830 ^{SS}	10	2.4
Total Sulphur	mg/kg	50	MCERTS	430	240	260
Total Sulphur	%	0.005	MCERTS	0.043	0.024	0.026
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

Heavy Metals / Metalloids

Magnesium (leachate equivalent)	mg/l	2.5	NONE	3.7	3.7	9.3
Magnesium (water soluble)	mg/kg	5	NONE	7.4	7.5	19

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

Analytical Report Number : 25-020155

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

* 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 *
519936	BH01	B	1.00-2.00	Brown clay
519937	BH03	D	11.10-11.40	Brown clay with stones
519938	TP02	D	2	Brown clay with gravel
519939	TP03	D	3	Brown clay with gravel
519940	TP04	D	0.7	Brown clay and sand with gravel and stones
519941	TP04	D	1.5	Brown clay with gravel
519942	WLS01	ES	2.2	Brown clay with gravel
519943	WLS02	ES	1.5	Brown clay with gravel

Analytical Report Number : 25-020155

Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

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
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
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
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
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	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
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

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 300°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

\$\$ - Result was reported from high dilution. The result should be interpreted with caution.



Southern Testing Laboratories Ltd
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

t: 01342 333100

e: smarshall@southerntesting.co.uk; contamresults@southerntesting.co.uk

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

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 25-027291

Project / Site name:	Penygarnddu Industrial Estate, Merthyr Tydfil	Samples received on:	27/05/2025
Your job number:	J15809	Samples instructed on/ Analysis started on:	27/05/2025
Your order number:	J15809 4	Analysis completed by:	10/06/2025
Report Issue Number:	1	Report issued on:	10/06/2025
Samples Analysed:	7 soil samples		

Signed: _____

Adan Cazas Garcia
Key Account Manager
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: 25-027291
Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil
Your Order No: J15809_4

Lab Sample Number				558634	558635	558636	558637	558638
Sample Reference				BH01	TP03	TP04	WLS01	WLS02
Sample Number				B	D	D	D	D
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				2.00-3.00	2	2.5	3.5	2
Date Sampled				24/03/2025	21/03/2025	21/03/2025	19/03/2025	19/03/2025
Time Taken				1200	1100	1300	1300	1100
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

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	JSW	JSW	JSW	JSW	JSW
Analysis completed	N/A	N/A	N/A	10/06/2025	10/06/2025	10/06/2025	10/06/2025	10/06/2025

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



Analytical Report Number: 25-027291
Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil
Your Order No: J15809_4

Lab Sample Number				558639	558640
Sample Reference				WLS02	WLS03
Sample Number				D	D
Water Matrix				N/A	N/A
Depth (m)				4	2
Date Sampled				19/03/2025	20/03/2025
Time Taken				1100	1000
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	JSW	JSW
Analysis completed	N/A	N/A	N/A	10/06/2025	10/06/2025

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



Analytical Report Number : 25-027291
Project / Site name: Penygarnddu Industrial Estate, Merthyr Tydfil

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

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

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



L1PKR-O3QW6-G858D

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Report is invalid if pages are removed.

Job name

J15890 Merthyr Tydfil

Description/Comments

Contam; WAC

Project

J15890

Site

Penygarnddu Industrial Estate, Merthyr Tydfil

Classified by

Name: **Andrew Moffatt**
 Date: **28 Jul 2025 16:04 GMT**
 Telephone: **01604 500020**
 Company: **Southern Testing Ltd**
Unit 7 Twigden Barns
Brixworth Road, Creaton
Northampton
NN6 8LU

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course
 Hazardous Waste Classification
 Most recent 3 year Refresher

Date
 05 Aug 2021
 04 Jun 2024

Next 3 year Refresher due by Jun 2027

Purpose of classification

2 - Material Characterisation

Address of the waste

Penygarnddu Industrial Estate, Merthyr Tydfil

Post Code CF48 2TA

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Redevelopment of former industrial site.

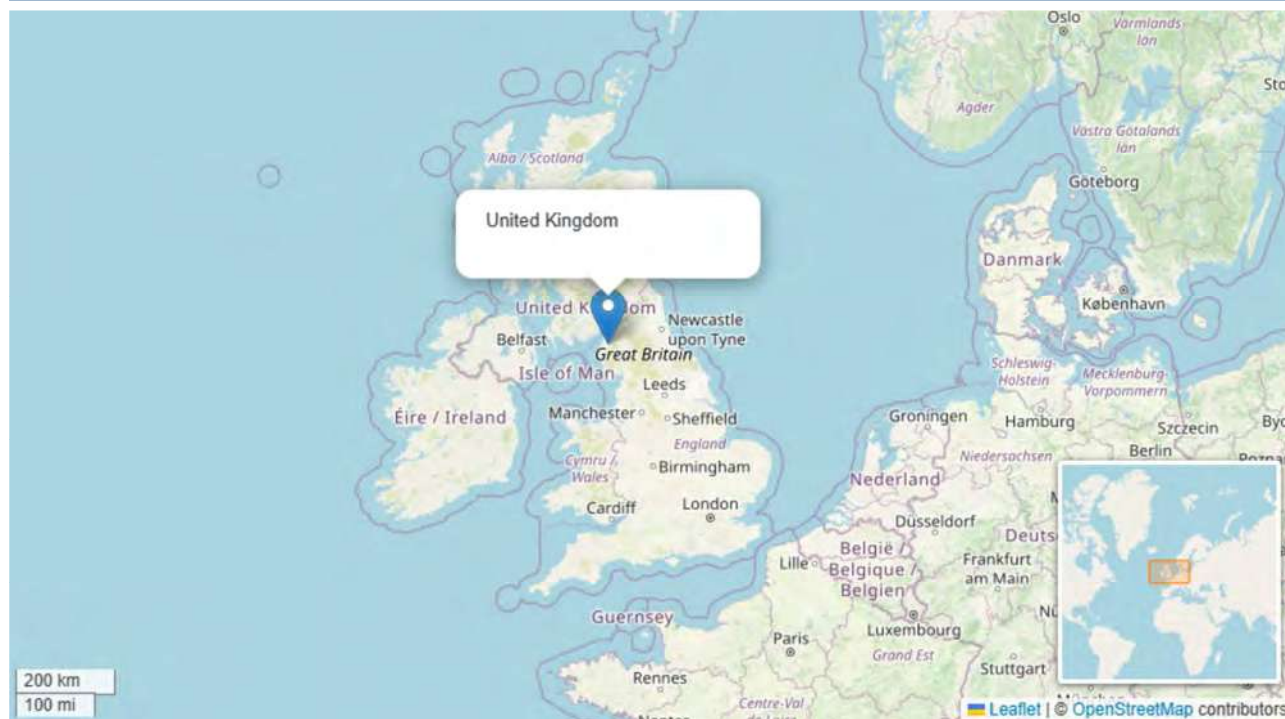
Description of the specific process, sub-process and/or activity that created the waste

Waste created during the excavation of soils during site redevelopment.

Description of the waste

Made Ground - see site investigation report for full details.

