Willmott Dixon

BISHOP HEDLEY SCHOOL CAMPUS, MERTHYR TYDFIL

Site Investigation Report

14075/FG/22/SI/RevB

Intégral
Géotechnique

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1.0 INTRODUCTION

1.1 GENERAL

Willmott Dixon in conjunction with Merthyr Tydfil County Borough Council are proposing to redevelop a site located off Galon Uchaf Road, Merthyr Tydfil, for educational end-use.

The site comprises the existing Bishop Hedley School Campus (to the east of Galon Uchaf Road) and part of Galon Uchaf Park (to the west of Galon Uchaf Road). The location of the site is shown in Figure 1. A site plan is presented in Figure 2.

Cambria Consulting are the appointed Consulting Civil and Structural Engineers for the scheme.

Intégral Géotechnique (Wales) Limited have been appointed as the Geotechnical Engineers to undertake a preliminary site investigation to enable a geotechnical and geoenvironmental appraisal of the site and provide a basis for design.

This report presents the findings of the preliminary site investigation and gives recommendations for the design of foundations, floor slabs and other geotechnical and geoenvironmental aspects of the project.

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1.2 PROPOSED DEVELOPMENT

The redevelopment proposals include the demolition of the existing buildings (excluding the existing sports hall) on the Bishop Hedley Campus site area, followed by the construction of a new school building with associated access roads, areas of car parking and sports pitches. A new external plant room is also proposed.

It is understood that an existing sports hall building is to be retained and extended.

1.2 PROPOSED DEVELOPMENT (CONTINUED)

In addition to the above, a new sports pitch is also proposed on part of the existing Galon Uchaf Park, situated to the west of Galon Uchaf Road.

The layout of the site has not been fully finalised at this stage and we understand it may be subject to change. The current site layout is illustrated in drawings by SNC-Lavalin and Cambria Consulting. The drawings are referenced below:

- BCA-ATK-VX-ZZ-DR-A-021001/ Rev.P.05
- Sheet 1/3 - BCA/CAM/ZZ/ZZ/GA/S/0051/ Rev.P04
- Sheet 2/3 - BCA/CAM/ZZ/ZZ/GA/S/0052/ Rev.P04
- Sheet 3/3 - BCA/CAM/ZZ/ZZ/GA/S/0053/ Rev.P04

A copy of the indicative proposed development layout is shown in Figure 3.

1.3 SCOPE OF WORKS

The work instructed included a desk study of available information, site reconnaissance and intrusive site investigation. This was followed by laboratory testing, on site monitoring and geotechnical and geoenvironmental reporting.

The desk study comprised a review of:

- An Envirocheck Report obtained for the site,
- Old Ordnance Survey maps covering the site,
- A Landmark Radon Information Map,
- Published geological maps of the area,
- A Consultants Coal Mining Report obtained from the Coal Authority,
- Mine abandonment plans obtained from the Coal Authority,
- Existing desk study site investigation data, where relevant.

The desk study information was used to make an initial assessment of the site and to design an investigation to be carried out by Intégral Géotechnique. The site investigation was designed in accordance with BS 5930:2015+A1:2020, the Code of Practice for Site Investigations, BS10175:2011+A2:2017, the Code of Practice for Investigation of Potentially Contaminated Sites, and 'Development of Land Affected by Contamination: A Guide for Developers' prepared by Welsh Local Government Association (WLGA)/Natural Resources Wales (NRW) Land Contamination Working Group, 2017.

1.3 SCOPE OF WORKS (CONTINUED)

The site investigation locations were specified by Cambria Consulting.

The site investigation was undertaken in two phases.

During May and June 2021 an initial phase of site investigation was undertaken across the area of the site comprising Galon Uchaf Park (i.e., on land west of Galon Uchaf Road). This phase of site investigation included:

- 9 No. machine excavated trial pits, 7 No. machine excavated trial trenches, and 8 No. windowless sample boreholes,
- Soil infiltration testing undertaken at 3 No. trial pit locations,
- Sampling of soil/fill for laboratory chemical testing,
- Sampling of soil/fill for laboratory geotechnical testing,
- Monitoring for concentrations of methane, carbon dioxide, oxygen, hydrocarbon vapours and gas flow,
- Monitoring groundwater levels.

During August 2022, a second phase of site investigation was undertaken, across the area of the site comprising the existing Bishop Hedley School Campus (to the east of Galon Uchaf Road). This phase of site investigation included:

- 23 No. machine excavated trial pits, 27 No. windowless sample boreholes, 14 No. hand dug trial pits/foundation inspection pits, and 25 No. CBR tests,
- Soil infiltration testing undertaken at 21 No. trial pit locations, and falling head percolation tests undertaken at 4 No. windowless sample borehole locations,
- Sampling of soil/fill for laboratory chemical testing,
- Sampling of tarmac for laboratory chemical testing,
- Sampling of soil/fill for laboratory geotechnical testing,
- Monitoring for concentrations of methane, carbon dioxide, oxygen, hydrocarbon vapours and gas flow,
- Monitoring groundwater levels.

1.4 LIMITATIONS

This document is intended to be a working document for further development in discussion with all concerned including the Local Planning Authority, Natural Resources Wales, and The Coal Authority, as appropriate.

1.4 LIMITATIONS (CONTINUED)

"Contamination" is taken throughout the report to mean the "presence of one or more potentially harmful substances as a result of human activity". The use of the term in this way does not imply that harm is being or might be caused by the contamination. It should be noted that "contamination" can have different meanings under different regulatory regimes, for example, planning, building control and Part IIA of the Environmental Protection Act 1990. Naturally elevated concentrations of potentially harmful substances may also be of concern and the significance of any that have been found is also evaluated in this report.

It is important to recognise that there may be areas of contamination that have not been found, or that contaminants are present at concentrations above those that have been found. It is also important to recognise that contamination may be localised and that no investigation, however comprehensive, is capable of finding such occurrences other than by chance.

It should also be noted that vertical and lateral changes in ground conditions may be present between exploratory hole locations.

Access for the intrusive investigation on the land west of Galon Uchaf Road was limited at the time due to underground services, steepened slopes and the presence of Japanese Knotweed.

Access for the intrusive site investigation within the existing school site was limited at the time due to active and vacant buildings, areas of hardstanding and underground services. The site had been historically terraced for the existing school development and as a result, access to some areas of the site was not possible with some of the plant. It should also be noted that there was a water main easement in the eastern and central parts of the northern area of the existing school site.

Further investigation beneath building floor slabs was outside the scope of work of this report but is recommended in subsequent post-demolition supplemental investigation works.

2.0 THE SITE

2.1 SITE LOCATION AND DESCRIPTION

The site is located to the east and west of Galon Uchaf Road approximately 1km northeast of Merthyr Tydfil town centre, at a National Grid Reference of 305350, 207380, see Figure 1. A site plan is presented in Figure 2.

Existing Bishop Hedley School Campus (east of Galon Uchaf Road)

The existing school site is irregular in shape and split into two parts (i.e., a northern site area and a southern site area), separated by Gwaunfarren Road. Collectively, the existing school site (i.e., the northern and southern sites together) occupies an area of approximately 6.8 hectares. The boundaries are defined by Galon Uchaf Road to the northwest, allotments gardens and residential development to the east, residential development to the south and a primary school and residential development to the west.

The existing school site is situated on sloping ground that generally falls to the south. The elevation varies from an approximate maximum of 275m AOD in the north, to an approximate minimum of 234m AOD in the south.

The site has been subjected to historical cut/fill earthworks in order to create a number of existing development plateaux separated by embankments.

The northern area (i.e., the area to the north of Gwaunfarren Road) is occupied by existing school buildings with associated access roads, car parking areas, and areas of hardstanding. The areas surrounding the developed parts of the site are grass covered. The eastern boundary of the site is heavily vegetated.

The southern area (i.e., the area to the south of Gwaunfarren Road) is occupied by existing school buildings, including a sports hall, with associated access roads, car parking areas, and areas of hardstanding. The areas surrounding the developed parts of the site are grass covered. An existing sports field is situated within the southwest area.

The northern and southern site areas are linked via an existing pedestrian tunnel/subway trending north to south beneath Gwaunfarren Road.

Land West of Galon Uchaf Road

The part of the site located to the west of Galon Uchaf Road occupies an area of approximately 5.02 hectares.

2.1 SITE LOCATION AND DESCRIPTION (CONTINUED)

The boundaries are defined by Galon Uchaf Road and existing residential properties to the east, undeveloped land with residential development beyond to the south, undeveloped woodland to the west and existing sport pitches to the north.

The area is situated on sloping ground that generally falls to the south. The elevation varies from an approximate maximum of 278m AOD in the north, to a minimum elevation of 270m AOD in the south.

This part of the site comprises undeveloped public open space (part of Galon Uchaf Park).

The area has been subjected to historical cut/fill earthworks in order to create two separate plateaux (referred to as Plateau 1 and Plateau 2) separated by an embankment. At the time of the site investigation, the bank was covered by extensive Japanese Knotweed.

The site boundaries are lined by a combination of vegetation, hedges, fences and mature and immature trees. Mature trees are also located on site, particularly within the eastern and southern area.

2.2 SITE OPERATIONS

The site is currently operational as a school and undeveloped public open space.

2.3 SURROUNDING LAND USE

The surrounding areas are mainly developed for residential use. However, a primary school is present to the west and allotment gardens are present to the east. Existing sports pitches and a recreation ground are located beyond Galon Uchaf Road to the north and northwest.

2.4 AVAILABLE SITE INVESTIGATION DATA

There is no available desk study or site investigation data for the existing school campus site area. However, the following previous reports cover the site area situated to the west of Galon Uchaf Road.

- Blandford Easterling and Associates, Mining Report on the Playing Fields at Galon Uchaf, Merthyr Tydfil - Desk Study. Report No. BEA/MB/03.93.03, dated 1993.
- Atkins, Bishop Headley School, Geotechnical Desk Study Technical Note, dated 10th July 2020.

2.4 AVAILABLE SITE INVESTIGATION DATA (CONTINUED)

- Cambria Summary of Desktop Studies and Previous SI's. Project Ref. CC2208, dated 28th April 2021.
- Intégral Géotechnique (Wales) Limited Site Investigation Report Ref: 12863/LW/21/SI Rev A, dated September 2021 covering an area to the west of Galon Uchaf Road which included Plateau 1 and Plateau 2.

It should be noted that the above referenced reports cover a larger site area than that currently being considered to the west of Galon Uchaf Road.

The above referenced reports have been reviewed and pertinent information relating the current red-line site boundary has been summarised within this report.

Copies of the previous Blandford, Atkins and Cambria desk study reports are included in Appendix A.

2.5 CONSULTATIONS WITH REGULATORS

The regulators have not been contacted at this stage of reporting.

3.0 SITE HISTORY

The recent history of the site has been traced with the aid of available information (see Appendix A) and historical OS maps as presented within the Envirocheck Report (see Appendix B).

The Envirocheck Report includes the following historical OS maps:

Map Scale	Dates
1:528	1875-1876, 1975
1:2,500	1875, 1900, 1904, 1919, 1958-1963, 1963-1964
1:1,250	1957, 1956-1957, 1957-1989, 1957-1988, 1963-1972, 1963-1971, 1970, 1975, 1985-1988, 1985-1989, 1989, 1993, 2001 (aerial photo)
1:10,560	1885, 1901, 1905, 1922, 1938-1951, 1945, 1951
1:10,000	1965, 1977-1979, 1983, 1992, 1999, 2006, 2021

The earliest edition of the map dated 1875 indicated the site to be undeveloped fields with the eastern area separated by an east-west orientated road and another road which separated the eastern area from the north western part of the site. A wooded field boundary crossed the southwest area of the site, possibly lined with a surface water feature. Trees were also noted within the southern area. An area of disturbed ground and small spoil heap was noted on the boundary within the south western area of the site. An existing surface water feature flowed along the eastern boundary and then continued in a southerly direction. The area to the northwest of the road was generally undeveloped apart from areas of disturbed ground, potentially indicative of patch workings. An embankment ran along the northern and north western boundary of the site with a rail track running along the top, likely to be associated with the coal/ironstone works.

3.0 SITE HISTORY (CONTINUED)

The nearest development was a small building adjacent to the road which separated the eastern area from the northwest area and Gwain-faren which was a large, detached property with associated landscaped gardens located adjacent to the western boundary. A shaft (coal) was located approximately 50m to the east. Another air shaft was located approximately 20m to the east of the northern area and an old level was located approximately 80m to the southeast of the site. Pen-y-bryn Water Works was located approximately 80m to the northeast of the site with works including an Engine House and Filtering Beds. Pen-y-daren was well established approximately 100m to the southeast including a school and terraces of residential properties. Pen-y-daren Iron Works was operational approximately 250m to the south. A large expanse of patch workings were noted beyond the iron works approximately 400m to the southeast of the site.

The 1900 edition of the map indicated the site to have remained undeveloped and with excavations and deposited material evident within the northwest area beyond the road. The southwest area of the site was no longer indicated to be wooded. A pond feature was now located within the former area of disturbed ground on the boundary within the southern area of the site. Gwaun-farren to the west had been extended slightly. The surface water feature located along the eastern boundary of the site was indicated to be flowing in a southerly direction. The Water Works remained operational to the northeast but the Iron Works was no longer operational to the south, with the associated buildings now removed. There was no longer any evidence of shafts, air shafts or coal levels in the vicinity of the site. There was also no longer any evidence of the track which ran along the top of the embankment which formed the north western and northern boundary of the site. Pen-Y-Darren continued to develop to the southwest.

The 1904 edition of the map indicated no significant changes to the site or the surrounding areas.

The 1919 edition of the map indicated the site to have remained undeveloped and with disturbed ground and excavations still evident within the northwest area. Significant residential development had taken place within Pen-Y-Darren up to the south eastern boundary of the site. Residential development also continued further away to the south and southwest. An additional small property had been constructed next to the original building which was located adjacent to road in between the eastern and north western site areas.

3.0 SITE HISTORY (CONTINUED)

The 1945 aerial photo indicated the northern part of the eastern area of the site to have remained undeveloped, apart from a small building on the southern edge adjacent to the road which crossed the area. The southern area had been divided into small parcels of land. These parcels of land were likely to have been allotment gardens. Excavations and spoil were still evident within the northwest area beyond the road.

The 1957 edition of the map indicated a spoil heap within the southwest area of the site which was accessed via two tracks which crossed the southern area from the north and east. The road which separated the eastern area was now known as Gwaunfarren Road. The former building indicated to the north of Gwaunfarren Road within the northern part of the eastern area was now a ruin. The majority of the eastern area remained undeveloped. The surface water feature which flowed along the field boundary which crossed the south western area of the site, was indicated to sink as it reached the spoil heap and issue to the south of the spoil heap within the southwest corner of the site. The road which separated the eastern area from the north western area was now more established and known as Galon Uchaf Road. Disturbed ground, excavations and spoil heaps were indicated within the northwest area and two small pond features were now located within the area just to the northwest of Galon Uchaf Road. This disturbed ground was indicated to be refuse tips by the edition of the map dated 1963-1964. Gwaunfarren to the west was now a maternity hospital and additional residential development continued to the west and beyond the water works to the northeast.

The edition of the map dated 1957-1989 indicated buildings associated with Bishop Hedley Roman Catholic High School to have been constructed within the eastern area of the site to the north and south of Gwaunfarren Road. It is understood that the school was constructed in the northern area in 1967 and within the southern area by 1973, based on historical aerial photos. Earthworks were indicated within the northern area to create a level development plateau for the buildings and possible playground areas. The spoil heap within the southwest area had been reprofiled and levelled with a graded embankment indicated along the southern edge, with the area utilised as playing fields. The north western area had also been regraded and with evidence of earthworks to form a number of level plateaux. The plateaux off site to the north were indicated to be playing fields. Development continued along Galon Uchaf Road in between the eastern and north western areas of the site. Gwaunfarren Primary School had been constructed by this time to the west of the southern area of the site. Residential development also continued in the vicinity of the site, particularly to the west and southwest and further to the east.

3.0 SITE HISTORY (CONTINUED)

By the edition of the map dated 1985-1988 the eastern school site had remained relatively unchanged. A new residential estate had been constructed within the grounds of Gwaunfarren Hospital to the west of the site.

The existing school site and the regraded plateaux within the northwest area have remained relatively unchanged in between the 1990's and the present day. The two school areas remained separated by Gwaunfarren Road and occupied by school buildings. The southwest former tip areas remained in use as playing fields. The former tips and regraded north western area has remained undeveloped.

4.0 SITE ENVIRONMENTAL SETTING

4.1 PHYSICAL SETTING

The site is located within a mainly residential setting to the northeast of Merthyr Tydfil town centre.

The existing Bishop Hedley School Campus (situated to the east of Galon Uchaf Road) is situated on sloping ground that generally falls to the south. The elevation varies from an approximate maximum of 275m AOD in the north, to an approximate minimum elevation of 234m AOD in the south. The existing school campus site area has been subjected to historical cut/fill earthworks in order to create a number of existing development plateaux separated by embankments.

The land to the west of Galon Uchaf Road is situated on sloping ground that generally falls to the south. The elevation varies from an approximate maximum of 278m AOD in the north, to an approximate minimum elevation of 270m AOD in the south. This part of the site comprises undeveloped public open space (part of Galon Uchaf Park). The area has also been subjected to historical cut/fill earthworks in order to create two separate plateaux (referred to as Plateau 1 and Plateau 2) separated by an embankment.