Waste Location



Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results			Page
					Inert	SNRHW	Hazardous	
1	HA01-ES-19032025-0.30		Non Hazardous		-	-	-	4
2	HA01-ES-19032025-1.50		Non Hazardous		Pass	Pass	N/A	6
3	HA02-ES-19032025-0.30		Non Hazardous		-	-	-	10
4	HA02-ES-19032025-1.00		Non Hazardous		Pass	Pass	N/A	12
5	TP01-ES-21032025-0.10		Non Hazardous		-	-	-	15
6	TP01-ES-21032025-1.00		Non Hazardous		Pass	Pass	N/A	17
7	TP02-ES-21032025-0.40		Non Hazardous		-	-	-	20
8	TP02-ES-21032025-1.00		Non Hazardous		-	-	-	22
9	TP03-ES-21032025-0.50		Non Hazardous		-	-	-	24
10	TP03-ES-21032025-1.50		Non Hazardous		-	-	-	26
11	WLS01-ES-19032025-0.50		Non Hazardous		-	-	-	28
12	WLS01-ES-19032025-1.20		Non Hazardous		-	-	-	30
13	WLS02-ES-19032025-0.70		Non Hazardous		-	-	-	32
14	WLS03-ES-21032025-0.60		Non Hazardous		-	-	-	34

Related documents

#	Name	Description
1	25-017450.batch.batch	i2 Analytical .batch file used to populate the Job
2	25-017450_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
3	25-017457_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
4	STL Contaminated Soils waste - WM3 v1.2.GB Oct 2021	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate the samples in this Job: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Andrew Moffatt

Created date: 28 Jul 2025 16:04 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	36
Appendix B: Rationale for selection of metal species	37
Appendix C: Version	38

Classification of sample: HA01-ES-19032025-0.30

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
HA01-ES-19032025-0.30	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
9.1%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.1% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				8.3 pH		8.3	pH	8.3 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				11 mg/kg	1.32	13.202	mg/kg	0.00132 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				13 mg/kg	1.462	19	mg/kg	0.0019 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				73 mg/kg	1.126	74.711	mg/kg	0.00747 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	30 mg/kg	1.56	42.536	mg/kg	0.00273 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				40 mg/kg	2.976	108.217	mg/kg	0.0108 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				110 mg/kg	2.774	277.387	mg/kg	0.0277 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				0.09 mg/kg		0.0818	mg/kg	0.00000818 %	✓	
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8								
15	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		0.05 mg/kg		0.0455 mg/kg	0.00000455 %	✓	
17	phenanthrene	201-581-5	85-01-8		0.26 mg/kg		0.236 mg/kg	0.0000236 %	✓	
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.052 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HA01-ES-19032025-1.50

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
HA01-ES-19032025-1.50	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
16%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				8.6 pH		8.6	pH	8.6 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				9.5 mg/kg	1.32	10.536	mg/kg	0.00105 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	boron { diboron trioxide }				0.8 mg/kg	3.22	2.164	mg/kg	0.000216 %	✓	
	005-008-00-8	215-125-8	1303-86-2								
5	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
6	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
7	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				16 mg/kg	1.462	23.385	mg/kg	0.00234 %		
		215-160-9	1308-38-9								
8	copper { dicopper oxide; copper (I) oxide }				55 mg/kg	1.126	52.016	mg/kg	0.0052 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
9	lead { lead chromate }			1	26 mg/kg	1.56	34.066	mg/kg	0.00218 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
10	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
11	nickel { nickel chromate }				30 mg/kg	2.976	75.002	mg/kg	0.0075 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
12	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
13	vanadium { divanadium pentaoxide; vanadium pentoxide }				18 mg/kg	1.785	26.992	mg/kg	0.0027 %	✓	
	023-001-00-8	215-239-8	1314-62-1								
14	zinc { zinc chromate }				86 mg/kg	2.774	200.404	mg/kg	0.02 %	✓	
	024-007-00-3	236-878-9	13530-65-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
16	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
17	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
18	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
19	phenanthrene				0.09 mg/kg		0.0756 mg/kg	0.00000756 %	✓	
		201-581-5	85-01-8							
20	anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7							
21	fluoranthene				0.06 mg/kg		0.0504 mg/kg	0.00000504 %	✓	
		205-912-4	206-44-0							
22	pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-927-3	129-00-0							
23	benzo[a]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
24	chrysene				0.07 mg/kg		0.0588 mg/kg	0.00000588 %	✓	
	601-048-00-0	205-923-4	218-01-9							
25	benzo[b]fluoranthene				0.08 mg/kg		0.0672 mg/kg	0.00000672 %	✓	
	601-034-00-4	205-911-9	205-99-2							
26	benzo[k]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
27	benzo[a]pyrene; benzo[def]chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
28	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5							
29	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
30	benzo[ghi]perylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2							
31	TPH (C6 to C40) petroleum group				28 mg/kg		28 mg/kg	0.0028 %		
			TPH							
32	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
33	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
34	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
35	xylene				<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
36	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
			P1186							
37	polychlorobiphenyls; PCB				<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
38	coronene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-881-7	191-07-1							
Total:								0.0441 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60 °C or waste gas oil, diesel and light heating oils having a flash point > 55 °C and ≤ 75 °C"

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 500 mg/kg (0.05%)
because: No free phase Liquid present.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0028%)

WAC results for sample: HA01-ES-19032025-1.50

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.8	3	5	6
2	LOI (loss on ignition)	%	2.9	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.007	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	26	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.85	100	-	-
7	pH	pH	8.1	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	8.4	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.02	0.5	2	25
10	barium	mg/kg	0.31	20	100	300
11	cadmium	mg/kg	0.0011	0.04	1	5
12	chromium	mg/kg	0.0082	0.5	10	70
13	copper	mg/kg	0.077	2	50	100
14	mercury	mg/kg	<0.007	0.01	0.2	2
15	molybdenum	mg/kg	<0.014	0.5	10	30
16	nickel	mg/kg	<0.009	0.4	10	40
17	lead	mg/kg	<0.017	0.5	10	50
18	antimony	mg/kg	<0.02	0.06	0.7	5
19	selenium	mg/kg	<0.05	0.1	0.5	7
20	zinc	mg/kg	0.047	4	50	200
21	chloride	mg/kg	<15	800	15,000	25,000
22	fluoride	mg/kg	2.3	10	150	500
23	sulphate	mg/kg	22	1,000	20,000	50,000
24	phenol index	mg/kg	<0.5	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	72	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	420	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Classification of sample: HA02-ES-19032025-0.30