4.2 GEOLOGY

The 1:50,000 and 1:10,560 scale geological maps of the area indicate the site to be underlain by bedrock strata of the South Wales Lower Coal Measures Formation of the Carboniferous period. These strata typically comprise grey, productive, coal-bearing mudstones/siltstones, with seatearths and minor sandstones.

The northwest to southeast orientated ‘Gyrnos Fault’ is located approximately 30m to the north of the site. The ‘Dowlais Fault’ runs parallel to the Gyrnos Fault and is located approximately 400m to the northeast of the site.

The bedrock strata dips in the area are indicated at approximately 6° to 10° towards the southeast.

The geological maps indicate the conjectural outcrop of the Five-Foot Gellideg coal seam approximately 400m to the south of the existing school site. However, a mine abandonment plan obtained from the Coal Authority (see plan ref: SW2358 in Appendix E) indicates this coal outcrop to be located further west and is actually situated beneath the existing school development across the northern area of the existing school campus.

4.2 GEOLOGY (CONTINUED)

Based on a review of the Generalised Vertical Sections (GVS) as shown on the geological maps, the next named coal seam down from the Five-Foot Gellideg is indicated to be the Garw coal seam. A sequence of ironstone veins is indicated between the Five-Foot Gellideg and the Garw coal seams. These ironstone veins would therefore be anticipated beneath the site (potentially at shallow depths).

Superficial deposits comprising Devensian Till of the Quaternary period are indicated to overlie the bedrock strata. These deposits are typically poorly sorted and variable in nature, comprising clays, sands, and gravel.

A variable thickness of made ground/reworked ground is anticipated above the superficial deposits across the existing school site associated with the construction of the school and the evidence of cut and fill earthworks to create development plateaux. Thicker made ground deposits are anticipated within the southwest area of the southern school site, (beneath existing sports pitches) due to the presence of a reprofiled historical spoil heap.

Thick made ground deposits and landfill waste are anticipated beneath Plateau 1 and Plateau 2 situated on land west of Galon Uchaf Road.

A summary of the anticipated geological succession is given below in Table 1.

Table 1: Summary of Anticipated Site Geology

Geological unit	Horizon	Description
Recent	Made ground and Landfill Waste	Various materials
Quaternary	Devensian Till	Poorly sorted and variable clays, sands, and gravel
Carboniferous	South Wales Lower Coal Measures Formation	Grey, productive, coal-bearing mudstones/siltstones, with seatearths and minor sandstones.

4.3 RADON

Information with regard to Radon Protective Measures is provided on the radon map as presented in Appendix C. The map indicates the site is located within a lower probability area, as less than 1% of properties are above action level, and that therefore no radon protective measures would be necessary in the construction of new buildings within the site.

4.4 MINING

Several data sources have been reviewed to provide a preliminary desk-based assessment of potential mining legacy risks at the site.

The data sources utilised for the purposes the preliminary desk-based assessment include:

- Published Geological Maps,
- A Consultants Coal Mining Report obtained from the Coal Authority (see Appendix D),
- Mine abandonment plans obtained from the Coal Authority (see Appendix E).
- The online Coal Authority Interactive Map Viewer.

A preliminary desk-based assessment of the potential mining legacy risks at the site is presented below.

4.4.1 Past Underground Coal Mining

The Consultants Coal Mining Report records shallow mineworkings targeting the Five-Foot Gellideg coal seam beneath the site. The depths to these workings are indicated to range between 2m and 65m. No further coal workings are recorded beneath the site.

In order to determine the extent of the recorded coal workings targeting the Five-Foot Gellideg seam, mine abandonment plans (ref: SW2358 and 3622) have been obtained from the Coal Authority.

Georeferenced extracts of abandonment plans SW2358 and 3622 are presented in Appendix E.

Abandonment plan SW2358 indicates the approximate outcrop location of the Five-Foot Gellideg coal seam. The outcrop is shown trending roughly northwest to southeast through the north-eastern part of the site area situated to the west of Galon Uchaf Road, and roughly through the middle of the northern school site. The outcrop is not indicated to cross the southern school site.

The abandonment plan indicates that the Five-Foot Gellideg was worked in two leaves (i.e., a top leaf and a bottom leaf). Workings are indicated beneath the north-eastern part of the site area situated to the west Galon Uchaf Road. These workings are indicated to have originated from an adit (referred to as the Galon Uchaf Level) situated approximately 35m to the north of the site boundary.

4.4 MINING (CONTINUED)

Abandonment plan 3622 records further workings targeting the Five-Foot Gellideg coal seam beneath the north-eastern part of the site area situated to the west Galon Uchaf Road. These workings are indicated to have originated from two adits situated on site (adit refs: 305207-006 and 305207-007. An 'air pit' serving these workings is also shown on site (shaft ref: 305207-008).

No further mineworkings targeting the Five-Foot Gellideg coal seam are recorded beneath the site. However, the possibility of shallow unrecorded workings cannot be discounted.

It should also be noted that abandonment plan SW2358 records workings approximately 20m to the east of the northern school site area.

Wherever old mineworkings underlie the site at shallow depths and are not backfilled or still uncollapsed (or only partially collapsed), there may be an associated risk of ground subsidence occurring and affecting the site surface. The level of this potential ground subsidence risk will depend on the height and extent of any remnant voids and whether there is sufficient rock cover above the mine workings to prevent any associated uncollapsed voids migrating up to and affecting the ground surface.

It is recommended that a series of rotary boreholes are drilled across the site to determine the depth and condition of the recorded coal workings, together with an assessment for the presence of any shallow unrecorded coal workings. These works will allow for the assessment of the level of any residual risk to the proposed development. Where shallow mineworking with insufficient safe rock cover thicknesses are proven to still be present, appropriate remediation / mitigation measures (such as drilling and grouting ground stabilisation) may be required.

4.4.1 Past Underground Ironstone Mining

A sequence of ironstone veins is known to underlie the Five-Foot Gellideg coal seam beneath the site.

A mine abandonment plan detailing recorded ironstone workings beneath the site has been obtained from the Coal Authority (see Appendix E).

The abandonment plan shows numerous underground roadways associated with ironstone mining beneath large parts of the existing school site area (north and south) and the eastern half of the part of the site area situated to the west of Galon Uchaf Road.

4.4 MINING (CONTINUED)

Ironstone workings are typically more sporadic in nature than coal workings and therefore the locations of workings can be difficult to determine with desk-based research.

Wherever old mineworkings underlie the site at shallow depths and are not backfilled or still uncollapsed (or only partially collapsed), there may be an associated risk of ground subsidence occurring and affecting the site surface. The level of this potential ground subsidence risk will depend on the height and extent of any remnant voids and whether there is sufficient rock cover above the mine workings to prevent any associated uncollapsed voids migrating up to and affecting the ground surface.

It is recommended that a series of rotary boreholes are drilled across the site to determine the depth and condition of the recorded ironstone workings, together with an assessment for the presence of any shallow unrecorded ironstone workings. These works will allow for the assessment of the level of any residual risk to the proposed development. Where shallow mineworking with insufficient safe rock cover thicknesses are proven to still be present, appropriate remediation / mitigation measures (such as drilling and grouting ground stabilisation) may be required.

4.4.3 Mine Entries

The Consultants Coal Mining Report obtained from the Coal Authority records the presence of 15 No. mine entries within 100m of the site.

Based on a review of the available data, a total of six of these mine entries are recorded on site / within influencing distance of the site.

A desk-based georeferencing exercise has been undertaken using available mine abandonment plans and to corroborate the Coal Authority's listed locations of the various mine entries on site / within influencing distance of the site.

A summary of the published mine entry data, and the results of the georeferencing exercise is presented in Table 2.

The approximate assumed locations of the various mine entries are shown in Figure 2.

4.4 MINING (CONTINUED)

Table 2: Available Mine Entry Data

Ref:	Mine Entry Type	Depth of Shaft	Assumed Diameter	Adit Azimuth	Assumed CA Easting, Northing	Assumed IG Easting, Northing	CA Assigned Departure Distance
305207-009	Trial Pit (shaft)	14m	2.5m	n/a	305398, 207448	305404, 207451	8m
305207-022	Shaft	-	2.5m	n/a	305249, 207285	-	8m
305207-008	Air Pit (shaft)	-	2.5m	n/a	305274, 207610	305276, 207602	8m
305207-007	Adit	-	3m	138°	305234, 207624	305241. 207613	8m
305207-006	Adit	-	3m	68°	305242, 207644	305257, 207647	8m
305207-023	Adit	-	3m	68°	305235, 207478	305235 207479	8m

Where mine entries are proven to still be present beneath the site at shallow depth, there will be a potential ground subsidence risk to the proposed development and appropriate remediation and development no build zones will need to be implemented.

Targeted intrusive investigation works will be required to locate the recorded mine entries on site. These works will allow for the assessment of the level of risk to the proposed development, the scope of any required remediation / mitigation measures, and the size of development no build zones.

4.4.6 Mine Gas

The Coal Authority states that no mine gas has been recorded within 500m of the enquiry boundary. However, a mine gas risk assessment should always be undertaken within coal mining areas in order to satisfy the guidelines within CL:AIRE document Good Practice for Risk Assessment for Coal Mine Gas Emissions, dated October 2021.

There are many sources of gas in mine workings including desorption of gas from coal and rocks, oxidation of coal, decomposition of old wood (such as pit props) and acidic mine drainage reacting with carbonate in the rocks around the seam or shaft. These gases, if produced within the old workings, would need a viable pathway to the surface such as a shaft or fractured rock above the workings.

4.4 MINING (CONTINUED)

The desk study shows that shallow coal workings are not recorded and there are no potential shallow unrecorded workings beneath the existing school site. However, the potential for shallow ironstone workings cannot be ruled out.

There are two mine entries located within the existing school site area and others located within 100m of the site boundary. It is unclear at this stage if these mine entries are connected to any unrecorded ironstone workings. It is not considered likely that they are connected to coal workings.

No faults, fissures or breaklines are known to affect the development site (existing school site). It is therefore concluded that there are no viable pathways via fractured rock or fault zones.

Based on the desk-based research, the potential risk from coal mine gas emissions at the development site (existing school site) is considered below:

Figure 13.1 Decision Support Tool for Mine Gas Risk Assessment, included within CL:AIRE document Good Practice for Risk Assessment for Coal Mine Gas Emissions, dated October 2021 includes a flow chart to aid the risk assessment process and decision making.

Stage 1 of the flow chart asks if the site is within a Coal Authority defined Coal Mining Reporting Area. Since the existing school site is located within a Coal Authority defined Coal Mining Reporting Area the flow chart then asks if all of the following statements are true:

- Mine entries >50m from site boundary,
- Workings >150m depth,
- No faults or other potential pathways connecting surface to deeper unflooded workings,
- Outside area of past or probable shallow workings on Coal Authority viewer.

Based on the information gained from the desk-based research, it is considered that the Stage 1 statements are not all true. The CL:AIRE document ‘Good Practice for Risk Assessment for Coal Mine Gas Emissions dated October 2021’ therefore states that an additional stage of assessment is required.

Due to the on-site entries, the potential for shallow coal mineworkings, and the recorded ironstone workings, following the next stage of assessment, the site falls within a high-risk zone.

4.4 MINING (CONTINUED)

In order to assess the potential ground gas risk at the site, a programme of ground gas monitoring has been carried out. A ground gas risk assessment is presented below in Section 10.6.

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK

The Envirocheck report records the nearest surface water feature to be located along the eastern boundary of the site. The OS Water Network Lines map indicates this to be Nant Morlais. An unnamed surface water feature flows from the north western site boundary towards another unnamed feature which flows approximately 20m to the west of the northern area of the site. This feature flows in a southerly direction into Nant Morlais. Nant Morlais flows into the River Taff which is located 907m to the southwest of the site.

The Natural Resources Wales groundwater vulnerability map and aquifer database classifies the bedrock beneath the existing school site as a Secondary 'A' Aquifer. Secondary 'A' Aquifers are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

The Natural Resources Wales groundwater vulnerability map and aquifer database classifies the superficial deposits beneath the existing school site as Secondary Aquifer-Undifferentiated. This classification is assigned in cases where it has not been possible to attribute either category A or B to a soil type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the material.

A perched water body could be encountered within any made ground or more granular superficial deposits.

It is considered possible that the existing site drainage could act as a pathway for potential surface contaminants.

There are eleven effective discharge consents recorded within 250m of the site boundary. The nearest two are recorded in between the eastern and north-western areas of the site where Dwr Cymru trade and other matter discharges are received by a tributary of Nant Morlais.

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK (CONTINUED)

Three Dwr Cymru sewage discharges are recorded approximately 20m to the north of the site with the discharges received by Goitre Brook. One further consent is recorded approximately 210m to the north of the site where a Dwr Cymru sewage discharge is received by Goitre Stream. Five additional Dwr Cymru sewage discharges are recorded 220m to 224m to the southeast of the site with the discharges received by Morlais Brook.

The Envirocheck Report states that there are no water abstractions recorded within 1km of the site boundary.

Tables 3 and 4 present a summary of the hydrological features and key hydrogeological nature of the site.

Table 3: Summary of Site Hydrology

Feature	Distance from site (existing school site)	Flow	Classification	Abstraction	Discharge
Nant Morlais	Eastern boundary	Southerly	Inland river	No	River Taff
Unnamed surface water feature	Northwest boundary	Westerly	Inland river	No	Unnamed feature
Unnamed surface water feature	20m west	Southerly	Inland river	No	Nant Morlais
River Taff	907m southwest	Southerly	Inland river	No	Cardiff Bay
Surface run-off	On site	Flows into site drainage	N/A	No	Not known
Site Drainage	On site	Not known	N/A	No	Not known

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK (CONTINUED)

Table 4: Summary of Site Hydrogeology

Geological Unit	Aquifer Classification	Aquifer Characteristics	Source Protection Zone	Groundwater Abstractions
Topsoil/subsoil and/or made ground	Not classified	Highly variable permeability and porosity. Perched water may be present with variable flow directions.	No	None
Devensian Till	Secondary Aquifer-Undifferentiated	Variable low to moderate permeability and porosity with intergranular flow possible. High clay content likely to restrict flow.	No	None
South Wales Lower Coal Measures Formation	Secondary A Aquifer	Variable moderate permeability layers of coal-bearing mudstones/siltstones, and minor sandstones capable of supporting water supply at local level	No	None

The Groundwater Vulnerability map of the area indicates the secondary superficial aquifer to have a low vulnerability. The pollutant speed is low with well-connected fractures.

The Natural Resources Wales Flood Risk map as presented within the Envirocheck Report indicates that the site is not at risk to extreme flooding from rivers or sea without defences.

The Natural Resources Wales Surface Water Flood Risk map as presented within the Envirocheck Report indicates that parts of the eastern edge of the site along the path of Nant Morlais are at a high-risk to surface water flooding (1 in 30-year flood extent).

The BGS Groundwater Flooding Susceptibility map indicates the majority of the site to have limited potential for groundwater flooding to occur at surface. It also indicates that the southern area of the site and the northern and western edge of the north western area have potential for groundwater flooding of property situated below ground level.

4.6 LANDFILL SITES

The Envirocheck Report indicates that there is one historical landfill site located within the northern area of the site. Deposited waste included inert, industrial, commercial, household and special waste. The last input date was 31st December 1975.

4.6 LANDFILL SITES (CONTINUED)

There is one local authority recorded landfill site located within the northern area of the site at the location of the historic excavations. No further information is provided.

There are no Licensed Waste Management Facilities located within 250m of the site boundary.

There are records of four areas of potentially infilled land (non-water) within 250m of the site boundary. The areas are located 45m east, approximately 20m east of the northern area 74m north and approximately 80m north at the location of former shafts or coal levels and 232m southeast at the location of the former opencast site. There are records of thirteen areas of potentially infilled land (non-water) within 250m of the site boundary. The areas are located across the southwest corner of the site, approximately 17m to 120m west, 160m north and 186m, 207m and 238m southwest at the location of former surface water features or ponds.

4.7 POTENTIAL CONTAMINATION

4.7.1 Previous Uses

The various activities in the vicinity of the existing school site which may have resulted in ground or water resource contamination on this site are listed below in Tables 5 and 6. A summary of the potential contaminants can be found in the tables.

Table 5: Potential Contaminants

Land Use: Undeveloped land until the 1940's

Material/Process	Contamination/Hazard	Evidence
Undeveloped north area of the existing school site potentially utilised as agricultural land	No potential contaminants	Historical maps
Southern area of the existing school site divided into smaller land parcels during the 1940's with the area potentially used as allotment gardens, possible disturbed ground, use of imported materials and fertilizers containing ash	Metals, semi metals, non-metals, PAH, asbestos	Aerial photo
Disturbed areas of ground and excavations within the northwest areas and evidence of deposited material of unknown origin	Metals, semi metals, non-metals, PAH, asbestos	Historical maps

4.7 POTENTIAL CONTAMINATION (CONTINUED)

Land Use: Spoil mound/refuse heap within southwest area during the 1950's and refuse tip within the northwest area by the 1960's		
Material/Process	**Contamination/Hazard**	**Evidence**
Imported material of unknown origin placed within the southwest area during the 1950's	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Small building constructed on the southern edge of the northern site area of the existing school site which was indicated to be a ruin by the 1950's. Construction may have utilised imported materials of unknown origin	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Majority of the northern site area of the existing school site remained undeveloped	No potential contaminants	Historical maps
Disturbed ground within the northwest area indicated to be refuse tips by the edition of the map dated 1963-1964	Metals, semi metals, non-metals, PAH, asbestos, Petroleum Hydrocarbons (VPH/EPH) and Ammoniacal Nitrogen.	Historical maps
Land Use: Construction of the school by 1967, and regrading of the northwest area		
Material/Process	**Contamination/Hazard**	**Evidence**
Construction of the school buildings across the eastern area which would have caused ground disturbance and may have utilised imported materials of unknown origin	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Reprofiling of the spoil heap across the southwest area of the existing school site in order to construct a level plateau to utilise as sports fields.	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Localised areas in the vicinity of the school buildings if boiler rooms are present which may include fuel/oil tanks	Petroleum Hydrocarbons-fuels/oils	Anecdotal
Made ground or in-situ materials in the vicinity of any electrical transformers or substations	Polychlorinated Biphenyls (PCB's)	Historical maps
Regrading of the former refuse tip area to create level plateaux which would have disturbed the ground and may have utilised additional imported materials of unknown origin	Metals, semi metals, non-metals, PAH, asbestos, Petroleum Hydrocarbons (VPH/EPH) and Ammoniacal Nitrogen.	Historical maps

4.7 POTENTIAL CONTAMINATION (CONTINUED)

4.7.2 Existing Uses

The existing school site is currently operational as a school with the school buildings located within both the northern and southern areas. Grass covered playing fields are also present, with a large sports field located within the southwest area. The northwest area remains undeveloped, and grass covered. The existing site uses would not add any additional contamination concerns.

4.7.3 Adjacent Site Uses

Table 6: Potential Contaminants : Adjacent Site Uses

Potential Contamination Source	Boundary	Associated Contaminants and Hazards
Residential development and allotment gardens	Eastern	No Potential Contaminants
Residential development	Southern	No Potential Contaminants
Residential development, Gwaunfarren Primary School and undeveloped land	Western	No Potential Contaminants
Recreation ground	Northern	No Potential Contaminants

4.8 OTHER ENVIRONMENTAL ISSUES

The Envirocheck Report indicates that no environmentally sensitive land has been identified within 500m of the site boundary.

The Envirocheck Report indicates that one Local Authority Pollution Prevention and Control is in place within 250m of the site boundary for a petrol filling station located 192m to the southeast.

The Envirocheck Report indicates that there have been no pollution incidents to controlled waters recorded on site but one within 250m of the site boundary. A Category 2-Significant Incident involving an unknown pollutant was recorded 204m to the south of the site.

There have been no substantiated pollution incidents registered on site but one recorded within 250m of the site boundary. The incident was recorded 223m to the southeast of the existing school site where inert materials and waste (clay and soil) caused a significant impact on water and no impact on air or land.

4.8 OTHER ENVIRONMENTAL ISSUES (CONTINUED)

There have been no prosecutions relating to controlled waters or to authorised processes recorded on site or recorded within 500m of the existing site boundary.

There is one active contemporary trade directory entry located within 250m of the site boundary. The entry is for domestic appliance servicing and repair located 126m to the southeast.

At the time of the site investigation, Japanese Knotweed was observed on the area of the site west of Galon Uchaf Road. It is not known if any further invasive plants are present on site. A full vegetation survey of the entire site should be carried out, and a scheme for the eradication and removal of invasive plant species will be required.

5.0 PRELIMINARY CONCEPTUAL SITE MODEL

5.1 RISK ASSESSMENT FRAMEWORK

In order to be consistent with current UK government policies and legislation, it is necessary to identify, assess, estimate, evaluate, and take appropriate action to deal with land contamination, in accordance with the procedures specified in the Environment Agency guidance Land Contamination Risk Management (LCRM) published in October 2020. This replaces the now withdrawn 'Model Procedures for the Management of Land Contamination CLR-11' (Environment Agency 2004).

The risk assessment process is designed to provide a reasoned, structured and pragmatic mechanism for the identification of any potential human health and controlled waters risks associated with land contamination and where necessary to develop a robust remediation strategy to ensure protection of the sensitive receptors (human health of future residents, controlled waters, etc).

In accordance with LCRM, the term 'land contamination' is defined as:

- All land affected by contamination – land that might have contamination present which may, or may or may not, meet the statutory definition of contaminated land,
- Land determined as contaminated land under Part 2A of the Environmental Protection Act 1990.

LCRM provides a tiered approach to risk assessment, comprising a preliminary risk assessment (including the development of an initial conceptual site model), a generic quantitative risk assessment and a detailed quantitative risk assessment. For each tier of risk assessment, the following steps must be followed:

1. Identify the hazard - establish contaminant sources,
2. Assess the hazard – use a source-pathway-receptor linkage approach to determine if there is potential for unacceptable risk,
3. Estimate the risk – predict what degree of harm or pollution may result and how likely it is to occur, and
4. Evaluate the risk – decide whether a risk is unacceptable.

LCRM also provides definitions of the following terms:

- Hazard – a property or situation that in particular circumstances could lead to harm or pollution,

5.1 RISK ASSESSMENT FRAMEWORK (CONTINUED)

- Risk – a combination of the probability, or frequency of occurrence of a defined hazard and the magnitude of the consequences of the occurrence,
- Risk assessment – the formal process of identifying, assessing and evaluating the health and environmental risks that may be associated with a hazard,
- Risk management – the formal process to identify, assess and determine the risks, and to select and take action to mitigate them.

The three essential elements to any risk are defined by LCRM as follows:

- A contaminant, or pollutant, that is in, on, or under the land and that has the potential to cause harm, or pollution (Source)
- A route by which a receptor is, or could be affected by a contaminant (Pathway)
- A receptor, i.e. something that could be adversely affected by a contaminant, for example a person, controlled waters, an organism, an ecosystem, or Part 2A receptors such as buildings, crops or animals (Receptor).

In order for there to be a potential risk, all three of the above elements must be present. If there is a source of contamination and a receptor (for example a resident or site user), then there is only a potential risk if there is a pathway linking the two. Such an active pathway is known as a relevant pollutant linkage. It is possible for the same contaminant to be linked to a receptor via a number of pathways, and hence it is important that all relevant pollutant linkages, to both human health and controlled waters, are separately identified on a site in order that a comprehensive conceptual model can be formed and ultimately a robust remediation strategy designed.

Current practice during Generic Quantitative Risk Assessment of land affected by contamination is to use generic soil screening values based on the appropriate proposed end use. These usually comprise risk based Soil Guideline values (SGVs) or Generic Assessment Criteria (GACs) derived by the Environment Agency's Contaminated Land Exposure Assessment Model (CLEA). The SGVs and the supporting technical guidance were developed in order to assist in the assessment of long term risk to human health from the exposure to contaminated soils.

Revised Statutory Guidance, published in 2012, to support Part 2A of the Environmental Protection Act 1990, introduced a new four category system for classifying land under Part 2A. Category 1 includes land where the level of risk is clearly unacceptable and Category 4 includes land where the level of risk posed is considered to be acceptably low. Under Part 2A, land would be determined as contaminated if it falls within Categories 1 or 2.

5.1 RISK ASSESSMENT FRAMEWORK (CONTINUED)

The revised Part 2A Statutory Guidance was accompanied by an Impact Assessment that identified a role for new 'Category 4 Screening Levels' (C4SLs) that would provide a simple test for determining when land is suitable for use and definitely not contaminated land. A Policy Companion Document including the C4SLs was published in March 2014 (England) and May 2014 (Wales).

The C4SLs have been based on the CLEA methodology and derived using the CLEA model, with modified toxicological and exposure parameters. To date, C4SLs have been released for six substances (arsenic, cadmium, chromium (VI), lead, benzo(a)pyrene and benzene).

The C4SLs have been derived on the assumption that where they exist, they will be used as generic screening criteria within generic quantitative risk assessment.

Following publication of the C4SLs, Land Quality Management (LQM), in conjunction with the Chartered Institute for Environmental Health (CIEH) released Suitable 4 Use Levels (S4ULs) in January 2015.

The S4ULs have been derived in accordance with UK legislation, and using a modified version of the Environment Agency's CLEA software. As such, the S4ULs are based on the concept of minimal or tolerable risk as described in Human Health Toxicological Assessment of Contaminants in Soil (Science Report SR2, Environment Agency 2009a).

S4ULs have been derived for a wider number of substances.

In addition to the existing SGVs, C4SLs and S4ULs, Atkins ATRISK^{soil} also provide a set of Soil Screening Values. These are currently intended to be used in conjunction with SGVs, although they intend to update these values in line with the C4SLs in due course.

We have reviewed all sets of values and intend to use the most appropriate assessment criteria as Tier 1 screening values in the first instance. Where a published S4UL is available, and considered appropriate, this will be used in the first instance.

5.2 CONCEPTUAL MODEL FRAMEWORK

The preliminary stage of the risk assessment process is to develop and define a conceptual site model, based on the desk study and any existing site investigation data. This is used to establish any potential contaminant sources, identify existing and future receptors and assess if there are any potentially active pathways by which a potential risk may be present.

5.2 CONCEPTUAL MODEL FRAMEWORK (CONTINUED)

The preliminary conceptual site model will be developed and refined as site specific data is gathered, such as actual ground conditions and chemical data, resulting in a more robust conceptual understanding of the site.

5.3 CRITICAL SENSITIVE RECEPTOR – HUMAN HEALTH

The proposed redevelopment of the site is for an educational end-use with the development of a new school. Since this is a non-standard land use, a residential without homegrown produce end-use has been considered in the first instance as a conservative assessment. Therefore, the critical sensitive receptor from a human health perspective is an on-site residential receptor without homegrown produce.

In accordance with S4UL/C4SL and CLEA guidance for a standard residential scenario without homegrown produce, the critical sensitive receptor for a residential end-use risk assessment is a female child, with exposure from 0 to 6 years.

The standard residential without homegrown produce end-use conceptual model defined by S4UL/C4SL and CLEA is assumed to be suitable for the purposes of this assessment.

5.4 CRITICAL SENSITIVE RECEPTOR – CONTROLLED WATERS

Based on the proposed redevelopment of the site for an educational end-use, and the findings of the desk study, the critical sensitive receptor from a controlled water perspective is groundwater within the Secondary ‘A’ Aquifer of the South Wales Lower Coal Measures Formation.

By considering groundwater as the critical sensitive receptor for controlled waters, the groundwater/hydrogeological risk assessment will also be protective of the Nant Morlais.

5.5 POTENTIAL CONTAMINANT SOURCES

As identified in the desk study, the existing school site remained largely undeveloped until the school was constructed in the 1970’s. Prior to construction of the school the southern area was utilised as allotment gardens during the 1940’s and a spoil heap was deposited within the southwest area during the 1950’s. There is evidence of earthworks within the site associated with the construction of the school buildings and the reprofiling of the spoil heap.

5.5 POTENTIAL CONTAMINANT SOURCES (CONTINUED)

Within the land west of Galon Uchaf Road, historical excavations were located within the area which were subsequently infilled and utilised as a landfill. There is also evidence of reprofiling of the topography which is likely to have involved the use of imported materials of an unknown origin in order to create level plateaux for existing sports pitches.

The potential types of contaminants of concern are listed below:

- Metals, semi-metals, and inorganics within the shallow made ground
- Polyaromatic hydrocarbons (PAH) within the shallow made ground
- Petroleum Hydrocarbons (VPH/EPH) within the shallow made ground/in-situ materials in the vicinity of any boiler rooms which may include fuel storage tanks
- Petroleum Hydrocarbons (VPH/EPH) and ammoniacal nitrogen within the made ground in the vicinity of the landfill area
- Polychlorinated Biphenyls (PCBs) within the shallow made ground/in-situ materials in the vicinity of electrical transformers/substation
- Asbestos within the shallow made ground.

5.6 POTENTIAL EXPOSURE PATHWAYS

Potential exposure pathways for the critical receptors (both human health and controlled waters) are listed below:

- Dermal contact with soil and/or soil derived dust
- Ingestion of soil
- Inhalation of soil derived dust
- Inhalation of vapours – indoor and outdoor air
- Leaching of contaminants from made ground to groundwater
- Transportation of contaminants within groundwater.

In addition, the following exposure pathways have also been considered:

- Ground gas generation and migration
- Building materials durability.

5.7 SUMMARY OF CONCEPTUAL EXPOSURE MODEL

A preliminary conceptual exposure model has been developed for the site. This is based on the findings of the desk study and historical review and includes all potential sources, pathways and receptors that may be present on site. Those that have been identified as being potentially active require further investigation in the form of sampling and testing of soils and groundwater, followed by appropriate risk assessment.

The preliminary conceptual exposure model will be reviewed and refined following the completion of the site works and laboratory testing.

The preliminary conceptual exposure model is presented below in Table 7.

5.7 SUMMARY OF CONCEPTUAL EXPOSURE MODEL (CONTINUED)

Table 7: Preliminary Conceptual Exposure Model

Source		Receptor	Pathway	Potentially Active Pathway?
Origin	Contaminant			
General Made Ground of unknown origin and historical land uses	Metals, semi-metals, non-metals, PAH, asbestos	Site User – human health	Dermal Contact with made ground/dust	✓
			Ingestion of soil	✓
			Inhalation of dust	✓
			Inhalation of vapours – indoor/outdoor	✓
	Metals, semi-metals, inorganics, PAH	Groundwater quality	Leaching from made ground	✓
	Metals, semi-metals, inorganics, PAH	Surface water quality	Transportation within groundwater	✓
Made ground/in-situ materials in the vicinity of any boiler rooms and/or fuel/oil tanks within the existing school site	Petroleum hydrocarbons-fuels/oils	Site User – human health	Dermal Contact with material/dust	✓
			Ingestion of soil	✓
			Inhalation of dust	✓
			Inhalation of Vapours – indoor/outdoor	✓
	Petroleum hydrocarbons-fuels/oils	Groundwater quality	Localised spillage	✓
	Petroleum hydrocarbons-fuels/oils	Surface water quality	Transportation within groundwater	✓
Made ground/in-situ materials in the vicinity of any transformers or electrical substations within the existing school site	Polychlorinated Biphenyls (PCBs)	Site User – human health	Dermal Contact with material/dust	✓
			Ingestion of soil	✓
			Inhalation of dust	✓
			Inhalation of vapours – indoor/outdoor	✓
		Groundwater quality	Leaching from material	✓
		Surface water quality	Transportation within groundwater	✓

5.7 SUMMARY OF CONCEPTUAL EXPOSURE MODEL (CONTINUED)

Table 7: Preliminary Conceptual Exposure Model (Continued)

Source		Receptor	Pathway	Potentially Active Pathway?
Origin	Contaminant			
Made ground within the area of the former historical landfill	Metals, semi-metals, non-metals, PAH, asbestos, petroleum hydrocarbons and ammoniacal nitrogen	Site User – human health	Dermal Contact with made ground/dust	✓
			Ingestion of soil	✓
			Inhalation of dust	✓
			Inhalation of vapours – indoor/outdoor	✓
	Metals, semi-metals, non-metals, PAH, asbestos, petroleum hydrocarbons and ammoniacal nitrogen	Groundwater quality	Localised spillage	✓
	Metals, semi-metals, non-metals, PAH, asbestos, petroleum hydrocarbons and ammoniacal nitrogen	Surface water quality	Transportation within groundwater	✓
Made Ground of unknown origin and natural ground	pH and water soluble sulphate	Building Materials Durability	Direct contact	✓
Ground Gas – organic, gas producing materials present within site or adjacent to the site or mine gas	Methane, carbon dioxide	Human health	Accumulation of gases in confined spaces, and/or migration off site, leading to asphyxiation, or risk of explosion	✓

6.0 THE SITE INVESTIGATION

6.1 FIELDWORKS

A site investigation was designed in accordance with BS 5930:2015+A1:2020, the Code of Practice for Site Investigations, BS10175:2011+A2:2017, the Code of Practice for Investigation of Potentially Contaminated Sites, and 'Development of Land Affected by Contamination: A Guide for Developers' prepared by Welsh Local Government Association (WLGA)/Natural Resources Wales (NRW) Land Contamination Working Group, 2017.

The site investigation was also designed to provide information to support and refine the preliminary conceptual site model/conceptual exposure model.

The site investigation was undertaken in two phases.

During May and June 2021 an initial phase of site investigation was undertaken across the area of the site comprising Galon Uchaf Park (to the west of Galon Uchaf Road). This phase of site investigation included:

- 9 No. machine excavated trial pits, 7 No. machine excavated trial trenches and 8 No. windowless sample boreholes,
- Soil infiltration testing undertaken at 3 No. trial pit locations,
- Sampling of soil/fill for laboratory chemical testing,
- Sampling of soil/fill for laboratory geotechnical testing,
- Monitoring for concentrations of methane, carbon dioxide, oxygen, hydrocarbon vapours and gas flow, and monitoring groundwater levels.

During August 2022, a second phase of site investigation was undertaken, across the area of the site comprising the existing Bishop Hedley School campus (to the east of Galon Uchaf Road). This phase of site investigation included:

- 23 No. machine excavated trial pits, 27 No. windowless sample boreholes, 14 No. hand dug trial pits/foundation inspection pits, and 25 No. CBR tests,
- Soil infiltration testing undertaken at 21 No. trial pit locations, and falling head percolation tests undertaken at 4 No. windowless sample borehole locations,
- Sampling of soil/fill for laboratory chemical testing,
- Sampling of tarmac for laboratory chemical testing,
- Sampling of soil/fill for laboratory geotechnical testing,
- Monitoring for concentrations of methane, carbon dioxide, oxygen, hydrocarbon vapours and gas flow, and monitoring groundwater levels.

6.1 FIELDWORKS (CONTINUED)

The site investigation locations were specified by Cambria Consulting.