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
HA02-ES-19032025-0.30	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
9.8%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.8% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				8.5 pH		8.5	pH	8.5 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				10 mg/kg	1.32	11.909	mg/kg	0.00119 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.309	mg/kg	0.0000309 %	✓	
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				15 mg/kg	1.462	21.923	mg/kg	0.00219 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				56 mg/kg	1.126	56.871	mg/kg	0.00569 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	25 mg/kg	1.56	35.174	mg/kg	0.00226 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				32 mg/kg	2.976	85.907	mg/kg	0.00859 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				92 mg/kg	2.774	230.21	mg/kg	0.023 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				0.06 mg/kg		0.0541	mg/kg	0.00000541 %	✓	
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8								
15	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	phenanthrene	201-581-5	85-01-8		0.14 mg/kg		0.126 mg/kg	0.0000126 %	✓	
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		0.13 mg/kg		0.117 mg/kg	0.0000117 %	✓	
20	pyrene	204-927-3	129-00-0		0.1 mg/kg		0.0902 mg/kg	0.00000902 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		0.07 mg/kg		0.0631 mg/kg	0.00000631 %	✓	
22	chrysene	601-048-00-0	205-923-4		0.11 mg/kg		0.0992 mg/kg	0.00000992 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.043 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HA02-ES-19032025-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
HA02-ES-19032025-1.00	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
12%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				8.6 pH		8.6	pH	8.6 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				8.4 mg/kg	1.32	9.76	mg/kg	0.000976 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	boron { diboron trioxide }				0.7 mg/kg	3.22	1.983	mg/kg	0.000198 %	✓	
	005-008-00-8	215-125-8	1303-86-2								
5	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
6	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
7	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				15 mg/kg	1.462	21.923	mg/kg	0.00219 %		
		215-160-9	1308-38-9								
8	copper { dicopper oxide; copper (I) oxide }				49 mg/kg	1.126	48.548	mg/kg	0.00485 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
9	lead { lead chromate }			1	21 mg/kg	1.56	28.825	mg/kg	0.00185 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
10	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
11	nickel { nickel chromate }				26 mg/kg	2.976	68.097	mg/kg	0.00681 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
13	vanadium { divanadium pentaoxide; vanadium pentoxide }				17 mg/kg	1.785	26.706	mg/kg	0.00267 %	✓	
	023-001-00-8	215-239-8	1314-62-1								
14	zinc { zinc chromate }				60 mg/kg	2.774	146.475	mg/kg	0.0146 %	✓	
	024-007-00-3	236-878-9	13530-65-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
16	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
17	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
18	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
19	phenanthrene				0.1 mg/kg		0.088 mg/kg	0.0000088 %	✓	
		201-581-5	85-01-8							
20	anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7							
21	fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-912-4	206-44-0							
22	pyrene				0.05 mg/kg		0.044 mg/kg	0.0000044 %	✓	
		204-927-3	129-00-0							
23	benzo[a]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
24	chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
25	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
26	benzo[k]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
27	benzo[a]pyrene; benzo[def]chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
28	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5							
29	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
30	benzo[ghi]perylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2							
31	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
32	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
33	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
34	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
35	xylene				<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
36	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
			P1186							
37	polychlorobiphenyls; PCB				<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
38	coronene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-881-7	191-07-1							
Total:								0.0342 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: HA02-ES-19032025-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	1	3	5	6
2	LOI (loss on ignition)	%	2.6	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.007	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.85	100	-	-
7	pH	pH	8.1	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	4.9	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.02	0.5	2	25
10	barium	mg/kg	0.19	20	100	300
11	cadmium	mg/kg	0.001	0.04	1	5
12	chromium	mg/kg	<0.006	0.5	10	70
13	copper	mg/kg	0.036	2	50	100
14	mercury	mg/kg	<0.007	0.01	0.2	2
15	molybdenum	mg/kg	<0.014	0.5	10	30
16	nickel	mg/kg	<0.009	0.4	10	40
17	lead	mg/kg	<0.017	0.5	10	50
18	antimony	mg/kg	0.048	0.06	0.7	5
19	selenium	mg/kg	<0.05	0.1	0.5	7
20	zinc	mg/kg	0.018	4	50	200
21	chloride	mg/kg	<15	800	15,000	25,000
22	fluoride	mg/kg	4.1	10	150	500
23	sulphate	mg/kg	23	1,000	20,000	50,000
24	phenol index	mg/kg	<0.5	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	72.1	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	520	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Classification of sample: TP01-ES-21032025-0.10

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP01-ES-21032025-0.10	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH				7.7	pH		7.7	pH	7.7 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5											
3	arsenic { arsenic trioxide }				7.3	mg/kg	1.32	7.903	mg/kg	0.00079 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
4	cadmium { cadmium oxide }				0.3	mg/kg	1.142	0.281	mg/kg	0.0000281 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				16	mg/kg	1.462	23.385	mg/kg	0.00234 %		
		215-160-9	1308-38-9									
7	copper { dicopper oxide; copper (I) oxide }				25	mg/kg	1.126	23.081	mg/kg	0.00231 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
8	lead { lead chromate }			1	27	mg/kg	1.56	34.534	mg/kg	0.00221 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
9	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
10	nickel { nickel chromate }				28	mg/kg	2.976	68.335	mg/kg	0.00683 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8											
12	zinc { zinc chromate }				100	mg/kg	2.774	227.48	mg/kg	0.0227 %	✓	
	024-007-00-3	236-878-9	13530-65-9									
13	naphthalene				1.6	mg/kg		1.312	mg/kg	0.000131 %	✓	
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				0.08	mg/kg		0.0656	mg/kg	0.00000656 %	✓	
		205-917-1	208-96-8									
15	acenaphthene				1.1	mg/kg		0.902	mg/kg	0.0000902 %	✓	
		201-469-6	83-32-9									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		0.9 mg/kg		0.738 mg/kg	0.0000738 %	✓	
17	phenanthrene	201-581-5	85-01-8		8.3 mg/kg		6.806 mg/kg	0.000681 %	✓	
18	anthracene	204-371-1	120-12-7		1.6 mg/kg		1.312 mg/kg	0.000131 %	✓	
19	fluoranthene	205-912-4	206-44-0		8.3 mg/kg		6.806 mg/kg	0.000681 %	✓	
20	pyrene	204-927-3	129-00-0		7.9 mg/kg		6.478 mg/kg	0.000648 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		2.6 mg/kg		2.132 mg/kg	0.000213 %	✓	
22	chrysene	601-048-00-0	205-923-4		3.1 mg/kg		2.542 mg/kg	0.000254 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		2.8 mg/kg		2.296 mg/kg	0.00023 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		1.2 mg/kg		0.984 mg/kg	0.0000984 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		2.9 mg/kg		2.378 mg/kg	0.000238 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		1.1 mg/kg		0.902 mg/kg	0.0000902 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.29 mg/kg		0.238 mg/kg	0.0000238 %	✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		1.3 mg/kg		1.066 mg/kg	0.000107 %	✓	
29	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.041 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
■	Determinand defined or amended by HazWasteOnline (see Appendix A)
■	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP01-ES-21032025-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP01-ES-21032025-1.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	pH				8.7 pH		8.7 pH	8.7 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
	006-007-00-5									
3	arsenic { arsenic trioxide }				8.5 mg/kg	1.32	9.988 mg/kg	0.000999 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
4	boron { diboron trioxide }				0.5 mg/kg	3.22	1.433 mg/kg	0.000143 %	✓	
	005-008-00-8	215-125-8	1303-86-2							
5	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
6	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
7	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
		215-160-9	1308-38-9							
8	copper { dicopper oxide; copper (I) oxide }				53 mg/kg	1.126	53.108 mg/kg	0.00531 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
9	lead { lead chromate }			1	26 mg/kg	1.56	36.094 mg/kg	0.00231 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
10	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
11	nickel { nickel chromate }				35 mg/kg	2.976	92.711 mg/kg	0.00927 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
13	vanadium { divanadium pentaoxide; vanadium pentoxide }				17 mg/kg	1.785	27.01 mg/kg	0.0027 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
14	zinc { zinc chromate }				87 mg/kg	2.774	214.802 mg/kg	0.0215 %	✓	
	024-007-00-3	236-878-9	13530-65-9							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
16	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8							
17	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
18	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7							
19	phenanthrene				0.09 mg/kg		0.0801 mg/kg	0.00000801 %	✓	
		201-581-5	85-01-8							
20	anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7							
21	fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-912-4	206-44-0							
22	pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		204-927-3	129-00-0							
23	benzo[a]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
24	chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
25	benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
26	benzo[k]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
27	benzo[a]pyrene; benzo[def]chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
28	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5							
29	dibenz[a,h]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
30	benzo[ghi]perylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2							
31	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
32	benzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
33	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
34	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
35	xylene				<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
36	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
			P1186							
37	polychlorobiphenyls; PCB				<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
38	coronene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		205-881-7	191-07-1							
Total:								0.0444 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP01-ES-21032025-1.00

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.5	3	5	6
2	LOI (loss on ignition)	%	2.3	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.007	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.85	100	-	-
7	pH	pH	8.3	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	3.1	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.02	0.5	2	25
10	barium	mg/kg	0.18	20	100	300
11	cadmium	mg/kg	<0.001	0.04	1	5
12	chromium	mg/kg	<0.006	0.5	10	70
13	copper	mg/kg	0.042	2	50	100
14	mercury	mg/kg	<0.007	0.01	0.2	2
15	molybdenum	mg/kg	<0.014	0.5	10	30
16	nickel	mg/kg	<0.009	0.4	10	40
17	lead	mg/kg	<0.017	0.5	10	50
18	antimony	mg/kg	0.043	0.06	0.7	5
19	selenium	mg/kg	<0.05	0.1	0.5	7
20	zinc	mg/kg	0.035	4	50	200
21	chloride	mg/kg	<15	800	15,000	25,000
22	fluoride	mg/kg	2.9	10	150	500
23	sulphate	mg/kg	17	1,000	20,000	50,000
24	phenol index	mg/kg	<0.5	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	91.1	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	450	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Classification of sample: TP02-ES-21032025-0.40

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP02-ES-21032025-0.40	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
9.7%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.7% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				10.9 pH		10.9	pH	10.9 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				8.3 mg/kg	1.32	9.896	mg/kg	0.00099 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				19 mg/kg	1.462	27.77	mg/kg	0.00278 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				50 mg/kg	1.126	50.834	mg/kg	0.00508 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	20 mg/kg	1.56	28.17	mg/kg	0.00181 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				28 mg/kg	2.976	75.252	mg/kg	0.00753 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				78 mg/kg	2.774	195.394	mg/kg	0.0195 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8								
15	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	phenanthrene	201-581-5	85-01-8		0.09 mg/kg		0.0813 mg/kg	0.00000813 %	✓	
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		0.06 mg/kg		0.0542 mg/kg	0.00000542 %	✓	
20	pyrene	204-927-3	129-00-0		0.05 mg/kg		0.0451 mg/kg	0.00000451 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0377 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP02-ES-21032025-1.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP02-ES-21032025-1.00	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
15%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				8.3 pH		8.3	pH	8.3 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				11 mg/kg	1.32	12.345	mg/kg	0.00123 %	✔	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				19 mg/kg	1.462	27.77	mg/kg	0.00278 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				55 mg/kg	1.126	52.635	mg/kg	0.00526 %	✔	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	25 mg/kg	1.56	33.146	mg/kg	0.00213 %	✔	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				30 mg/kg	2.976	75.895	mg/kg	0.00759 %	✔	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				80 mg/kg	2.774	188.642	mg/kg	0.0189 %	✔	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8								
15	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	phenanthrene	201-581-5	85-01-8		0.09 mg/kg		0.0765 mg/kg	0.00000765 %	✓	
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		0.19 mg/kg		0.161 mg/kg	0.0000161 %	✓	
20	pyrene	204-927-3	129-00-0		0.15 mg/kg		0.128 mg/kg	0.0000128 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		0.09 mg/kg		0.0765 mg/kg	0.00000765 %	✓	
22	chrysene	601-048-00-0	205-923-4		0.15 mg/kg		0.128 mg/kg	0.0000128 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.12 mg/kg		0.102 mg/kg	0.0000102 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0379 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03-ES-21032025-0.50

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP03-ES-21032025-0.50	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
17%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				7.5 pH		7.5	pH	7.5 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				20 mg/kg	1.32	21.917	mg/kg	0.00219 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				12 mg/kg	1.462	17.539	mg/kg	0.00175 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				46 mg/kg	1.126	42.986	mg/kg	0.0043 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	17 mg/kg	1.56	22.009	mg/kg	0.00141 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				12 mg/kg	2.976	29.644	mg/kg	0.00296 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				30 mg/kg	2.774	69.076	mg/kg	0.00691 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8								
15	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	phenanthrene	201-581-5	85-01-8		0.08 mg/kg		0.0664 mg/kg	0.00000664 %	✓	
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
30	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0195 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03-ES-21032025-1.50

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP03-ES-21032025-1.50	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
22%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 22% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH		PH		7.7	pH		7.7	pH	7.7 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5											
3	arsenic { arsenic trioxide }				22	mg/kg	1.32	22.657	mg/kg	0.00227 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
4	cadmium { cadmium oxide }				<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0									
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				13	mg/kg	1.462	19	mg/kg	0.0019 %		
		215-160-9	1308-38-9									
7	copper { dicopper oxide; copper (I) oxide }				23	mg/kg	1.126	20.198	mg/kg	0.00202 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
8	lead { lead chromate }			1	24	mg/kg	1.56	29.2	mg/kg	0.00187 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
9	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
10	nickel { nickel chromate }				9	mg/kg	2.976	20.893	mg/kg	0.00209 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.2	mg/kg	1.405	1.315	mg/kg	0.000132 %	✓	
	034-002-00-8											
12	zinc { zinc chromate }				16	mg/kg	2.774	34.621	mg/kg	0.00346 %	✓	
	024-007-00-3	236-878-9	13530-65-9									
13	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
15	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	phenanthrene	201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
30	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0137 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WLS01-ES-19032025-0.50

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WLS01-ES-19032025-0.50	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
6.6%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.6% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				8.8 pH		8.8	pH	8.8 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				12 mg/kg	1.32	14.798	mg/kg	0.00148 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				9.5 mg/kg	1.462	13.885	mg/kg	0.00139 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				34 mg/kg	1.126	35.754	mg/kg	0.00358 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	30 mg/kg	1.56	43.706	mg/kg	0.0028 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				11 mg/kg	2.976	30.578	mg/kg	0.00306 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				72 mg/kg	2.774	186.556	mg/kg	0.0187 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8								
15	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	phenanthrene	201-581-5	85-01-8		0.21 mg/kg		0.196 mg/kg	0.0000196 %	✓	
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		0.28 mg/kg		0.262 mg/kg	0.0000262 %	✓	
20	pyrene	204-927-3	129-00-0		0.21 mg/kg		0.196 mg/kg	0.0000196 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		0.11 mg/kg		0.103 mg/kg	0.0000103 %	✓	
22	chrysene	601-048-00-0	205-923-4		0.16 mg/kg		0.149 mg/kg	0.0000149 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.15 mg/kg		0.14 mg/kg	0.000014 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.06 mg/kg		0.056 mg/kg	0.0000056 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.06 mg/kg		0.056 mg/kg	0.0000056 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0311 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WLS01-ES-19032025-1.20

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WLS01-ES-19032025-1.20	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
12%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH		PH		8.5 pH		8.5	pH	8.5 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				8.8 mg/kg	1.32	10.225	mg/kg	0.00102 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				15 mg/kg	1.462	21.923	mg/kg	0.00219 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				52 mg/kg	1.126	51.521	mg/kg	0.00515 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	20 mg/kg	1.56	27.453	mg/kg	0.00176 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				31 mg/kg	2.976	81.193	mg/kg	0.00812 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				79 mg/kg	2.774	192.859	mg/kg	0.0193 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				0.05 mg/kg		0.044	mg/kg	0.0000044 %	✓	
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8								
15	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	phenanthrene	201-581-5	85-01-8		0.13 mg/kg		0.114 mg/kg	0.0000114 %	✓	
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
20	pyrene	204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
21	benzo[a]anthracene	601-033-00-9	200-280-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
22	chrysene	601-048-00-0	205-923-4		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0375 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WLS02-ES-19032025-0.70