For ease of reference, the exploratory holes undertaken across land west of Galon Uchaf Road and across the northern and southern school site areas are provided below in Tables 8, 9 and 10 respectively.

Table 8: Exploratory Hole Locations – Land West of Galon Uchaf Road

Trial Pits	Windowless Sample Holes	CBR/TRL Tests	Trial Trenches
TP09	WS08		TT02
TP10	WS09		TT05
TP11	WS10		TT06
TP12	WS11		TT07
TP13	WS12		TT08
TP14	WS13		TT09
TP15	WS14		TT10
TP16	WS15		
TP17			

Table 9: Exploratory Hole Locations – Existing School Site (North)

Trial Pits	Windowless Sample Holes	CBR/TRL Tests	Trial Pits Hand Dug Foundation Inspection Pits
SA101	WS171	CBR121	TP151-HD
SA102	WS172	CBR122	TP153-HD
SA103	WS173	CBR123	TP154-HD
SA106	WS174	CBR124	TP155-HD
SA107	WS175	CBR125	TP156-HD
SA108 (reverted to WS)	WS176	CBR126	TP157-HD
SA109	WS177	CBR127	TP158-HD
SA110	WS178	CBR128	
SA111	WS179	CBR129	
SA112 (reverted to WS)	WS180	CBR130	
SA113 (reverted to WS)	WS181	CBR131	
SA114 (reverted to WS)	WS182	CBR132	
TP141	WS183	CBR133	
	WS184	CBR134	
	WS185		
	WS186		
	WS187		

6.1 FIELDWORKS (CONTINUED)

Table 10: Exploratory Hole Locations – Existing School Site (South)

Trial Pits	Windowless Sample Holes	CBR/TRL	Trial Pits Hand Dug Foundation Inspection Pits
SA201	WS271	CBR221	TP247-HD
SA202	WS272	CBR222	TP251-HD
SA203	WS273	CBR223	TP252-HD
SA204	WS274	CBR224	TP254-HD
SA205	WS275	CBR225	TP255-HD
SA206	WS277	CBR226	TP256-HD
SA207	WS278	CBR227	TP257-HD
SA208	WS279	CBR229	
SA209	WS280	CBR230	
SA210	WS281	CBR231	
SA211		CBR232	
SA212			
SA213			
TP245			

BRE365 soil infiltration testing was carried out at TP13, TP14, TP17 and TP21, and the at trial pit locations referenced SA in the Tables 9 and 10 above. The soil infiltration test trial pits were excavated utilising a JCB 3CX backhoe excavator and extended to depths of between 0.7m and 2.5m below existing ground level. All excavated trial pits were carried out in areas laid to grass or soft landscaping. Clean water was rapidly added to the 24 trial pits from an agricultural tanker, and the water level measured over an extended period of time.

It should be noted that access to soakaway test locations SA108, SA112, SA113 and SA114 was not possible with the plant required to undertaken BRE365 soil infiltration tests. At these locations, a falling head percolation tests was undertaken within windowless sample boreholes instead, at depths of typically between 0.7m and 2.0m.

Two additional trial pits were excavated without the requirement for soil infiltration testing. The trial pits (referenced TP141 and TP245) were excavated to depths of 2.50m and 2.40m respectively.

The windowless sample boreholes (Referenced WS in Tables 8, 9 and 10) were drilled using a tracked competitor windowless sampling rig and located at readily accessible areas across the site.

6.1 FIELDWORKS (CONTINUED)

The windowless sample boreholes were drilled to depths of between 0.5m and 5.0m below existing ground level. Several of the windowless sample holes refused at shallow depths on buried obstructions in the made ground or owing to the stiffness/density of the natural soils, if encountered. In-situ SPT/CPT testing was carried out at regular intervals within the windowless sample boreholes.

It should be noted access could not be afforded to WS276 due to its location being situated within the footprint of an existing school building. Due to the specific nature of the exploratory hole locations an alternative location was not attempted, and the hole was abandoned. Additionally, on the location plans provided by Cambria Consulting a windowless sample location in the eastern part of the southern site area was not numbered, and was subsequently labelled during the fieldworks as WS281, continuing from the last listed position.

Following completion of the windowless sample drilling, ground gas and/or groundwater monitoring standpipes were installed in a number of locations positioned across the site, and a period of monitoring was commenced.

A summary of the monitoring standpipe installation is presented below in Table 11.

Table 11: Groundwater and Ground Gas Monitoring Installations

Groundwater Monitoring Standpipes	Ground Gas Monitoring Standpipes	Combined Groundwater/Ground Gas Monitoring Standpipes
WS172	WS08	WS277
WS177	WS10	
WS182	WS14	
WS184	WS15	
WS185	WS171	
WS271	WS174	
WS272	WS178	
WS273	WS181	
WS274	WS275	
WS279		
WS280		

The trial trenches (referenced TT in Table 8 above) were excavated in the vicinity of the reports mine entries on the land west of Galon Uchaf Road. The purpose of the trial trenches was to try and investigate the presence of these features. No mine entry exploratory excavations were undertaken within the grounds of existing school, due access constraints.

6.1 FIELDWORKS (CONTINUED)

CBR testing using TRL (Transport Research Laboratory) dynamic cone penetrometer testing was completed at 25 No. locations (referenced CBR in Tables 9 and 10 above) and deployed from ground level to 1.0m depth.

The dynamic cone penetrometer is an instrument designed for the rapid measurement of the structural properties of near surface soils. Where necessary, surface topsoil in soft landscaped areas was removed by hand excavation prior to undertaking the test. In areas of existing hardstanding (concrete and tarmac) the surface hardstanding was cored and the windowless sample advanced to 0.3m depth prior to undertaking the test.

A total of 14 No. hand dug trial pits/foundation inspection pits (referenced TP151-HD, etc. in Tables 9 and 10 above) were undertaken at various locations around the perimeter of the existing school buildings. The hand dug trial pits were excavated to approximately 1.0m below ground level and were intended to investigate the current nature of the existing school building foundations.

Representative soil samples were taken from the trial pits and windowless sample boreholes for laboratory chemical and geotechnical testing and placed in the appropriate sample containers deemed suitable for the analysis required. Strict protocols were adopted during this process to limit the cross contamination of samples.

The fieldworks were supervised by a qualified Geotechnical Engineer from Intégral Géotechnique (Wales) Limited who also logged the trial pits / boreholes and prepared their detailed engineering logs in accordance with the requirements of BS5930:2015+A1:2020. The engineering logs provide descriptions of the materials encountered in accordance with BSEN ISO 14688-1 (2002) and 14689-1 (2003) for soils and rocks respectively.

The approximate locations of the trial pits, trial trenches, windowless sample boreholes, CBR/TRL probes, hand dug pits and soil infiltration tests / falling head percolation tests are shown in Figures 4a, 4b and 4c, respectively.

The trial pit and trial trenches logs, windowless sample borehole logs and CBR/TRL probe results are presented in Appendices F, G and H respectively. Schematic drawings of the hand dug trial pits/foundation inspection pits are presented in Appendix I. The results of the soil infiltration tests and falling head percolation tests are presented in Appendix J.

6.2 FIELD OBSERVATIONS

Across the existing school site, made ground was observed at a number of exploratory hole locations. The made ground is characterised by the presence of anthropogenic materials including brick, ash, and various forms of slag. However, no visual or olfactory evidence of potential significant contamination was recorded.

Across the land to the west of Galon Uchaf Road, made ground was encountered at each exploratory location. The made ground was laterally and vertically variable and contained domestic refuse/landfill waste. Suspected fragments of asbestos containing material (ACM) were also encountered within the domestic refuse/landfill waste at trial pits TP15 and TP17.

6.3 LABORATORY CHEMICAL TESTING

Representative soil samples were taken from the trial pits, trial trenches and windowless sample boreholes across the site, stored at the appropriate temperature and dispatched to the MERTS and UKAS accredited laboratories of i2 analytical for laboratory chemical testing within 24 hours.

The samples were tested for a range of contaminants that reflects the historical use of the site, the findings of the desk study and the preliminary conceptual site model/conceptual exposure model. A list of the soil testing carried out is given below:

Beryllium	Cadmium
Total Chromium	Hexavalent Chromium (VI)
Copper	Lead
Mercury	Nickel
Vanadium	Zinc
Arsenic	Boron
Selenium	Elemental Sulphur
Total Cyanide	Total Sulphate
Sulphide	Water Soluble Sulphate
pH	Monohydric Phenol
Polyaromatic Hydrocarbons (PAH)	

All soil samples were also screened for asbestos.

Selected samples from the domestic refuse/landfill area were also tested for Petroleum Hydrocarbons (VPH/EPH) and Ammoniacal Nitrogen.

6.3 LABORATORY CHEMICAL TESTING (CONTINUED)

Representative samples of bituminous hardstanding were also taken from four locations within the existing school site, as specified by Cambria Consulting, and tested for the presence of coal tars.

The results of all the soil laboratory chemical testing are presented in Appendix K.

The potential for leachate generation and migration to groundwater was identified as being active in the preliminary conceptual site model within the domestic refuse/landfill area. Therefore, selected samples from the domestic refuse/landfill were also tested for their leachability characteristics for a similar suite of contaminants as the soils.

The results of the leachate testing are presented in Appendix L.

6.4 LABORATORY GEOTECHNICAL TESTING

During the site investigation works representative soil samples of the made ground/re-worked ground and/or natural ground were also taken and dispatched to the MCERTS and UKAS accredited laboratories of ATS for laboratory geotechnical testing including moisture content, pH, water soluble sulphate, Atterberg Limits, optimum compaction and particle size distribution.

The results of the laboratory geotechnical testing are presented in Appendix M.

6.5 GROUNDWATER LEVEL MONITORING

Groundwater level monitoring standpipes were installed in 11 No. windowless sample boreholes, and these have been monitored at approximately fortnightly intervals following completion of the fieldworks.

The results of the groundwater level monitoring are presented in Appendix N.

6.6 IN-SITU GAS MONITORING

Gas monitoring standpipes were installed in 9 No. windowless sample boreholes, and these have been monitored at fortnightly intervals following completion of the fieldworks.

6.6 IN-SITU GAS MONITORING (CONTINUED)

The gas monitoring programme for the land west of Galon Uchaf Road commenced on 15th June 2021 and the gas monitoring programme for the existing school site commenced on 12th September 2022.

The concentration levels of methane, carbon dioxide and oxygen were measured in the standpipes during each visit by using a GA5000 Landfill Gas Analyser. In addition, gas flow rate and the atmospheric pressure at the time of the field measurements were also recorded.

Gas monitoring was carried out over a range of atmospheric pressures to include at least one reading in low and/or falling pressure, in accordance with the recommendations made in CIRIA Report C665.

The results of the field gas monitoring are presented in Appendix O.

7.0 GROUND CONDITIONS

7.1 SHALLOW SOIL PROFILE – EXISTING BISHOP HEDLEY SCHOOL CAMPUS

Beneath the existing school campus site area, the encountered ground conditions typically comprised a variable thickness of made ground/reworked ground, as a result of historical terracing/reprofiling earthworks for the existing school development, over natural in-situ glacial till deposits.

Bedrock was not encountered during the site investigation works.

In areas of soft landscaping, topsoil was encountered to typically 0.1/0.4m depth. In areas of hardstanding, a surface layer of tarmac/bituminous material was present to typically 0.1m over a layer of granular sub-base.

The topsoil and hardstanding were typically underlain by made ground/reworked ground to depths of between approximately 0.5m and 4.0m below existing ground level. Locally, the base of the made ground/reworked ground could not be proven due to encountering buried obstructions. The variable thickness of made ground/reworked ground is considered to represent the previous cut and fill earthworks undertaken to create development plateaux for the existing school buildings, car parking areas and playing fields.

The reworked made ground materials comprised natural materials that had been cut and placed as fill. Locally, made ground containing anthropogenic materials such as slag, concrete, plastic, glass and wood were present overlying the reworked made ground materials.

Natural in-situ glacial till soils were encountered from typically between 0.5/4.0m and proven to >2.0/>4.8m depth. Locally, the made ground/reworked ground were absent and the topsoil was observed to be directly underlain by natural in-situ glacial soils.

All trial pits remained generally stable throughout the duration of excavation. However, local instability was observed to be associated with cobble and boulder removal. Some instability was noted within the windowless sample holes specifically within the granular made ground deposits.

7.1.1 Topsoil

A veneer of topsoil was encountered within areas of soft landscaping located around the school buildings. The topsoil was encountered from ground level and proven to depths ranging between 0.1m and 0.4m below existing ground level.

7.1 SHALLOW SOIL PROFILE – EXISTING BISHOP HEDLEY SCHOOL CAMPUS (CONTINUED)

The topsoil varied in composition across the site but generally comprised soft light brown slightly sandy silt or soft black / brown gravelly clayey silt. Frequent roots and rootlets were recorded throughout. The gravel constituents were reflective of the underlying natural stratum and typically comprised fine to coarse angular to sub-rounded sandstone, siltstone, and mudstone.

7.1.2 Surface Hardstanding and Sub-Base

Thin surface coverings of hardstanding material were encountered within the vicinity of the school buildings, areas of car parking and access roads. The hardstanding areas generally comprised a thin layering of tarmac / asphalt. The hardstanding areas were proven to depths of typically 0.1m, but up to 0.16m depth across the site.

Windowless sample WS277 was located within a courtyard area between the school buildings and was laid to a surface covering of concrete patio slabs underlain by a lean sand mix concrete. The hardstanding material local to WS277 was proven to a depth of approximately 0.09m below existing ground level.

The sub-base materials encountered comprised loose grey angular gravel of limestone, loose grey, brown and green sandy gravelly clayey sand/ gravel with a low cobble content of sub-angular concrete and compact greyish brown, red, grey, and black silty sandy clayey gravel. The gravel constituents of the sub-base typically comprised angular to sub-rounded bituminous material, brick, concrete, vesicular and vitreous slag, limestone, sandstone, and mudstone/ siltstone.

The majority of the sub-base material encountered underlying areas of hardstanding existed as a fill material reminiscent of typical made ground material. Similarly, some areas of hardstanding were underlain by deeper made ground fill deposits and no specific sub-base layer was recorded (see WS173). However, a typical sub-base material was recorded underlying the areas of hardstanding local to WS273 where the coarse angular gravel of limestone was recorded.

7.1.3 Made Ground and Reworked Ground

Made ground/reworked ground was encountered across the majority of the site and existed as variable compositions of reworked fill materials and/or anthropogenic made ground. The made ground/reworked ground was encountered at depths ranging from typically 0.3/0.7m to 0.5/4.0m depth.

7.1 SHALLOW SOIL PROFILE – EXISTING BISHOP HEDLEY SCHOOL CAMPUS (CONTINUED)

Locally, where topsoil or hardstanding was absent, made ground/reworked ground was encountered from ground level. Locally, the base of the made ground/reworked ground could not be proven due to obstructions in some areas of the site made ground was absent.

The reworked made ground materials comprised natural materials that had been cut and placed as fill. Locally, made ground containing anthropogenic materials such as slag, concrete, plastic, glass and wood were present overlying the reworked made ground materials.

The reworked ground varied locally in composition but generally comprised firm, stiff and firm to stiff, locally soft and locally stiff grey, brown and greyish brown mottled orange and yellow silty sometimes sandy, gravelly friable / fissured clay. Low to high cobble and boulder content of angular to sub-rounded sandstone and mudstone was encountered. The gravel constituents comprised fine to coarse angular to sub-rounded sandstone, siltstone and mudstone with fine and medium gravel sized lithorelicts of mudstone.

Windowless sample holes WS174 and WS176 encountered localised peaty clays within the made ground at approximate depths of 0.8m and 1.8m respectively. Lower SPT N values were recorded at these depths, likely to be reflective of these materials.

Locally, the reworked materials were overlain by a layer of made ground containing anthropogenic materials such as slag concrete, plastic, wood, etc. Where present, the anthropogenic made ground was encountered to typically 0.5/1.5m depth overlying re-worked made ground. Locally, the base of the anthropogenic made ground could not be proved due to obstructions. The anthropogenic made ground / fill comprised varying compositions of soft to firm, firm to stiff locally firm and stiff to very stiff / loose, medium dense and loose to medium dense greyish brown and brownish grey mottled yellow and orange sandy gravelly clayey silty silt /clay or gravel. Low to high cobble and boulder contents were recorded which typically comprised angular to sub-rounded sandstone, siltstone, mudstone, concrete, brick, and vesicular slag. The gravel constituents were recorded as fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone, brick, concrete, shale, coal, vesicular and vitreous slag, and bituminous material. Miscellaneous inclusions of material were encountered including plastic, metal, wood, glass, ceramics, and rebar.

Within windowless sample hole WS179, the reworked made ground materials were underlain at 1.8m depth by made ground comprising colliery spoil. The windowless sample hole refused in this material at 2.0m depth.

7.1 SHALLOW SOIL PROFILE – EXISTING BISHOP HEDLEY SCHOOL CAMPUS (CONTINUED)

Uncorrected SPT N values within the made ground ranged between 3 and 50. The higher range of SPT N values were typically derived within the reworked materials.

Laboratory plasticity testing undertaken on samples of reworked materials recorded a plasticity index in the range of 17% and 21%. The calculated modified plasticity indices of 12.2% and 16.8%, indicates this stratum has a low volume change potential.

7.1.4 Natural Soils

Natural glacial till soils were encountered from typically between 0.5/4.0m and proven to >2.0/>4.8m depth. Locally, the made ground/reworked ground were absent and the topsoil was underlain directly by in-situ natural glacial soils.

The natural soils underlying the site generally comprised firm to stiff and stiff, locally soft, brownish grey / reddish brown / greyish brown, mottled orange and yellow sandy gravelly sometimes friable clay. Low to high cobble and boulder contents were recorded throughout the natural soils observed as angular to sub-rounded mudstone, siltstone and sandstone. The gravel constituents of the natural soils comprised fine to coarse angular to sub-rounded sandstone, siltstone and mudstone with fine and medium gravel sized lithorelicts of mudstone.

Local to TP245 medium dense brownish grey silty gravel was encountered at 1.10m below ground level and proven to a depth of >2.40m.

Uncorrected SPT N values within the natural soils ranged between 6 and 50.

Laboratory plasticity testing undertaken on samples of natural soils recorded a plasticity index in the range of 17% and 23%. The calculated modified plasticity indices of 12.4% and 19.3%, indicates this stratum has a low volume change potential.

7.2 SHALLOW SOIL PROFILE – LAND WEST OF GALON UCHAF ROAD

Beneath the land west of Galon Uchaf Road, the ground conditions are typically characterised by a veneer of topsoil underlain by variable made ground deposits typically comprising domestic refuse/landfill waste.

Natural in-situ glacial soils were locally encountered below the made ground.

During the excavation of the trial pits, trial trenches and drilling of the windowless sample boreholes, instability was encountered resulting in collapse of trial pits and borehole sides.

7.2 SHALLOW SOIL PROFILE – LAND WEST OF GALON UCHAF ROAD (CONTINUED)

7.2.1 Topsoil

Within the land west of Galon Uchaf Road, a veneer of topsoil was encountered at each exploratory location. The topsoil comprised of slightly gravelly sandy organic clayey silt to silty clay with rootlets. Locally the topsoil contained gravel and fragments of coal, ash and brick.

The topsoil was encountered at a thickness of between 0.10m and 0.20m.

7.2.2 Made Ground

Beneath the majority of the area, the made ground consisted of general landfill waste.

The landfill waste typically consisted of loose dark grey to black slightly silty very sandy gravel of ash, clinker, burnt shale, slag, mudstone with frequent glass, metal, timber, brick, plastic, black bag waste etc.

Suspected ACM was noted within trial pit TP15 at a depth of 2.0m below existing ground level and within TP17 at a depth of 1.0m below existing ground level.

An organic odour was noted within trial pits TP14 and TP15.

It should be noted that beneath the northern area, the domestic waste/landfill waste such as frequent glass, metal, timber, brick, plastic, black bag waste etc. was not encountered along the western boundary of Plateau 2. However, made ground still consisted of gravel of ash, clinker, slag, brick, and burnt shale with fragments of glass and ceramic.

Locally the made ground was encountered as soft or firm to stiff silty slightly sandy slightly gravelly to gravelly clay.

During the excavation of the trial pits, trial trenches and drilling of the windowless sample boreholes, instability was encountered resulting in collapse of trial pits and borehole sides.

In-situ SPT testing undertaken within the windowless sample boreholes, indicate the landfill waste have uncorrected SPT ‘N’ values of between 2 and 10.

The base of the made ground/landfill waste was not generally proven in the trial pits and windowless sample boreholes, with the windowless sample borehole terminating at a depth of 5.0m below existing ground level.

7.2 SHALLOW SOIL PROFILE – LAND WEST OF GALON UCHAF ROAD (CONTINUED)

Possible natural strata were encountered underlying the landfill waste in TP17 at a depth of 1.6m below existing ground level. The possible natural strata consisted of firm grey brown slightly gravelly clay.

Natural strata consisting of glacial till was encountered in trial pits TP11, TP12, TP13, TT2 and TT10 at depths of between 1.0m and 2.7m below existing ground level.

A sample of cohesive made ground, obtained from trial trench TT2 indicates that the cohesive made ground has a moisture content of 19.6%, a plasticity index of 25% and a modified plasticity index of 21.7%.

The results of the laboratory Proctor compaction testing indicates that the cohesive made ground has an optimum moisture content of 13.7% and a maximum dry density of 1.75mg/m^3. Based on this, at the time of the site works the cohesive made ground would be considered as being wet of optimum with regards to compaction.

7.2.3 Natural Soils

In-situ glacial till deposits was proven in trial pits TP11, TP12, TP13, TT2 and TT10 and only at depths of between 1.0m and 2.7m below existing ground level.

Where encountered, the glacial till consisted of firm, firm to stiff, grey locally mottled brown slightly gravelly slightly sandy silty clay with the gravel consisting of predominantly sandstone and occasional siltstone.

Limited information was obtained about the glacial till deposits from the trial pits and windowless sample boreholes, due to the thickness of the overlying made ground deposits.

The results of the Atterberg Limit testing on samples of the glacial till deposits indicate plasticity indices of between 15% and 25% and modified plasticity indices of between 9.5% and 25%. Therefore, in accordance with NHBC standards, the modified plasticity indices indicate that the glacial till deposits are regarded to be of low to medium volume change potential.

7.3 HAND DUG TRIAL PITS

Hand excavated foundation inspection pits were excavated adjacent to the exterior walls of buildings across both the northern and southern sites of the existing school site, as detailed in Figures 4a and 4b.

The trial pits were excavated to depths of 0.2m and 0.8m below ground level.

The findings, logs, and photographic evidence of the hand dug trial pits are presented in Appendix I.

7.4 GROUNDWATER

A summary of the groundwater strikes encountered during the intrusive site investigation works is summarised below in Table 12.

Table 12: Summary of Groundwater Strikes

TP/BH	Depth to groundwater strike below ground level (m)	Groundwater Strike Type
SA205	1.8	Minor Seepage
SA212	2.0	Minor Seepage
WS174	4.5	Standing in borehole (after drilling)
WS176	3.0	Standing in borehole (after drilling)
WS179	1.3	Standing in borehole (after drilling)
TP17	1.6	Minor Seepage
WS08	2.4	Inflow
WS15	2.5	Inflow

Within the underlying clay soils, minor groundwater seepages were encountered at variable depths. A water strike was noted within WS176 immediately after drilling within the peaty/ organic made ground. The water strike noted within WS179 was recorded within the reworked clay material. A further water strike was noted within the natural clay soils at TP17. This is likely indicative of a perched water body/pocket held within the cohesive soils.

The groundwater conditions are based on observations made at the time of the fieldwork. It should be noted that groundwater levels may vary due to seasonal and other effects.

Following completion of the fieldworks, five return visits to monitor the ground water levels at multiple locations has been undertaken across the site.

A summary of the groundwater levels measured within the boreholes during each monitoring visits is provided below in Tables 13 and 14.

7.4 GROUNDWATER (CONTINUED)

Table 13: Summary of Groundwater Depths (Groundwater Monitoring Standpipes)					
Borehole Ref:	Depth (m bgl)				
	Round 1 *12/09/22*	Round 2 *28/09/22*	Round 3 *03/11/22*	Round 4 *30/11/2022*	Round 5 *14/12/2022*
WS172	3.73	3.75	3.12	3.05	3.01
WS177	Dry	Dry	1.51	1.42	1.39
WS182	Dry	Dry	1.42	1.45	1.40
WS184	Dry	Dry	1.21	1.20	1.22
WS185	Dry	Dry	0.52	0.48	0.41
WS271	Dry	Damp	1.52	1.61	1.59
WS272	Dry	Dry	1.23	1.21	1.19
WS273	0.08	0.14	0.08	0.21	0.19
WS274	2.71	2.67	1.96	1.87	1.89
WS279	Dry	Dry	3.12	3.05	2.96
WS280	0.21	0.25	0.11	0.25	0.28

Table 14: Summary of Groundwater Depths (Gas Monitoring Standpipes)						
Borehole Ref:	Depth (m bgl)					
	Round 1 *12/09/22*	Round 2 *28/09/22*	Round 3 *19/10/22*	Round 4 *03/11/22*	Round 5 *30/11/22*	Round 6 *14/12/22*
WS171	1.08	1.07	2.06	2.06	2.06	2.06
WS174	0.61	0.63	4.04	4.04	4.04	4.04
WS178	Dry	Dry	2.03	2.03	2.03	2.03
WS181	1.43	1.44	2.04	2.04	2.04	2.04
WS275	Dry	Dry	1.74	1.74	1.74	1.74
WS278	2.34	2.21	2.81	2.81	2.81	2.81
WS277	0.22	0.23	1.38	1.38	1.38	1.38

It should be noted that the gas monitoring wells installed within the windowless sample boreholes within the land west of Galon Uchaf Road were noted to be dry during all six monitoring visits.

7.5 SOIL INFILTRATION TESTING

Soakaway testing was carried out in 24 No. trial pits at locations specified by Cambria Consulting.

7.5 SOIL INFILTRATION TESTING (CONTINUED)

Due to access constraints 4 No. trial pits locations were substituted for windowless sample hole locations where a falling head percolation test was undertaken (SA108, SA112, SA113 and SA114).

It should be noted that locations SA104 and SA105 were absent on the location plans provided by Cambria Consulting.

The trial pits were rapidly filled with water from a tractor-towed agricultural bowser and the water level monitored over a period of time. The windowless sample holes were rapidly filled with a 5-gallon plastic container and the water level monitored over a period of time.

Insufficient infiltration was observed in all test locations (with the exception to TP14), and it was not possible to calculate a design infiltration rate/soil permeability.

At trial pit TP14, a design infiltration rate of 8.3×10^{-5} m/s was calculated. The design infiltration rate provided is based on a worst case scenario. At this trial pit location, due to the thickness of the made ground along with instability of the trial pit sides, infiltration into the underlying natural glacial till deposits would not be possible.

The soil infiltration test and falling head percolation test calculation sheets are presented in Appendix J.

The soil infiltration test results and falling head percolation test results are specific to the location and depths of the tests undertaken.

It should also be noted that this initial testing should only be regarded as indicative. If it should be proposed to use soakaways for this site, then more extensive follow-up tests will be required and should fully comply with BRE 365, in order to confirm the suitability of the site and to satisfy the local authority.

7.6 LABORATORY GEOTECHNICAL TESTING

Laboratory geotechnical testing was carried out on a number of bulk samples of reworked material and superficial soils recovered from trial pits, trial trenches and windowless sample holes.

The results of the laboratory geotechnical testing are included within Appendix M.

7.6 LABORATORY GEOTECHNICAL TESTING (CONTINUED)

A summary of the geotechnical test results for the made ground and natural soils is presented below in Table 15.

Table 15: Summary of Laboratory Geotechnical Testing

Made Ground

Summary of Atterberg Limit Testing

Location	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 425um	Modified Plasticity Index (%)	Volume Change Potential
TT2	19.6	45	20	25	63	21.75	Low

Summary of Dry Density/Optimum Moisture Content Relationship

Location	Initial Water Content (%)	Maximum Dry Density (Mg/m^3)	Optimum Moisture Content (%)
TP09	36.1	1.38	21.5

Reworked Ground

Summary of Atterberg Limit Testing

Location	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 425um	Modified Plasticity Index (%)	Volume Change Potential
SA212	18.3	37	16	21	73	17.2	Low
WS172	9.6	32	15	17	72	12.2	Low
WS176	29.3	39	18	21	80	16.8	Low
WS181	14.3	33	16	17	76	12.9	Low
WS187	26.0	36	17	19	85	16.2	Low

Natural Soils

Summary of Atterberg Limit Testing

Location	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 425um	Modified Plasticity Index (%)	Volume Change Potential
SA111	10.2	35	16	19	68	12.9	Low
SA211	20.0	37	16	21	73	15.3	Low
SA212	18.3	37	16	21	82	17.2	Low
WS271	15.2	35	17	18	94	16.9	Low
SA202	18.3	45	20	25	77	19.3	Low
SA110	11.3	45	22	23	62	14.3	Low
SA103	12.8	35	17	18	73	13.0	Low
SA205	19.6	35	18	17	73	12.4	Low

7.6 LABORATORY GEOTECHNICAL TESTING (CONTINUED)

Natural Soils					
Summary of Particle Distribution (Sample Portions %)					
Location	Boulders/Cobbles	Gravel	Sand	Silt	Clay
SA202	0	14	24	62	
SA110	0	28	25	47	
SA103	0	19	27	54	
SA205	0	21	23	56	

Summary of Dry Density/Optimum Moisture Content Relationship			
Location	Initial Water Content (%)	Maximum Dry Density (Mg/m^3)	Optimum Moisture Content (%)
SA202	18.3	1.82	16.8
SA110	11.3	1.92	13.9
SA103	12.8	1.86	14.0
SA205	19.6	1.89	14.2

7.7 IN-SITU CBR TEST RESULTS

In-situ CBR testing was carried out across the upper metre at 25 No. locations across the site.

Although the physical nature of the sub-surface at these specific locations was not investigated it is likely the CBR results are reflective of the made ground underlying the site.

It should be noted that no location was designated DCP228 on the site plans by Cambria Consulting and hence this location is not named within the results.

It should also be noted that locations DCP130, DCP223, DCP226, and DCP227 could not be advanced 300mm into the sub-surface. Additionally, DCP124, DCP 131, DCP222, DCP 224, DCP225 and DCP232 could not be advanced 500mm into the sub-surface.

Locations where penetration of the TRL CBR Probe could not be advanced to the appropriate depths have not been included within the CBR average data mentioned below.

A copy of the results of the TRL CBR testing is presented in Appendix H.

The results indicate average CBR values across the northern site at approximately 0.3m to 0.5m depth within the presumed made ground of between 14.8% and 32.2%, respectively.

7.7 IN-SITU CBR TEST RESULTS (CONTINUED)

The results indicate average CBR values across the southern site at approximately 0.3m to 0.5m depth within the presumed made ground of between 12.4% and 10.2% respectively.

7.8 MINE ENTRIES EXPLORATORY EXCAVATIONS

A total of 7 No. trial trenches were excavated across the land west of Galon Uchaf Road, targeting reported locations of several mine entries.

The trial trenches targeted both the mine entry positions provided by the Coal Authority and the mine entry positions derived through a georeferencing exercise (as detailed above in Section 4.4).

7.8.1 Adit 305207-006 and Adit 305207-007

Adits 305207-006 and 305207-007 are indicated to be located within the eastern and south-eastern areas of Plateau 2 (on land west of Galon Uchaf Road).

Trial trenches TT02 (4.4m) and TT05 (4.2m) were excavated to investigate the presence of Adit 305207-006. Trial trench TT02 encountered made ground to a depth of 2.0m below existing ground level and the made ground was further underlain by cohesive glacial till deposits proven to a depth of 4.4m below existing ground level. Trial trench TT05 encountered made ground to the base of the excavation. No evidence of Adit 305207-006 was encountered.

Trial trenches TT06 (4.2m) and TT07 (4.5m) were excavated to investigate the presence of Adit 305207-007. Made ground was encountered to the base of each excavation. No evidence of Adit 305207-007 was encountered.

7.8.2 Adit 305207-023

Adit 305207-023 is indicated to be located within the southern area of Plateau 1 (on land west of Galon Uchaf Road).

Trial trenches, TT08 (4.0m) and TT09 (4.0m) were excavated to investigate the presence of Adit 305207-023. Made ground was encountered to the base of each excavation. No evidence of Adit 305207-023 was encountered.

7.8 MINE ENTRIES EXPLORATORY EXCAVATIONS (CONTINUED)

7.8.3 Shaft 305207-008

The Coal Authority records indicates that Shaft 305207-008, which is considered to be an old air pit, is located close to the eastern boundary Plateau 2 (on land west of Galon Uchaf Road). However, the results of the georeferencing exercise indicates that this mine entry could be potentially located further east within the rear garden/s of the properties located off Galon Uchaf Road.

Trial trench TT10 (1.5m) was excavated to investigate the presence of Shaft 305207-008.

The excavation encountered made ground to a depth of 1.0m below exiting ground level which was further underlain by glacial till deposits. However, no evidence of a potential shaft / air pit was encountered.

7.8.4 Shaft 305207-009 and Shaft 305207-022

It was not possible to investigate the presence of Shaft 305207-009 and Shaft 305207-022 during the site investigation works due to access constraints. It is recommended that additional works are undertaken to locate these features once access becomes available.

It is recommended that further investigations are undertaken to try and locate the mine entries on site, either through further bulk excavations, or by drilling a series of rotary open hole boreholes.

8.0 CONTAMINATION

8.1 AVERAGING AREAS

In order to assess the laboratory test results reliably and in context, the data have been grouped into an averaging area. An averaging area (or area of interest) is that area of soil to which a receptor is exposed or which otherwise contributes to the creation of hazardous conditions. This may be an area of historical industrial usage, a soil type, or a specific proposed end use.

In the case of this analysis, the averaging area has been determined according to the proposed school end use.

8.2 SOIL CONTAMINATION

The Suitable 4 Use Levels (S4ULs) published by LQM have been adopted as critical concentrations against which soil contaminant concentrations can be compared. In the absence of additional published S4ULs, the Category 4 Screening Levels (C4SLs) derived by DEFRA and Soil Screening Values (SSVs) derived by Atkins ATRISK^{soil} for a residential without home grown produce end use have been adopted, where considered appropriate.

It should be noted that published thresholds for a school end use are unavailable and it has been considered that a residential without the consumption of home grown produce end use has been deemed appropriate for the site, as a conservative assessment in the first instance.

Since the results of the testing indicate total organic carbon content (TOC) in the range of 0.2% to 5.5%, the results have been compared to the respective guidelines, where applicable, for 1% soil organic matter content.