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WLS02-ES-19032025-0.70	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
6.8%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.8% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH		PH		8.5 pH		8.5	pH	8.5 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				12 mg/kg	1.32	14.767	mg/kg	0.00148 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				7.1 mg/kg	1.462	10.377	mg/kg	0.00104 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				78 mg/kg	1.126	81.848	mg/kg	0.00818 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	27 mg/kg	1.56	39.251	mg/kg	0.00252 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				43 mg/kg	2.976	119.277	mg/kg	0.0119 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				100 mg/kg	2.774	258.55	mg/kg	0.0259 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				0.43 mg/kg		0.401	mg/kg	0.0000401 %	✓	
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8								
15	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
17	phenanthrene	201-581-5	85-01-8		0.66 mg/kg		0.615 mg/kg	0.0000615 %	✓	
18	anthracene	204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
19	fluoranthene	205-912-4	206-44-0		0.18 mg/kg		0.168 mg/kg	0.0000168 %	✓	
20	pyrene	204-927-3	129-00-0		0.13 mg/kg		0.121 mg/kg	0.0000121 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		0.06 mg/kg		0.0559 mg/kg	0.00000559 %	✓	
22	chrysene	601-048-00-0	205-923-4		0.25 mg/kg		0.233 mg/kg	0.0000233 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.15 mg/kg		0.14 mg/kg	0.000014 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
29	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0512 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WLS03-ES-21032025-0.60

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WLS03-ES-21032025-0.60	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
7.8%	Entry:
(wet weight correction)	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.8% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	pH				8.9 pH		8.9	pH	8.9 pH		
2	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
	006-007-00-5										
3	arsenic { arsenic trioxide }				8.8 mg/kg	1.32	10.713	mg/kg	0.00107 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
4	cadmium { cadmium oxide }				0.4 mg/kg	1.142	0.421	mg/kg	0.0000421 %	✓	
	048-002-00-0	215-146-2	1306-19-0								
5	chromium in Cr(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
6	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				11 mg/kg	1.462	16.077	mg/kg	0.00161 %		
		215-160-9	1308-38-9								
7	copper { dicopper oxide; copper (I) oxide }				50 mg/kg	1.126	51.903	mg/kg	0.00519 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
8	lead { lead chromate }			1	100 mg/kg	1.56	143.815	mg/kg	0.00922 %	✓	
	082-004-00-2	231-846-0	7758-97-6								
9	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
	080-010-00-X	231-299-8	7487-94-7								
10	nickel { nickel chromate }				12 mg/kg	2.976	32.929	mg/kg	0.00329 %	✓	
	028-035-00-7	238-766-5	14721-18-7								
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
12	zinc { zinc chromate }				110 mg/kg	2.774	281.354	mg/kg	0.0281 %	✓	
	024-007-00-3	236-878-9	13530-65-9								
13	naphthalene				0.38 mg/kg		0.35	mg/kg	0.000035 %	✓	
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				0.08 mg/kg		0.0738	mg/kg	0.00000738 %	✓	
		205-917-1	208-96-8								
15	acenaphthene				1.6 mg/kg		1.475	mg/kg	0.000148 %	✓	
		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	fluorene	201-695-5	86-73-7		2 mg/kg		1.844 mg/kg	0.000184 %	✓	
17	phenanthrene	201-581-5	85-01-8		8.9 mg/kg		8.206 mg/kg	0.000821 %	✓	
18	anthracene	204-371-1	120-12-7		1.7 mg/kg		1.567 mg/kg	0.000157 %	✓	
19	fluoranthene	205-912-4	206-44-0		12 mg/kg		11.064 mg/kg	0.00111 %	✓	
20	pyrene	204-927-3	129-00-0		9.8 mg/kg		9.036 mg/kg	0.000904 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		5.9 mg/kg		5.44 mg/kg	0.000544 %	✓	
22	chrysene	601-048-00-0	205-923-4		6.6 mg/kg		6.085 mg/kg	0.000609 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		8.8 mg/kg		8.114 mg/kg	0.000811 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		2.4 mg/kg		2.213 mg/kg	0.000221 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		5.7 mg/kg		5.255 mg/kg	0.000526 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		2.6 mg/kg		2.397 mg/kg	0.00024 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.68 mg/kg		0.627 mg/kg	0.0000627 %	✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		2.9 mg/kg		2.674 mg/kg	0.000267 %	✓	
29	TPH (C6 to C40) petroleum group		TPH		250 mg/kg		250 mg/kg	0.025 %		
30	monohydric phenols		P1186		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
Total:								0.0802 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60 °C or waste gas oil, diesel and light heating oils having a flash point > 55 °C and <= 75 °C"

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 500 mg/kg (0.05%) because: No free phase Liquid present.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.025%)

Appendix A: Classifier defined and non GB MCL determinands

• pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

• salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 $\geq$ 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 $\geq$ 0.2 % hazard statement sourced from: WM3, Table C12.2

• chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

• acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

• fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

• anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

■ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Unknown Oil

Hazard statements taken from WM3 1st Edition 2015
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

■ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

■ **monohydric phenols** (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 <= conc. < 3 % , Eye Irrit. 2; H319 1 <= conc. < 3 % , Aquatic Chronic 2; H411

■ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

GB MCL index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2; H371

Appendix B: Rationale for selection of metal species

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

boron {diboron trioxide}

site specific

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in Cr(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (edit as required)

chromium in Cr(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {selenium compounds with the exception of cadmium sulposelenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulposelenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

vanadium {divanadium pentaoxide; vanadium pentoxide}

default

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2025.206.6723.12195 (27 Jul 2025)
HazWasteOnline Database: 2025.206.6723.12195 (27 Jul 2025)

This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021

GB MCL List v2.0 - version 2.0 of 20th October 2023

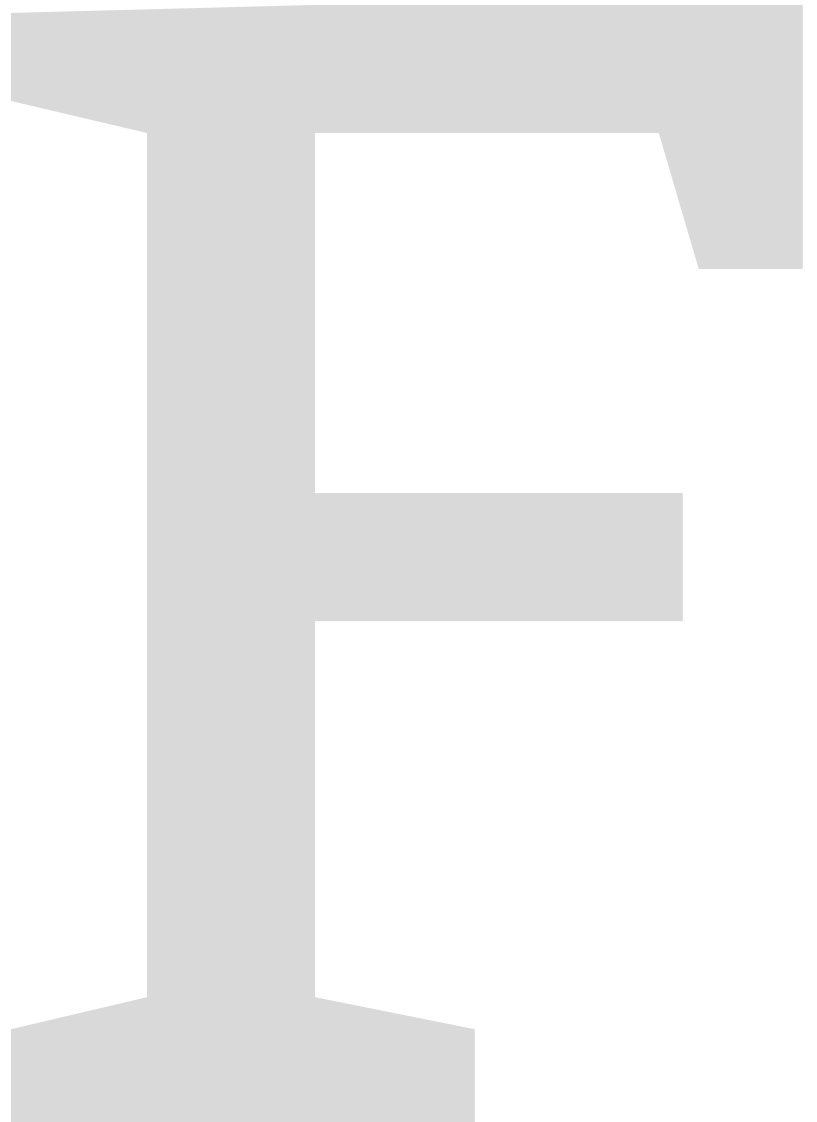
GB MCL List v3.0 - version 3.0 of 11th January 2024