The soil test results for made ground, topsoil and in-situ natural ground have been summarised and are shown in Appendices P, Q and R respectively. In addition, samples of bituminous hardstanding material have been tested for coal tars and the results are presented in Appendix K.

8.2.1 Made Ground - General

A total of 16 samples of the made ground were tested for contamination, including asbestos in accordance with the findings of the desk study.

8.2 SOIL CONTAMINATION (CONTINUED)

The results of the laboratory testing indicate that the majority of the analysed chemical elements or compounds are present at concentrations below the appropriate thresholds. However, the initial screening indicates exceedances of beryllium and several PAH compounds.

Beryllium was detected at elevated concentrations in 6 out of the 16 made ground samples and detected at concentrations between 2.0mg/kg and 6.7mg/kg, elevated above the adopted threshold of 1.7mg/kg (S4UL 1%SOM).

Benzo(a)pyrene was detected at elevated concentrations in two made ground samples and detected at concentrations of 7.6mg/kg and 4.2mg/kg, elevated above the adopted threshold of 3.2mg/kg (S4UL 1% SOM).

Benzo(b)fluoranthene was detected at elevated concentrations in two made ground samples and detected at concentration of 9.1mg/kg and 6.9mg/kg, elevated above the adopted threshold of 3.9mg/kg (S4UL 1% SOM).

Dibenzo(ah)anthracene was detected at elevated concentrations in 5 out of the 16 made ground samples and detected at concentration between 0.32mg/kg and 1.1mg/kg, elevated above the adopted threshold of 0.31mg/kg (S4UL 1% SOM).

Asbestos was not detected with the screened samples.

8.2.1 Made Ground – Domestic Refuse/Landfill Waste

The results of the laboratory testing indicates that the majority of the analysed chemical elements or compounds are present at concentrations below the appropriate thresholds. However, the initial screening indicates exceedances of beryllium, arsenic and some PAH compounds within the domestic refuse/landfill waste.

Within the made ground samples, elevated concentrations of beryllium, arsenic and the PAH compounds naphthalene, dibenzo(ah)anthracene and benzo(b)fluoranthene were detected above the relevant thresholds.

Beryllium was detected at elevated concentrations in 6 out of the 14 made ground samples and detected at concentrations between 1.9mg/kg and 3.6mg/kg elevated above the adopted threshold of 1.7mg/kg (S4UL 1% SOM).

8.2 SOIL CONTAMINATION (CONTINUED)

Arsenic was detected at elevated concentrations in two made ground samples, obtained from TP10 at 1.5m depth and WS13 at 0.5m depth. Arsenic was detected at concentrations of 42mg/kg and 51mg/kg in TP10 and WS13, respectively, elevated above the adopted threshold of 40mg/kg (S4UL 1% SOM).

A single exceedance of benzo(b)fluoranthene was detected in a made ground sample from WS10 at 0.5m depth. Benzo(b)fluoranthene was detected at a concentration of 5.1mg/kg, elevated above the adopted threshold of 3.9mg/kg (S4UL 1% SOM).

Dibenzo(ah)anthracene was detected at elevated concentrations in 3 out of the 14 made ground samples and detected at concentrations between 0.4mg/kg and 0.79mg/kg, elevated above the adopted threshold of 0.31mg/kg (S4UL 1% SOM).

Naphthalene was detected at elevated concentrations within two made ground samples from TP14 at 0.5m depth and TP15 at 0.5m depth. Naphthalene was detected at concentrations of 5.1mg/kg and 2.5mg/kg in TP14 and TP15, respectively, elevated above the adopted threshold of 2.3mg/kg (S4UL 1% SOM).

Selected samples were also analysed for petroleum hydrocarbons. The results of the laboratory testing indicate that the analysed petroleum hydrocarbon bands are detected at concentrations below the appropriate thresholds.

Asbestos fibres identified as loose chrysotile fibres were detected within a made ground sample from WS11 at 0.6m depth. Quantification testing undertaken on the sample indicated that the asbestos fibres were at <0.001% asbestos by weight.

During the excavation of the trial pits and drilling of the windowless sample boreholes, suspected asbestos containing material (ACM) was noted within trial pit TP15 at a depth of 2.0m below existing ground level and within TP17 at a depth of 1.0m below existing ground level. The results of the laboratory asbestos identification testing indicated that the ACM obtained from TP15 consisted of chrysotile hard/cement type material. The results indicated that no asbestos was detected within the suspected ACM obtained from TP17.

No further exceedances were detected within the samples of made ground.

8.2 SOIL CONTAMINATION (CONTINUED)

8.2.2 Topsoil

The results of the laboratory testing of topsoil samples indicate that the analysed chemical elements or compounds are present at concentrations below the appropriate thresholds.

Asbestos was not detected within the screened topsoil samples.

It should be noted that no topsoil samples were obtained from the land west of Galon Uchaf Road.

8.2.3 In-situ Natural Ground

No visual or olfactory evidence of contamination of the in-situ natural ground was identified during the drilling of the windowless sample boreholes and excavation of the trial pits. At the time of writing this report one sample of natural ground had been tested and all analysed chemical elements and compounds were below the relevant thresholds. Asbestos was not detected within the sample. It is considered likely that concentrations of determinants within the natural ground are likely to be naturally occurring and as such, the natural ground poses no significant threat to human health or the environment.

8.2.4 Coal Tar Testing

Four samples (WS171, WS173, WS274 and WS281) of bituminous hardstanding from the existing school site were tested for coal tar content, including PAH compounds. A copy of the coal tar test results is presented in Appendix K.

The results indicate a maximum benzo(a)pyrene concentration of 6.5mg/kg (0.00065%).

The samples were also tested for coal tar and total residue. A summary of the results is provided below in Table 16.

Table 16: Summary of Coal Tar Content Testing

Exploratory Location	Coal Tar	Total Residue (mg/kg)	Total Residue (%)
WS171	Not identified	11	0.0011
WS173	Not identified	40	0.004
WS274	Not identified	23	0.0023
WS281	Not identified	740	0.074

The results indicate that coal tar was not identified and the maximum total residue was 740mg/kg (0.074%.

8.2 SOIL CONTAMINATION (CONTINUED)

Based on these results, the materials are not classified as hazardous waste since the coal tar content is <0.1% and the benzo(a)pyrene concentration is <0.005%.

8.3 SOIL LEACHATE

Soil samples taken from across the area to the west of Galon Uchaf Road were tested for their leachable concentrations for a similar suite of contaminants as the soils. A copy of the leachate test results is presented in Appendix L.

The results have been screened against UK Drinking Water Standards and Freshwater Environmental Quality Standards (EQS) based on a worst case scenario.

A summary of the results and comparison against the screening criteria are presented in Appendix S.

The results of the laboratory leachate testing indicate that the majority of the contaminants are below the relevant thresholds. However, elevated concentrations of copper, lead, nickel, zinc and ammoniacal nitrogen were detected within the made ground samples the area.

Elevated concentrations of copper were detected in all four made ground samples obtained from Plateau 1 and 2 at concentrations of between 3.2ug/l and 5.6ug/l. The concentrations were elevated above the AA-EQS threshold of 1ug/l. The concentrations were below the UK Drinking Water Standard. Site specific PNECs (Predicted No-Effect Concentration) of between 17.92ug/l and 23.5ug/l has been calculated for copper with the Water Framework Directive M-BAT (Metal Bioavailability) Tool (using a function of dissolved organic carbon (DOC), calcium and pH). Since the maximum concentration of 5.6ug/l is below the minimum PNEC for copper of 17.92ug/l, it is considered that copper is not present at elevated concentrations.

Elevated concentrations of lead were detected in two of the made ground samples at concentrations of 2.5ug/l and 4.1ug/l in trial pits TP10 and TP17 respectively. The concentrations of lead were elevated above the AA-EQS threshold of 1.2ug/l. The concentrations were below the MAC-EQS and UK Drinking Water Standard. Site specific PNECs (Predicted No-Effect Concentration) of 5.89ug/l and 6.29ug/l has been calculated for lead (using a function of dissolved organic carbon (DOC)). Since the measured maximum concentration of 4.1ug/l is below the minimum PNEC for lead of 5.89ug/l, it is considered that lead is not present at elevated concentrations.

8.3 SOIL LEACHATE (CONTINUED)

Elevated concentrations of nickel were detected in all four made ground samples at concentrations of between 4.4ug/l and 9.7ug/l. The concentrations were elevated above the AA-EQS threshold of 4ug/l. The concentrations were below the MAC-EQS and UK Drinking Water Standard. Site specific PNECs (Predicted No-Effect Concentration) of between 10.68ug/l and 17.12ug/l has been calculated for nickel with the Water Framework Directive M-BAT Tool (using a function of dissolved organic carbon (DOC), calcium and pH). Since the maximum concentration of 9.7ug/l is below the minimum PNEC for nickel of 10.68ug/l, it is considered that nickel is not present at elevated concentrations.

Elevated concentrations of zinc were detected in all four made ground samples at concentrations of between 13ug/l and 53ug/l. The concentrations were elevated above the AA-EQS threshold of 10.9ug/l. The concentrations were below the UK Drinking Water Standard. Site specific PNECs (Predicted No-Effect Concentration) of between 25.18ug/l and 27.44ug/l has been calculated for zinc using the Water Framework Directive M-BAT Tool (using a function of dissolved organic carbon (DOC), calcium and pH). Since the recorded concentrations of zinc remain elevated above the calculated PNEC in the majority of the samples it is considered that elevated concentrations of zinc are still present.

Elevated concentrations of ammoniacal nitrogen were detected in three out of the four samples at concentrations of between 1800ug/l and 9100ug/l. The concentrations were elevated above the AA-EQS threshold of 200ug/l.

Concentrations of PAH and petroleum hydrocarbons were below the laboratory detection limit within each sample.

8.4 GROUND GASES

Ground gas was monitored on a fortnightly basis using a GA5000 Gas Analyser. The results of the gas monitoring programme are included in Appendix O. A summary of the results is given in the following Table 17.

Table 17: Summary of Ground Gas Results

Borehole	Maximum Methane Concentration (%)	Maximum Carbon Dioxide Concentration (%)	Minimum Oxygen Concentration (%)	Gas Flow Rate (l/hr)
WS171	0.4	1.4	16.4	<0.3
WS174	0.6	1.1	17.2	0.4

8.4 GROUND GASES (CONTINUED)

Table 17: Summary of Ground Gas Results (Continued)

Borehole	Maximum Methane Concentration (%)	Maximum Carbon Dioxide Concentration (%)	Minimum Oxygen Concentration (%)	Gas Flow Rate (l/hr)
WS178	<0.5	0.8	19.3	<0.3
WS181	0.3	2.3	18.1	<0.3
WS275	<0.5	2.2	17.8	<0.3
WS278	<0.5	0.8	17.8	<0.3
WS277	<0.5	<0.5	17.5	<0.3
WS08	<0.5	3.6	16.1	<0.3
WS10	9.4	5.8	1.2	0.1
WS14	1.5	3.7	9.4	0.1
WS15	6.1	4.6	3.8	0.1

The results show a maximum methane concentration of 9.4% and a maximum carbon dioxide concentration of 5.8%. A maximum gas flow rate of 0.4l/hr was measured during the gas monitoring programme.

In addition to the above, carbon monoxide and hydrogen sulphide concentrations are also measured. Results indicate the general absence of hydrogen sulphide, with concentrations below the limit of detection. During the six monitoring rounds a maximum carbon monoxide concentration of 14ppm was recorded.

9.0 REVISED CONCEPTUAL EXPOSURE MODEL

The preliminary conceptual exposure model has been reviewed and revised to reflect the findings of the site investigation and the results of the laboratory testing of soils, soil leachate and groundwater and gas monitoring. Pathways identified as a relevant pollutant linkage require appropriate risk assessment or mitigation measures (see Section 10).

Table 18: Revised Conceptual Exposure Model

Source		Receptor	Pathway	Preliminary Active Pathway? (see Sect. 5.7)	Relevant Pollutant Linkage	Justification/ Mitigation
Origin	Contaminant					
General Made Ground of unknown origin and historical land uses, topsoil and natural ground	Metals, semi-metals, non-metals, PAH, asbestos	Site User – human health	Dermal Contact with made ground/dust	✓	✓	Elevated concentrations of beryllium and PAH compounds identified within the made ground – risk assess.
			Ingestion of soil	✓	✓	
			Inhalation of dust	✓	✓	
			Inhalation of vapours – indoor/outdoor	✓	X	No elevated volatile compounds detected
	Metals, semi-metals, inorganics, PAH	Groundwater quality	Leaching from made ground	✓	✓	Elevated concentrations of beryllium and PAH compounds identified within the made ground – risk assess.
	Metals, semi-metals, inorganics, PAH	Surface water quality	Transportation within groundwater	✓	✓	

9.0 REVISED CONCEPTUAL EXPOSURE MODEL (CONTINUED)

Table 18: Revised Conceptual Exposure Model (Continued)

Source		Receptor	Pathway	Preliminary Active Pathway?	Relevant Pollutant Linkage	Justification/ Mitigation
Origin	Contaminant					
Made ground/in-situ materials in the vicinity of any boiler rooms and/or fuel/oil tanks	Petroleum hydrocarbons - fuels/oils	Site User – human health	Dermal Contact with made ground/dust	✓	✓/X	No evidence of tanks during the intrusive site investigation. As there is a potential for boiler rooms located within the existing school buildings, post demolition sampling below the building footprint is recommended.
			Ingestion of soil	✓	✓/X	
			Inhalation of dust	✓	✓/X	
			Inhalation of Vapours – indoor/outdoor	✓	✓/X	
	Petroleum hydrocarbons - fuels/oils	Groundwater quality	Localised spillage	✓	✓/X	
	Petroleum hydrocarbons - fuels/oils	Surface water quality	Transportation within groundwater	✓	✓/X	
Made ground/in-situ materials in the vicinity of any transformers or electrical substations	Polychlorinated Biphenyls (PCBs)	Site User – human health	Dermal Contact with made ground/dust	✓	✓/X	Small electrical transformer located on the south eastern site boundary. Post demolition sampling is recommended if it is proposed to remove the structure
			Ingestion of soil	✓	✓/X	
			Inhalation of dust	✓	✓/X	
			Inhalation of Vapours – indoor/outdoor	✓	✓/X	
	Polychlorinated Biphenyls (PCBs)	Groundwater quality	Localised spillage	✓	✓/X	
	Polychlorinated Biphenyls (PCBs)	Surface water quality	Transportation within groundwater	✓	✓/X	

9.0 REVISED CONCEPTUAL EXPOSURE MODEL (CONTINUED)

Table 18: Revised Conceptual Exposure Model (Continued)

Source		Receptor	Pathway	Preliminary Active Pathway?	Relevant Pollutant Linkage	Justification/ Mitigation
Origin	Contaminant					
Made ground within the area of the former historical landfill	Metals, semi-metals, non-metals, PAH, asbestos, petroleum hydrocarbons and ammoniacal nitrogen	School user (Resident) – human health	Dermal Contact with made ground/dust	✓	✓	Elevated concentrations of beryllium, arsenic, PAH compounds, asbestos fibres and ACM fragments identified within the made ground – risk assess.
			Ingestion of soil	✓	✓	
			Inhalation of dust	✓	✓	
			Inhalation of vapours – indoor/outdoor	✓	X	
	Metals, semi-metals, non-metals, PAH, asbestos, petroleum hydrocarbons and ammoniacal nitrogen	Groundwater quality	Leaching from made ground	✓	✓	Elevated leachate concentrations of zinc and ammoniacal nitrogen identified.
	Metals, semi-metals, non-metals, PAH, asbestos, petroleum hydrocarbons and ammoniacal nitrogen	Surface water quality	Transportation within groundwater	✓	✓	

9.0 REVISED CONCEPTUAL EXPOSURE MODEL (CONTINUED)

Table 18: Revised Conceptual Exposure Model (Continued)

Source		Receptor	Pathway	Preliminary Active Pathway?	Relevant Pollutant Linkage	Justification/ Mitigation
Origin	Contaminant					
Made Ground of unknown origin and natural ground	pH and water soluble sulphate	Building Materials Durability	Direct contact	✓	✓	Building materials will be in contact with made ground and natural ground – risk assess
Ground Gas – organic, gas producing materials	Methane, carbon dioxide	Human health	Accumulation of gases in confined spaces, and/or migration off site, leading to asphyxiation, or risk of explosion	✓	✓	Potential gas producing materials present. Gas monitoring programme undertaken – risk assess

10.0 RISK ASSESSMENT

10.1 METHODOLOGY

The risk of pollution, health effects or environmental harm occurring as a result of ground contamination is dependent upon three principal factors:

- The scale of the contamination sources,
- The presence of sensitive "receptors", e.g., Humans: health of the general public, site occupiers, redevelopment workers. Environment: flora, fauna, etc,
- The existence of migration pathways by which contaminants can reach the sensitive receptors.

This section assesses each of these factors in order to evaluate the overall level of risk and potential harm to receptors. The receptor may be human, a water resource, an eco-system or construction materials. Pathways connecting a perceived hazard to a receptor are referred to as exposure pathways.

The sources of contamination and the links connecting the hazards to the sensitive receptors will represent the basis for the risk assessment.

10.2 SOURCE-PATHWAY-RECEPTOR MODEL

The preliminary conceptual site model was based on the findings of the desk study. This was later reviewed and refined according to the findings of the site investigation, allowing for the ground conditions encountered and the results of laboratory testing of soil and groundwater. Any pathways considered to be inactive were removed from the model and all remaining potentially active pathways require risk assessment.