GB MCL List v4.0 - version 4.0 of 2nd March 2024

GB MCL List v5.0 - version 5.0 of 26th June 2024

GB MCL List v6.0 - version 6.0 of 15th February 2025

APPENDIX F
Monitoring Data





Project No.		Project Name			Operative		Date		Equipment Used				
J15809		Merthyr Tydfil, CF48 2TA			SM		14 April 2025		GFM Unit: FOC PID: FOC Dip Meter Ref: Interface				
Well No	BH01	Atm Press	mb	960	Time of Reading	Flow l/hr	Peak	0.0	Diff Pressure (Pa)	Max:	0		
		Temp	° C	15			Steady	0.0		Min:	0		
Well Depth (m)	30.12	Groundwater level from GL (m)		29.52	12:09	VOC ppm	Max:	0.7	LEL %	Max:	0.0		
							Min:	0.7		Min:	0.0		
	Time (Seconds)												
	30	60	90	120	180	240	300	360	420	480	540	600	
O ₂	19.3	19.2	19.2	19.2	19.2								
CO ₂	0.0	0.0	0.0	0.0	0.0								
CH ₄	0.0	0.0	0.0	0.0	0.0								
Remarks/Weather						Weather: Overcast but dry.		CO ppm	Max:	0	H ₂ S ppm	Max:	0
								Min:	0		Min:	0	
Well No	BH02	Atm Press	mb	959	Time of Reading	Flow l/hr	Peak	0.0	Diff Pressure (Pa)	Max:	0		
		Temp	° C	15			Steady	0.0		Min:	0		
Well Depth (m)	29.50	Groundwater level from GL (m)		24.72	12:57	VOC ppm	Max:	1.1	LEL %	Max:	0.0		
							Min:	1.1		Min:	0.0		
	Time (Seconds)												
	30	60	90	120	180	240	300	360	420	480	540	600	
O ₂	19.0	18.5	18.3	18.1	18.0								
CO ₂	0.4	0.5	0.6	0.6	0.7								
CH ₄	0.0	0.0	0.0	0.0	0.0								
Remarks/Weather						Weather: Overcast but dry.		CO ppm	Max:	16	H ₂ S ppm	Max:	0
								Min:	0		Min:	0	
Well No	WLS01	Atm Press	mb	961	Time of Reading	Flow l/hr	Peak	0.0	Diff Pressure (Pa)	Max:	0		
		Temp	° C	15			Steady	0.0		Min:	0		
Well Depth (m)	4.91	Groundwater level from GL (m)		4.66	11:58	VOC ppm	Max:	0.6	LEL %	Max:	0.0		
							Min:	0.6		Min:	0.0		
	Time (Seconds)												
	30	60	90	120	180	240	300	360	420	480	540	600	
O ₂	19.4	19.3	19.3	19.2	19.2								
CO ₂	0.4	0.4	0.4	0.5	0.5								
CH ₄	0.0	0.0	0.0	0.0	0.0								
Remarks/Weather						Weather: Overcast but dry.		CO ppm	Max:	0	H ₂ S ppm	Max:	0
								Min:	0		Min:	0	

Pressure Trend Before Visit: Falling - 9mb drop in atmospheric pressure over previous 24 hours.



Project No.		Project Name		Operative		Date		Equipment Used					
J15809		Merthyr Tydfil, CF48 2TA		SM		14 April 2025		GFM Unit: FOC PID: FOC Dip Meter Ref: Interface					
Well No	WLS02	Atm Press	mb	960	Time of Reading	Flow l/hr	Peak	0.0	Diff Pressure (Pa)	Max:	0		
		Temp	° C	15				0.0		Min:	0		
Well Depth (m)	4.02	Groundwater level from GL (m)	2.19	12:20	VOC ppm	Max:	0.1	LEL %	Max:	0.0			
							Min:			0.1	Min:	0.0	
Time (Seconds)													
	30	60	90	120	180	240	300	360	420	480	540	600	
O ₂	20.5	20.4	20.4	20.4	20.4								
CO ₂	0.0	0.0	0.0	0.0	0.0								
CH ₄	0.0	0.0	0.0	0.0	0.0								
Remarks/Weather						Weather: Overcast but dry.		CO ppm	Max: 0	H ₂ s ppm	Max: 0		
								Min: 0		Min: 0			
Well No		Atm Press	mb		Time of Reading	Flow l/hr	Peak		Diff Pressure (Pa)	Max:			
		Temp	° C							Min:			
Well Depth (m)		Groundwater level from GL (m)			VOC ppm	Max:		LEL %	Max:				
							Min:				Min:		
Time (Seconds)													
	30	60	90	120	180	240	300	360	420	480	540	600	
O ₂													
CO ₂													
CH ₄													
Remarks/Weather								CO ppm	Max:	H ₂ s ppm	Max:		
								Min:		Min:			
Well No		Atm Press	mb		Time of Reading	Flow l/hr	Peak		Diff Pressure (Pa)	Max:			
		Temp	° C							Min:			
Well Depth (m)		Groundwater level from GL (m)			VOC ppm	Max:		LEL %	Max:				
							Min:				Min:		
Time (Seconds)													
	30	60	90	120	180	240	300	360	420	480	540	600	
O ₂													
CO ₂													
CH ₄													
Remarks/Weather								CO ppm	Max:	H ₂ s ppm	Max:		
								Min:		Min:			

Pressure Trend Before Visit: Falling - 9mb drop in atmospheric pressure over previous 24 hours.

ESS**Environmental Site Sampling Ltd**

22nd April 2025

Mr S Marshall
Southern Testing
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

Environmental Site Sampling Ltd
94 Dillotford Avenue
Styvechale
Coventry
CV3 5DU

Tel : (024) 7669 0514

Mobile : 07971 664 118

e.mail: cosgrove_patrick@hotmail.com

Page 1 of 2

In-situ Analysis Report: ST/7017

Dear Mr Marshall,

Please find enclosed a copy of the in-situ ground gas and vapour monitoring results undertaken at Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA, on 22nd April, 2025.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc
Environmental Site Sampling Ltd



Environmental Site Sampling Ltd Registered in England & Wales No. 4431348
Registered Office: 94 Dillotford Avenue Coventry CV3 5DU

In-situ Analysis: ST/7017**Client: Southern Testing****Project: J15809, Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA****22/04/25**

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	PID VOC (ppm)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H ₂ S	CO	
BH01	0.3	14	0.1	<0.1	<0.1	<2	<2	1.2	1.2	17.3	17.3	<1	<1	29.36m
BH02	<0.1	3	0.4	<0.1	<0.1	<2	<2	0.5	0.5	19.9	19.9	<1	<1	24.41m
WLS01	<0.1	2	0.2	<0.1	<0.1	<2	<2	0.2	0.2	20.1	20.1	<1	<1	4.41m
WLS02	0.1	7	0.2	<0.1	<0.1	<2	<2	0.1	0.1	20.3	20.3	<1	<1	1.69m
Notes: Monitoring order is from left to right. Steady concentrations are measured up to 3 minutes.														

Additional Information	
Date Monitoring Undertaken:	22 nd April 2025
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GFM436 S/N 13985, Phocheck Tiger S/N T115608
Atmos. Pressure Merthyr Tydfil a.m. (mb):	1017mb
Atmos. Pressure On-site (mb):	1015mb
Atmos. Pressure Merthyr Tydfil p.m. (mb):	1014mb
Weather During Visit:	Sunny, Dry, Wind SW, 2m/s, 11°C
Comments:	

ESS**Environmental Site Sampling Ltd**

6th May 2025

Mr S Marshall
Southern Testing
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

Environmental Site Sampling Ltd
94 Dillotford Avenue
Styvechale
Coventry
CV3 5DU

Tel : (024) 7669 0514

Mobile : 07971 664 118

e.mail: cosgrove_patrick@hotmail.com

Page 1 of 2

In-situ Analysis Report: ST/7033

Dear Mr Marshall,

Please find enclosed a copy of the in-situ ground gas and vapour monitoring results undertaken at Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA, on 6th May, 2025.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc
Environmental Site Sampling Ltd



Environmental Site Sampling Ltd Registered in England & Wales No. 4431348
Registered Office: 94 Dillotford Avenue Coventry CV3 5DU

In-situ Analysis: ST/7033**Client: Southern Testing****Project: J15809, Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA****06/05/25**

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	PID VOC (ppm)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H ₂ S	CO	
BH01	<0.1	3	0.1	<0.1	<0.1	<2	<2	0.7	0.7	19.7	19.7	<1	<1	29.51m
BH02	<0.1	2	0.3	<0.1	<0.1	<2	<2	1.8	1.8	18.7	18.7	<1	<1	23.44m
WLS01	0.1	12	0.2	<0.1	<0.1	<2	<2	0.4	0.4	19.9	19.9	<1	<1	4.52m
WLS02	<0.1	1	0.4	<0.1	<0.1	<2	<2	0.3	0.3	20.0	20.0	<1	<1	1.87m
Notes: Monitoring order is from left to right. Steady concentrations are measured up to 3 minutes.														

Additional Information	
Date Monitoring Undertaken:	6 th May 2025
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GFM436 S/N 13985, Phocheck Tiger S/N T118383
Atmos. Pressure Merthyr Tydfil a.m. (mb):	1026mb
Atmos. Pressure On-site (mb):	1024mb
Atmos. Pressure Merthyr Tydfil p.m. (mb):	1024mb
Weather During Visit:	Overcast, Dry, Wind N, 2m/s, 6°C
Comments:	

ESS**Environmental Site Sampling Ltd**

19th May 2025

Mr S Marshall
Southern Testing
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

Environmental Site Sampling Ltd
94 Dillotford Avenue
Styvechale
Coventry
CV3 5DU

Tel : (024) 7669 0514

Mobile : 07971 664 118

e.mail: cosgrove_patrick@hotmail.com

Page 1 of 2

In-situ Analysis Report: ST/7045

Dear Mr Marshall,

Please find enclosed a copy of the in-situ ground gas and vapour monitoring results undertaken at Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA, on 19th May, 2025.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc
Environmental Site Sampling Ltd



Environmental Site Sampling Ltd Registered in England & Wales No. 4431348
Registered Office: 94 Dillotford Avenue Coventry CV3 5DU

In-situ Analysis: ST/7045

Client: Southern Testing

Project: J15809, Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA

19/05/25

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	PID VOC (ppm)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H ₂ S	CO	
BH01	<0.1	2	0.2	<0.1	<0.1	<2	<2	0.2	0.2	20.4	20.4	<1	<1	29.79m
BH02	0.1	8	0.3	<0.1	<0.1	<2	<2	0.8	0.8	19.8	19.8	<1	<1	24.11m
WLS01	0.1	7	0.3	<0.1	<0.1	<2	<2	0.6	0.6	20.2	20.2	<1	<1	4.53m
WLS02	<0.1	1	0.4	<0.1	<0.1	<2	<2	0.1	0.1	20.6	20.6	<1	<1	2.23m
Notes: Monitoring order is from left to right. Steady concentrations are measured up to 3 minutes.														

Additional Information	
Date Monitoring Undertaken:	19 th May 2025
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GFM436 S/N 13985, Phocheck Tiger S/N T115608
Atmos. Pressure Merthyr Tydfil a.m. (mb):	1022mb
Atmos. Pressure On-site (mb):	1021mb
Atmos. Pressure Merthyr Tydfil p.m. (mb):	1024mb
Weather During Visit:	Overcast, Dry, Wind E, 2m/s, 9°C
Comments:	

ESS**Environmental Site Sampling Ltd**

2nd June 2025

Mr S Marshall
Southern Testing
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

Environmental Site Sampling Ltd
94 Dillotford Avenue
Styvechale
Coventry
CV3 5DU

Tel : (024) 7669 0514

Mobile : 07971 664 118

e.mail: cosgrove_patrick@hotmail.com

Page 1 of 2

In-situ Analysis Report: ST/7057

Dear Mr Marshall,

Please find enclosed a copy of the in-situ ground gas and vapour monitoring results undertaken at Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA, on 2nd June, 2025.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc
Environmental Site Sampling Ltd



Environmental Site Sampling Ltd Registered in England & Wales No. 4431348
Registered Office: 94 Dillotford Avenue Coventry CV3 5DU

In-situ Analysis: ST/7057

Client: Southern Testing

Project: J15809, Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA

02/06/25

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	PID VOC (ppm)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H ₂ S	CO	
BH01	<0.1	3	0.4	<0.1	<0.1	<2	<2	0.2	0.2	20.3	20.3	<1	<1	29.51m
BH02	<0.1	1	0.3	<0.1	<0.1	<2	<2	0.9	0.9	19.6	19.6	<1	<1	24.28m
WLS01	<0.1	2	0.2	<0.1	<0.1	<2	<2	1.1	1.1	18.3	18.3	<1	<1	4.54m
WLS02	<0.1	1	0.1	<0.1	<0.1	<2	<2	0.3	0.3	20.0	20.0	<1	<1	1.92m
Notes: Monitoring order is from left to right. Steady concentrations are measured up to 3 minutes.														

Additional Information	
Date Monitoring Undertaken:	2 nd June 2025
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GFM436 S/N 13985, Phocheck Tiger S/N T115608
Atmos. Pressure Merthyr Tydfil a.m. (mb):	1015mb
Atmos. Pressure On-site (mb):	1011mb
Atmos. Pressure Merthyr Tydfil p.m. (mb):	1008mb
Weather During Visit:	Sunny, Dry, Wind SW, 6m/s, 15°C
Comments:	

ESS**Environmental Site Sampling Ltd**

17th June 2025

Mr S Marshall
Southern Testing
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

Environmental Site Sampling Ltd
94 Dillotford Avenue
Styvechale
Coventry
CV3 5DU

Tel : (024) 7669 0514

Mobile : 07971 664 118

e.mail: cosgrove_patrick@hotmail.com

Page 1 of 2

In-situ Analysis Report: ST/7065

Dear Mr Marshall,

Please find enclosed a copy of the in-situ ground gas and vapour monitoring results undertaken at Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA, on 17th June, 2025.