The pathways shown as potentially active in the Revised Conceptual Site Model in Section 9.0 above have been assessed below.

10.3 HUMAN HEALTH RISK ASSESSMENT

10.3.1 Site in its Present Condition

The site does not pose any risks to casual visitors or trespassers. The site is currently an existing school and areas of public open space.

10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

10.3.2 Future Site Users

The contamination test results and investigation observations show locally elevated concentration levels in the general made ground encountered beneath the existing school area of beryllium and three PAH compounds, benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(ah)anthracene. Asbestos was not detected in the screened samples.

Within the made ground consisting of general domestic waste/landfill waste encountered beneath the land west of Galon Uchaf Road elevated concentrations of beryllium, arsenic and PAH compounds were identified. Asbestos fibres identified as loose chrysotile fibres were detected within a made ground sample from WS11 at 0.6m depth. Quantification testing undertaken on the sample indicated that the asbestos fibres were at <0.001% asbestos by weight.

Suspected ACM was noted within trial pits TP15 and TP17. The results of the laboratory asbestos identification testing indicated that the ACM obtained from TP15 consisted of chrysotile hard/cement type material. The results indicated that no asbestos was detected within the suspected ACM obtained from TP17.

Given the elevated beryllium and PAH concentrations within the general made ground encountered and elevated beryllium, arsenic, PAH compounds, asbestos fibres and ACM in the landfill material, it is considered that a potential risk to human health may exist via the following relevant pollutant linkages:

- Dermal contact,
- Ingestion of soil or soil derived dust,
- Inhalation of soil bourn dust.

It is therefore considered necessary to protect end users from the elevated concentrations of beryllium, arsenic and PAH in the shallow made ground and locally asbestos fibres and ACM. It is considered necessary to break the above listed relevant pollutant linkages in order to remove the potential risk.

In the developed state, the majority of the northern area (north of Gwaunfarren Road) within the existing school will be covered by either the buildings footprint or areas of hardstanding. This would eliminate the exposure pathways between future site users and the underlying made ground.

10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

It is understood that the majority of the southern area of the existing school (south of Gwaunfarren Road) and the land west of Galon Uchaf Road will consist of sport pitches and areas of soft landscaping, along with the footprint of the sports hall and a car park.

It is recommended that a capping layer, of a minimum thickness of 600mm, of clean imported subsoil and topsoil is placed in all areas of soft landscaping and any sport pitches underlain by made ground. This should be placed above a robust high visibility anti-dig membrane. This would break all the above listed relevant pollutant linkages. It should be noted that the thickness and detailed design of the proposed capping layer will need to be agreed with the regulators prior to construction. An increased thickness of capping layer greater than 600mm may be required, particularly across the landfill materials.

It should be noted that sports pitches are proposed within the former landfill area to the west of Galon Uchaf Road and levels may be raised. The construction of the sports pitches and the raising of the ground levels are likely to provide a suitable capping layer between the underlying landfill materials and future end users.

It should be noted that the former school site is likely to be subject to cut and fill earthworks in order to create suitable development plateaux for the proposed new development. In areas of cut, where in-situ natural ground is exposed at the surface, the requirement for capping soils to be placed in soft landscaped areas could be reviewed, subject to the results of appropriate verification testing.

In areas of fill utilising the existing made ground where the existing made ground is exposed at the surface, the placement of capping soils to areas of soft landscaping in these areas will be required, as described above.

It is recommended that following demolition of existing buildings and site clearance, additional inspections and sampling should be undertaken and tested for a range of contaminants including asbestos. The risk assessment should be reviewed and amended following completion of the recommended additional sampling and testing.

Although no asbestos was detected within the screened samples from within the existing school area, given the age of the school buildings and services (i.e. constructed during a time where the use of asbestos in the construction industry was widespread), the presence of asbestos containing materials associated with the building structures, buried services, drainage runs and buried structures could be reasonably anticipated at this stage.

10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

It is therefore recommended that once the buildings are demolished and the floor slab and areas of hardstanding are broken out and removed, the underlying ground is visually inspected and handpicked of any identified asbestos containing materials.

Similarly, all redundant foundations, services runs/ducts, pits, basements etc should be inspected and handpicked for any identified asbestos containing materials.

These works should be carried out by a suitable contractor in accordance with an appropriate risk assessment and managed in accordance with the requirements of the Control of Asbestos Regulations (2012). Any handpicked asbestos containing materials should be disposed off-site at a suitable licenced facility as hazardous waste.

Following demolition and site clearance, it is recommended that supplementary site investigations are carried out to check for any residual contamination beneath the former buildings. The testing should include general contaminants as identified by the desk study, together with screening for asbestos. Locally, samples should also be tested for petroleum hydrocarbons from areas beneath any former boiler rooms, and PCBs from areas below any former electrical substations.

10.3.3 Construction Workers

With future site development works involving the excavation and removal of the made ground, there would be a risk to workers from contaminants in the soils.

Appropriate measures are therefore recommended for works involving the made ground and particularly the landfill waste which are known to be present beneath the area to the west of Galon Uchaf Road.

The following practical measures are required while excavating/re-using the made ground, particularly the landfill waste:

- Excavations will need to be regularly dampened down to prevent any dust that may contain asbestos becoming airborne
- Any excavated materials should be quarantined and regularly dampened down to prevent any dust that may contain asbestos becoming airborne
- Appropriate PPE to be worn by all workers and appropriate RPE when required.
- Asbestos/dust/air monitoring
- All works to be carried out in accordance with an appropriate risk assessment and managed in accordance with the requirements of the Control of Asbestos Regulations 2012.

10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

Additionally, a system should be established by which any 'unusual' materials that may be encountered are reported rapidly to the site management, so that the appropriate action may be taken, following specialist advice if necessary. An unusual material may be identified on site by colour, odour or physical nature.

Routine visual checks should be made for the presence of ACM particularly within the landfill material and for the handpicking of any occurrences.

Any visual ACM should be handpicked by an appropriate qualified asbestos awareness trained operative. All picked ACMs will need to be double bagged and disposed off-site at a suitable licensed facility as hazardous waste.

Normal good hygiene practices should be adequate to protect the health and safety of redevelopment workers, and should include:

- Minimum handling of materials;
- Washing of hands prior to all meal breaks, which should be taken in a designated clean area;
- The use of standard protective clothing such as boots and overalls and gloves, where considered relevant.

In dry weather, inhalation of dust and gases should be avoided preferably by the use of dust suppression techniques to minimise fugitive emissions and minimisation of exposed materials at any particular time.

All excavations should be regularly checked for safe atmospheres.

Reference should be made to the Health and Safety Executive document "Protection of Workers and the General Public during the development of contaminated land" for detailed guidance on these matters.

10.4 RISKS TO VEGETATION

The concentrations of phytotoxic contaminants in the shallow made ground materials, indicate the potential for adverse effects to vegetation.

Similarly, the physical nature of the existing made ground does not provide a suitable growing medium for vegetation.

10.4 RISKS TO VEGETATION (CONTINUED)

To ensure viable landscape areas by preventing upward migration of contaminants into the overlying soils, and in order to promote plant growth, any landscaped areas and any sport pitches underlain by made ground will require the provision of a minimum 600mm thick capping layer of clean, inert subsoil and topsoil materials, placed over a high visibility anti-dig membrane.

It should be noted that the thickness and detailed design of the proposed capping layer will need to be agreed with the regulators prior to construction. An increased thickness of capping layer greater than 600mm may be required, particularly across the landfill materials.

The construction of the sports pitches to the west of Galon Uchaf Road and the raising of the ground levels are likely to provide a suitable capping layer between the underlying landfill materials and future end users.

10.5 GROUNDWATER RISK ASSESSMENT

10.5.1 Existing Bishop Hedley School Campus

Localised elevated concentrations of beryllium and three PAH compounds (benzo(a)pyrene, benzo(b)fluoranthene and dibenzo(ah)anthracene) were encountered within the general made ground located beneath the existing school campus area.

The underlying natural ground comprised of generally cohesive glacial deposits.

Shallow groundwater was not generally encountered during the intrusive works, with only localised groundwater inflows encountered at depths of between 1.3m and 4.5m below existing ground level and often noted as seepages.

In the developed state, the site will be covered by either the building footprint or areas of hardstanding and the areas of soft landscaping and any sport pitches underlain by made ground will be covered by a minimum 600mm thick capping layer of clean inert imported soils, placed above a high visibility anti-dig membrane.

It is therefore considered that the potential for rainfall infiltration into the made ground, subsequent leachate generation from the made ground and the potential for vertical migration of unacceptable leachate concentrations to impact the underlying groundwater is considered to be low.

10.5 GROUNDWATER RISK ASSESSMENT (CONTINUED)

10.5.2 Land West of Galon Uchaf Road

The results of the leachate testing carried out on samples of the made ground/landfill materials encountered do not indicate widespread significant elevated leachable concentrations. However, locally, leachable concentrations of metals and ammoniacal nitrogen that may present a potential risk to groundwater quality, both to the underlying aquifers and nearby surface water features have been identified.

It is therefore recommended that a programme of groundwater sampling and testing is carried out, where landfill materials have been encountered, in order to establish the risk to groundwater quality and the need or otherwise for remediation works to the groundwater bodies underlying the site.

A detailed groundwater risk assessment is likely to be required in order to satisfy the requirements of the local planning authority and Natural Resources Wales.

10.6 GROUND GAS RISK ASSESSMENT

10.5.1 Existing Bishop Hedley School Campus

The results of the ground gas monitoring programme show a maximum methane concentration of 0.6% and a maximum carbon dioxide concentration of 2.3%. A maximum gas flow rate of 0.4l/hr was measured during the gas monitoring programme.

Results indicate the general absence of hydrogen sulphide, with concentrations below the limit of detection. During the six monitoring rounds a maximum carbon monoxide concentration of 14ppm was recorded.

In accordance with CIRIA Report C665 a Gas Screening Value (GSV) of 0.0092l/hour has been calculated. This GSV corresponds to gas Characteristic Situation 1 (CS1), which does not require any special gas protective measures.

Reference should also be made to BS8485+A1:2019.

In accordance with BS8485+A1:2019 and based on the results of the ground gas monitoring programme with the site being classified as CS1, for Development Type B and C (commercial/public), the minimum gas protection score is zero, and therefore no specific gas protection measures are required in regards to carbon dioxide and methane.

10.6 GROUND GAS RISK ASSESSMENT (CONTINUED)

However, as stated in Section 8.3, maximum carbon monoxide concentrations of 14ppm were detected during the gas monitoring programme.

The HSE Workplace Exposure Limit for carbon monoxide is 20ppm for long term exposure (8-hour timeweighted average period), which is not exceeded by the maximum recorded concentration. It is therefore considered that the potential risk from carbon monoxide within the proposed school buildings is considered to be low.

No radon protective measures are required.

10.5.2 Land West of Galon Uchaf Road

The results of the gas monitoring programme indicate a maximum methane concentration of 9.4% and a maximum carbon dioxide concentration of 5.8%. A maximum gas flow rate of 0.1l/hr has measured during the gas monitoring programme to date.

Depleted oxygen concentrations were detected within WS10, WS14 and WS15, where minimum oxygen concentrations of between 1.2% and 9.4% were recorded.

In accordance with CIRIA Report C665 a Gas Screening Value (GSV) of 0.0282l/hour has been calculated. This GSV corresponds to gas Characteristic Situation 1 (CS1). However, as the maximum methane concentrations exceeds 1% and the maximum carbon dioxide concentration exceeds 5% and considering the nature of the made ground encountered on site, considerations should be given to upgrading the classification to Characteristic Situation 2 (CS2).

It is therefore considered that gas protection measures would be required if any enclosed spaces/buildings are proposed within the land west of Galon Uchaf Road.

10.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY

10.7.1 Concrete Classification

The laboratory chemical test results for the chemicals water soluble sulphate and pH, which may adversely affect the durability of building materials is presented in Appendix K and M.

Evidence to date does not indicate any specifically aggressive conditions, but it would be reasonable to expect a degree of sulphate and acidic aggressiveness from the made ground.

10.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY (CONTINUED)

Made Ground – General

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for brownfield sites, the laboratory chemical test results indicate a characteristic value (taking the mean of the highest 20% of the test results) for water soluble sulphate within the made ground of 363mg/l.

Using Table C2 of BRE Digest SD1:2005, this characteristic value corresponds to Design Sulphate Class DS-1.

The groundwater regime of the site has been assessed as 'mobile' and a characteristic pH value within the made ground of 7.7 has been determined (adopting the mean of the lowest 20% of the test results). The Design Sulphate Class has been modified to give a site ACEC class of AC-1 for concrete structures constructed within the made ground.

Made Ground – Landfill Waste

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for brownfield sites, the laboratory chemical test results indicate a characteristic value (taking the mean of the highest 20% of the test results) for water soluble sulphate within the made ground of 1633mg/l.

Using Table C2 of BRE Digest SD1:2005, this characteristic value corresponds to Design Sulphate Class DS-3.

The groundwater regime of the site has been assessed as 'mobile' and a characteristic pH value within the made ground of 5.8 has been determined (adopting the mean of the lowest 20% of the test results). The Design Sulphate Class has been modified to give a site ACEC class of AC-4 for concrete structures constructed within the made ground.

Natural Soils

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for brownfield sites, the laboratory chemical test results indicate a characteristic value (taking the highest test result) for water soluble sulphate within the natural soils of 1700mg/l.

Using Table C2 of BRE Digest SD1:2005, this characteristic value corresponds to Design Sulphate Class DS-3.

10.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY (CONTINUED)

The groundwater regime of the site has been assessed as 'mobile' and a characteristic pH value within the made ground of 7.13 has been determined (adopting the mean of the lowest 20% of the test results). The Design Sulphate Class has been modified to give a site ACEC class of AC-3 for concrete structures constructed within the natural soils.

10.7.2 Water Services

Water supply pipes will need to be protected from any contamination present within the ground. In particular, the presence of organic contaminants (such as PAH) should be addressed when selecting pipe materials. Measures to protect the pipes will include clean backfill to trenches and possibly alternative material selection. Reference should be made to UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, document No. 10/WM/03/21. The final design and selection of the pipe and associated backfill should be agreed with the appropriate Regulator prior to installation.

In order to comply with the UKWIR guidance, specific sampling and testing along the actual line of the proposed water supply route may need to be carried out once this has been established.

10.8 WASTE DISPOSAL

Excavated materials generated by the development may be considered as waste and subject to waste controls.

Any re-use of excavated materials on-site should be undertaken in accordance with current waste and environmental legislation and which may require the production of an approved Materials Management Plan (MMP) prepared in accordance with the CL:AIRE Code of Practice.

It is recommended that a sustainable development strategy is adopted which reduces to a practicable minimum the generation of waste materials and the need for disposal to a licensed tip. Emphasis should be on recovery and re-use rather than disposal.

However, any waste or surplus materials that are generated will need to be classified in accordance with current EC regulations and Environment Agency guidance prior to disposal. It is the responsibility of the waste producer to classify the waste.

Based on the data obtained from the site investigation works, any waste materials comprising the existing general made ground are likely to be classified as non-hazardous waste. The existing natural ground are likely to be classified as non-hazardous waste.

10.8 WASTE DISPOSAL (CONTINUED)

The results of the laboratory testing of made ground – landfill waste samples have been assessed using the HazWasteOnline waste classification tool. A copy of the Waste Classification Report is presented in Appendix T. The classification report provides a waste classification for each sample and is produced in accordance with current UK guidance and legislation, including WM3 – Waste Classification May 2018.

The waste classification report indicates that the majority of the soil samples are classified as non-hazardous waste. However, one sample of made ground (from TP17) is classified as hazardous.

Any asbestos containing materials (ACMs) will be classified as hazardous waste. It should be noted that ACM was visually identified within the made ground at TP15. Asbestos fibres were detected within WS11.

The results of the coal tar testing on samples of bituminous materials/tarmac do not indicate the presence of coal tar and are likely to be classified as non-hazardous waste.

This classification is provisional and indicative of the likely waste classification based on the data obtained to date (including chemical composition, moisture content, etc.). It also assumes that the materials tested will be representative of future generated waste.

In order to minimise disposal, the materials generated should be segregated and examined, with appropriate testing as necessary, to enable the materials to be sorted or treated into lower classifications, with the resultant benefit of potentially generating re-use rather than disposal.

Once final waste sources and volumes are known, the waste stockpile to be disposed off-site will need to be classified in accordance with Environment Agency/Natural Resources Wales Waste Classification – Guidance on the Classification and Assessment of Waste Technical Guidance WM3 (2015). This is likely to require additional sampling and testing of the generated waste materials to provide an up to date current basis for classification.

Depending on the waste classification, waste acceptance criteria (WAC) testing may be required, in order to determine which class of landfill site the waste can be sent to.

It is recommended that the results of the waste classification and any WAC test results are sent to the intended licensed waste operator prior to disposal in order to confirm their classification and acceptance.

10.9 UNCERTAINTIES

It is important to recognise that there may be areas of contamination within the site that have not been found or that contaminants may be present at concentrations above those that have been found. It is also important to recognise that contamination may be localised and that no investigation, however comprehensive, is capable of finding such occurrences, other than by chance.

It should be noted that large areas of the site could not be investigated due to the presence of the existing school building, access constraints and buried services/easements.

The near-surface drainage patterns have not been fully established.