I trust you find these satisfactory. Should you have any queries please contact us.

Yours Sincerely,

Patrick Cosgrove

P V Cosgrove BSc MSc
Environmental Site Sampling Ltd



Environmental Site Sampling Ltd Registered in England & Wales No. 4431348
Registered Office: 94 Dillotford Avenue Coventry CV3 5DU

In-situ Analysis: ST/7065

Client: Southern Testing

Project: J15809, Penygarnddu Industrial Estate, Merthyr Tydfil, CF48 2TA

17/06/25

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	PID VOC (ppm)	Methane (%vol)		Methane (%LEL)		Carbon Dioxide (%vol)		Oxygen (%vol)		Other Gases (ppm)		Water Level (Meters)
			Peak	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	H ₂ S	CO	
BH01	<0.1	3	0.4	<0.1	<0.1	<2	<2	0.8	0.8	17.1	17.1	<1	<1	29.37m
BH02	<0.1	1	0.3	<0.1	<0.1	<2	<2	1.6	1.6	19.3	19.3	<1	<1	23.27m
WLS01	<0.1	1	0.2	<0.1	<0.1	<2	<2	0.9	0.9	19.4	19.4	<1	<1	4.49m
WLS02	<0.1	2	0.1	<0.1	<0.1	<2	<2	0.7	0.7	19.5	19.5	<1	<1	1.69m
Notes: Monitoring order is from left to right. Steady concentrations are measured up to 3 minutes.														

Additional Information	
Date Monitoring Undertaken:	17 th June 2025
Monitoring Undertaken By:	P Cosgrove
Equipment Used:	GFM436 S/N 13985, Phocheck Tiger S/N T115608
Atmos. Pressure Merthyr Tydfil a.m. (mb):	1024mb
Atmos. Pressure On-site (mb):	1022mb
Atmos. Pressure Merthyr Tydfil p.m. (mb):	1025mb
Weather During Visit:	Sunny, Dry, Wind SW, 2m/s, 20°C
Comments:	



APPENDIX G

Photographs



Penygarnddu Industrial Estate, Merthyr Tydfil



BH03A



BH03A



Manhole near BH03A



Manhole near BH03A



Manhole near BH03A



Manhole near BH03A

Penygarnddu Industrial Estate, Merthyr Tydfil



TP01



TP01 Spoil



TP01 Spoil



TP02



TP02



TP03

Penygarnddu Industrial Estate, Merthyr Tydfil



TP03



TP03



TP03 Spoil



TP04



TP04

Penygarnddu Industrial Estate, Merthyr Tydfil



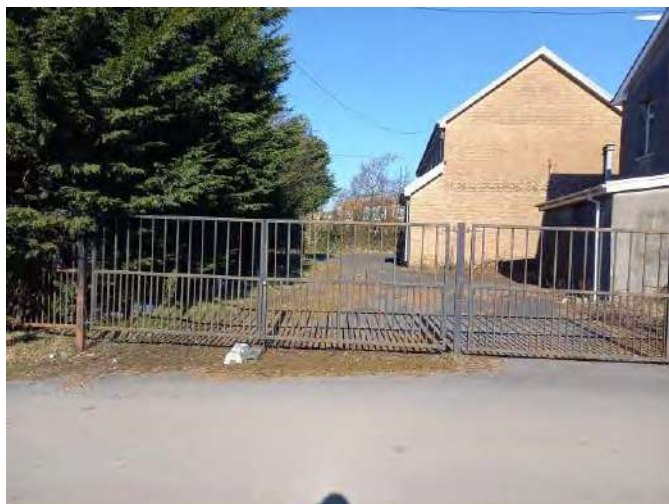
View from north of site looking east.



View from north of site looking south east.



View from north of site looking south west.



View from east of site looking north west.



View from east of site looking south west.



House in eastern section of site.

Penygarnddu Industrial Estate, Merthyr Tydfil



Fly-tipped material in southern area of site.



View from south east of site looking north east.



View from south east of site looking north.



View from south east of site looking east.



View from south east of site looking south east.



View from south east of site looking south.

Penygarnddu Industrial Estate, Merthyr Tydfil



View from south east of report looking south west.



View from west of site looking north.



View from top of western bund looking west.



View from top of western bund looking north.



View from south west corner of site looking north east.



View from south west corner of site looking east.

Penygarnddu Industrial Estate, Merthyr Tydfil



View from south west corner of site looking south east.



View from centre of site looking north.



View from north east of site looking south.



View from north east of site looking south east.



View from north east of site looking east.



House in north east of site.

Penygarnddu Industrial Estate, Merthyr Tydfil



House in east north of site.



House in east north of site.



View from east of site looking south west.



House in east north of site.



House in east north of site.



House in east north of site.

Penygarnddu Industrial Estate, Merthyr Tydfil



House in east north of site.



House in east north of site.



House in east north of site.



North eastern area of site.



North eastern area of site.



North eastern area of site.

Penygarnddu Industrial Estate, Merthyr Tydfil



View from north east of site looking west.



View from north east of site looking north.



View from north east of site looking south.



View from north east of site looking south east.



View from north east of site looking towards main body of site.



View from east of site looking south west.

Penygarnddu Industrial Estate, Merthyr Tydfil



View from east of site looking west.



View from east of site looking north west.



View from east of site looking north east.



View from south west of site looking north west.



View from south west of site looking north.

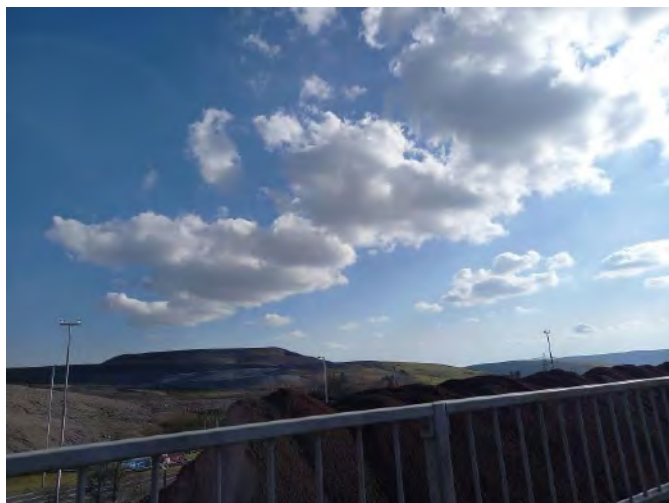


View from south west of site looking north east.

Penygarnddu Industrial Estate, Merthyr Tydfil



View from south west of site looking east.



View from south west of site looking south east.



View from east of site looking south.



View from east of site looking north.



View from east of site looking east.



Southern Testing
Environmental & Geotechnical

ST Consult
Environmental & Geotechnical

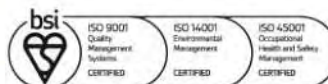


Head Office
East Grinstead
Tel: 01342 333100
enquiries@southerntesting.co.uk

ST Consult Midlands
Northampton
Tel: 01604 500020
creaton@stconsult.co.uk

ST Consult Thames Valley
Hannington
Tel: 01635 800 950
hannington@stconsult.co.uk

ST Consult North West
Warrington
Tel: 01925 661 735
warrington@stconsult.co.uk



FS 28280 EMS 506775 OHS 506776