11.0 ENGINEERING CONSIDERATIONS AND RECOMMENDATIONS

11.1 DETAILS OF PROPOSED DEVELOPMENT

The redevelopment proposals include the demolition of the existing buildings (excluding the existing sports hall) on the Bishop Hedley Campus site area, followed by the construction of a new school building with associated access roads, areas of car parking and sports pitches. A new external plant room is also proposed.

It is understood that an existing sports hall building is to be retained and extended.

In addition to the above, a new sports pitch is also proposed on part of the existing Galon Uchaf Park, situated to the west of Galon Uchaf Road.

It should be noted that this report assumes that the proposed school buildings will be within the area of the existing school site and only a sport pitch would be constructed on land west of Galon Uchaf Road.

There are no current proposals for the southwest area of the existing school site at the location of an existing sports field.

The layout of the site has not been fully finalised at this stage and we understand it may be subject to change. The current site layout is illustrated in drawings by SNC-Lavalin and Cambria Consulting. The sheets are referenced below:

- BCA-ATK-VX-ZZ-DR-A-021001/ Rev.P.05
- Sheet 1/3 - BCA/CAM/ZZ/ZZ/GA/S/0051/ Rev.P04
- Sheet 2/3 - BCA/CAM/ZZ/ZZ/GA/S/0052/ Rev.P04
- Sheet 3/3 - BCA/CAM/ZZ/ZZ/GA/S/0053/ Rev.P04

The following recommendations should be reviewed once the final development layout, engineering levels and the extent of the required earthworks are confirmed.

An appropriate Materials Management Plan (MMP) and/or appropriate environmental permits may be required in order to undertake earthworks operations on site, particularly involving the landfill material. If environmental permits are required from NRW, it is recommended that early discussions are held with the permitting department at NRW in order to determine the most appropriate form of environmental permitting required.

11.2 SITE CONSTRAINTS

11.2.1 Existing Bishop Headley School Campus

- The majority of the area is underlain by made ground of varying thickness.
- Recorded shallow ironstone workings, and a coal outcrop identified beneath the site. Two shafts are also located on site.

11.2.2 Land West of Galon Uchaf Road

- The majority of area is underlain by made ground consisting of landfill waste material, including black bag waste, ACM and asbestos fibres.
- The base of the landfill waste was not proven.
- Appropriate environmental permits will be required from Natural Resources Wales to disturb/excavate and place back the landfill waste. It is therefore recommended that the landfill materials are not disturbed as this will result in the generation of landfill waste and if materials cannot be placed back, potentially impact the environment.
- Due to the encountered thickness of the made ground, the adits and shafts were not encountered within the trial trenches and further investigation is required to locate and prove the condition of the adits and shaft located beneath the area.
- Extensive Japanese Knotweed has been identified on the existing bank between plateau boundaries.
- General sloping nature of the site, both between plateaus and offsite. Note that slope stability assessments will be required once engineering ground levels have been established
- A settlement assessment will be required if site levels are to be raised.

11.3 SITE PREPARATION

11.3.1 Services and Demolition

Prior to works commencing on site, any services within the site area should be identified and either disconnected/removed, diverted or protected. Early discussions should be held with the service operators regarding any required diversionary works or any required protection measures / easements. Any diversionary works should be carried out under the supervision of, and to the specification of the appropriate Statutory Authorities. The resulting excavations should be backfilled with suitable acceptable granular fill material.

Prior to demolition of the existing buildings / structures, strategies should be developed to ensure the safe demolition and re-use of materials.

11.3 SITE PREPARATION (CONTINUED)

All buildings/structures to be demolished/dismantled should be subject to a 'Demolition Asbestos Survey', soft strip, and disposal of asbestos containing materials to a licensed tip.

11.3.2 Vegetation and Site Strip

Extensive areas of Japanese Knotweed have been identified on site, along the existing bank between the plateaus and along the western boundary on the land west of Galon Uchaf Road.

It is recommended that a survey of invasive species/pest plants is undertaken across the site. The Japanese Knotweed, along with any further identified pest plants should be subject to an eradication programme.

Early advice and liaison with a specialist contractor should be undertaken and allowances should be made for the time constraints to effectively remove Japanese Knotweed.

If an on-site Japanese Knotweed disposal cell is to be considered, consideration should be given to the size required to dispose of the volume of Japanese Knotweed, the depth of overburden required above the cell and the location of the cell onsite. An on-site Japanese Knotweed disposal cell should not be located beneath the footprint of any buildings.

All protection orders relating to existing vegetation/ecology should be adhered to during the development of the site.

There are a number of semi-mature, mature trees and hedges along the site boundary and within the site. Allowances should be made for the removal of any associated roots that may become exposed in any proposed nearby earthworks and foundation excavations. Any such works should be conducted in accordance with the code of practice recommended by the National House Building Council (NHBC).

All protection orders relating to existing vegetation/ecology should be adhered to during the development of the site.

All existing topsoil should be stripped from beneath proposed development areas for re-use in areas of gardens and soft landscaping, subject to the results of further testing.

11.3 SITE PREPARATION (CONTINUED)

11.3.3 Unexpected Occurrences

Given the nature of the made ground encountered across the site, unidentified 'hotspots' of contamination could be present. Strategies and site management procedures should be put in place for dealing with unexpected contamination, waste handling and control of workers health and safety. Allowances should be made for any such materials, if encountered, to be removed from site and disposed at a suitably licensed tip.

11.3.4 Site Clearance and Earthworks

Existing areas of hardstanding (including surface tarmac and concrete) should be broken out and the materials set aside for appropriate re-use or off-site disposal.

Once the existing buildings have been demolished and the existing floor slabs / areas of hardstanding have been removed, the exposed formations should be inspected and tested for a range of contaminants (in accordance with the recommendations outlined in Section 10.3).

All remnant foundations, structures, redundant drainage / services ducts / infrastructure / basements etc. should be fully broken out. The excavated/broken out materials should be processed, with any unacceptable materials (such as timber, metal, plastic, etc.) removed. Any oversized acceptable demolition materials should be crushed to a suitable grade, typically <125mm maximum particle size, and stockpiled on site for re-use as structural fill.

The most reliable way to achieve a formation cleared of underground obstructions associated with the past site usage would be to excavate the previously developed areas to a depth of 2.0m below proposed finished floor levels or to expose the natural strata (whichever is shallowest). The excavated materials should be sorted and processed with any oversized materials crushed to a suitable grade, and any unacceptable materials (such as timber, metal etc) removed. Any residual obstructions should be broken out and crushed to a suitable grade. The acceptable excavated materials and crushed granular fill should be re-laid in controlled and compacted layers in accordance with DTp Specification for Highway Works.

Strategies should be developed for re-use of these materials.

11.3 SITE PREPARATION (CONTINUED)

Excavating and processing the ground will also have the additional benefit of exposing, and being able to appropriately deal with, any hitherto undetected 'hot spots/areas' of contamination. Any soft spots identified during preparation works should be removed and backfilled with clean granular material in accordance with the DTp Specification for Highway Works. Any identified ACM should be handpicked by a suitably licenced contractor in accordance with an appropriate risk assessment and managed in accordance with the Control of Asbestos Regulation (2012). Any handpicked ACM should be double bagged and disposed off-site at a suitable licensed facility as hazardous waste.

Any basements or chambers should also be excavated and replaced with granular fill materials to an agreed specification.

Allowances should be made for encountered localised perched/shallow groundwater during the earthworks and any excavations. Some surface water and groundwater management will be required to ensure the protection of the earthworks and materials.

The site is anticipated to require some cut and fill earthworks to create suitable development plateaux for the proposed new development.

Any excavated materials should be inspected, processed and sorted in accordance with an agreed Earthworks Strategy and Materials Management Plan. The Materials Management Plan should be produced in accordance with the CL:AIRE Code of Practice and approved by a Qualified Person. Any unacceptable materials (such as wood, metal, etc) should be removed and disposed off-site. The acceptable material should then be stockpiled on site for compliance testing and subsequent re-use as fill materials.

It should be noted that the excavation and re-use of any of the landfill materials may be subject to obtaining appropriate environmental permits from NRW. It is recommended that early discussions are held with NRW in order to determine the most appropriate form of environmental permit required.

If any fill is to be placed onto an existing sloping area, then the original ground should be adequately cut and benched, in order to prevent the possibility of slippage at the interface between the new fill and the original ground. All works should be carried out in accordance with the DTp Specification for Highway Works.

11.3 SITE PREPARATION (CONTINUED)

Any cut and/or fill slopes should be no steeper than 1v in 2h. Cut off drains should be provided at the top and French drains at the bottom of any cut and/or fill slopes. In areas of cut and/or fill, the slopes should be topsoiled and seeded with grass, in order to minimise any future maintenance problems caused by surface water run-offs.

If site excavated materials are to be used as fill, then any generated cobbles/boulders should be processed/crushed to appropriate sizes, typically <125mm particle size. Allowances should be made for selection and local removal of soft cohesive materials, where encountered.

Note that earthworks will be seasonally dependant and will rely on control of water content in the structural soils. It is recommended that the cut and fill earthworks are carried out as enabling works during the summer months. Allowances should also be made for conditioning/drying out the structural soils as they are being placed.

All soft clays or organic materials at sub-formation level will require excavation and replacement with granular fill materials.

Any reduced levels should be brought up to the required levels with well compacted imported granular materials, or suitable site won granular material crushed to 6F2 grade. Department of Transport (DTp) Type 1 sub base or similar approved, could be used, and should be compacted in layers, in accordance with the current DTp Specification for Highway Works.

It should be noted that if proposed finished ground levels within the land west of Galon Uchaf Road are to be raised above existing ground levels, appropriate settlement assessments should be carried out.

Due to the nature of the landfill materials, it is considered that the made ground materials consisting of landfill waste are not suitable for re-use on site. Due to the potential impact on the environment, it is recommended that the landfill materials are not disturbed as this will result in the generation of landfill waste.

Further to the above, any works/excavations and handling of the landfill materials will require appropriate environmental permits from Natural Resources Wales. A permit is also likely to be required for the placement of any excavated landfill materials. If the excavation and re-use of landfill materials are proposed, it is recommended that early discussions are held with NRW in order to determine the most appropriate form of environmental permitting required.

11.3 SITE PREPARATION (CONTINUED)

The above earthworks recommendations are preliminary and should be reviewed as development proposals are confirmed. An earthworks specification should be provided for the site.

Given the cohesive nature of the near surface soils, the exposed surface of the site will deteriorate in poor weather and due to trafficking of plant. We therefore recommend that to minimise surface water management risks and minimise the generation of silt, softened materials and unsuitable arisings, strategic earthworks and materials management is required. The exposed areas should be minimised at all times.

All exposed areas should be protected from damage in wet weather. Designated access routes should be maintained and suitably designed and maintained working platforms for construction plant provided.

11.3.5 Certification

The required site preparatory earthworks should be properly designed, specified and monitored by a qualified engineer. A certification report should be prepared to confirm the acceptability of the prepared ground for the proposed development. Field and laboratory verification/validation tests will be required for such a certification. Allowances should therefore be made for site monitoring by a competent and suitably qualified geotechnical engineer, and for the required sampling and field and laboratory chemical and geotechnical testing.

It is recommended that a series of supplementary optimum compaction tests, Atterberg Limits and PSD tests are carried out ahead of the earthworks in order to inform the compaction works.

11.3.4 Slope Stability

No slope stability assessments have been undertaken of the onsite and adjacent sloping ground as part of the site investigation works. Once the final site levels and layout have been finalised appropriate slope stability assessments should be undertaken and further site investigation works carried out, if required.

11.3.6 Pollution Protection and Management

Allowances should be made for appropriate pollution prevention measures to be in place during the construction phase. Pollution prevention measures should be included within the appointed contractor's method statements and agreed with the appropriate regulator prior to commencement. The required pollution prevention measures should include, but not be limited to the following:

11.3 SITE PREPARATION (CONTINUED)

- Protection/diversion of any active surface drains that cross the site
- Segregation of arisings from earthworks, piling and/or excavation works
- Stockpiled materials are to be sealed from the weather, placed on a suitable impermeable surface and bunded to prevent run-off
- Exposed formations are to be regularly damped down to prevent any fugitive dust emissions
- Appropriate boundary air and dust monitoring
- Airborne nuisance caused by dust from the site must be controlled on account of the health and safety of site operatives and the general public.
- Protection of any adjacent water courses from uncontrolled run-off.

11.4 FOUNDATIONS AND FLOOR SLABS

The following recommendations are based on the indicative development layout that had been provided at the time of writing.

The following recommendations are subject to the findings of the recommended further intrusive site investigation works detailed below in Section 11.8 (and the completion of any required remedial measures in relation to shallow mineworkings / mine entries).

The ground conditions encountered beneath the existing school area generally consist of a variable thickness of made ground/re-worked ground over firm, firm to stiff, locally soft, cohesive glacial deposits, with variable granular content, encountered at general depths of between 0.15m and 2.3m below existing ground level, locally deeper, at 4.0m below existing ground level. Locally, particularly in the northern site area, the base of the made ground was not proven, with made ground thicknesses of between >2.0m and >4.0m encountered.

Additionally, as discussed in Section 4.4, the review of the underlying geology, the Coal Authority Mining Report and mine abandonment plans obtained from the Coal Authority, indicate the presence of recorded shallow ironstone workings, and a coal outcrop beneath the site. Two shafts are also located on site. Additional intrusive site investigation works are recommended to investigate for the presence of any shallow workings beneath the site.

The following foundation recommendations should be reviewed following completion of the additional mining related site investigation works.

Consideration has been given to a number of foundation options, including reinforced strips/trench fill foundations, raft foundations, piled foundations and vibro improvement.

11.4 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

Raft foundations are not well suited to large structures, in particular large structures with split levels.

Piling is not deemed appropriate at this stage due to the potential shallow mining risk associated with the potential presence of shallow workings beneath the site. Piles would need to be cased and drilled though the shallow workings and socketed into competent rock. It would also be necessary to prove that there was a suitable thickness of competent rock below the toe of the pile. If shallow workings are not encountered beneath the site a piled foundation solution may be considered.

Ground improvement using vibro is also not recommended due to the nature of the soils (predominantly cohesive soils) and changes in level/split level design. This technique is also not recommended in recently placed fill.

Based on the findings of the site investigation to date, it is recommended that the proposed school development is founded using reinforced strip/trench fill foundations either constructed within suitably compacted and validated engineered fill or the underlying competent glacial deposits.

An allowable bearing pressure of 50kN/m^2 should be achievable within suitably compacted engineered fill, subject to the results of appropriate earthworks validation testing (such as plate load testing and dynamic probing). At this intensity of loading total settlements should not exceed 25mm, and any angular distortions caused by differential movements should be less than 1:750.

Foundations in engineered fill should be reinforced for a 3.0m lack of support over a soft spot and a 1.5m cantilever at building corners.

If founding within in-situ natural glacial deposits, an allowable bearing pressure of 100kN/m^2 can be used for design purposes. At this intensity of loading total settlements should not exceed 25mm, and any angular distortions caused by differential movements should be less than 1:750.

At this stage, all strip/trench fill foundations within in-situ glacial soils should be reinforced for a 3.0m lack of support over a soft spot and a 1.5m cantilever at building corners. This could be reviewed following completion of the recommended mining related additional site investigation works.

11.4 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

Foundations should penetrate the founding strata by a minimum of 200mm and be at a minimum depth of 900mm below development level in order to protect against the effects of frost heave and/or thermal shrinkage.

Footings should not be founded within any loose or soft natural deposits, or within any existing made ground that has not been re-engineered. If encountered, trenches should be over deepened until more competent strata is encountered.

Following completion of the cut and fill exercise, in areas of fill, where foundations are founding within the in-situ glacial till deposits, trench fill foundation may need to be deepened through the engineered fill.

Laboratory Atterberg Limits have been determined for samples of the glacial till deposits. The results show the deposits are of low volume change potential. Footings should be deepened in accordance with NHBC guidance for low volume change potential soils for foundations constructed adjacent to mature trees and hedgerows.

It is recommended that floor slabs are designed and constructed as suspended.

No radon protective measures are required.

Based on the results of the ground gas monitoring programme, no ground gas protective measures are required.

As previously stated, the above recommendations should be reviewed following completion of the recommended additional site investigation works (see Section 11.8), and once the final development layout, engineering levels and the extent of the required cut/fill earthworks are confirmed.

11.5 EXCAVATIONS AND FORMATIONS

Most excavations should be possible with normal soil excavating machinery. However, allowances should be made for the use of pneumatic breaker attachments, or similar tools, to deal with potential buried obstructions, should any be encountered.

Based on the findings of the intrusive site investigation, excavations are unlikely to encounter significant groundwater inflows. Any groundwater inflows together with any rainfall infiltrations should be dealt with by using conventional pumping techniques.

11.5 EXCAVATIONS AND FORMATIONS (CONTINUED)

Overbreak and spalling of excavation sides associated with cobble and boulder removal should be allowed for and potential over pouring of concrete.

The sides of excavations deeper than 1.0m should be supported by trench boxes.

Foundations should therefore be constructed as soon as possible after the excavation works and the surrounding ground should be brought up to the adjacent ground levels as soon as possible. This is in order to avoid ponding and the discharge of concentrated rainfall accumulations into the ground.

The exposed formations within the near surface cohesive in-situ materials will be extremely susceptible to damage, softening and deterioration by wet weather and site traffic. They should therefore be protected by blinding concrete or a 100mm thick layer of hard-core immediately after exposure.

Below the depth of the trial pits hard dig conditions and rock break may be required.

It should be noted that elevated concentrations of methane and carbon dioxide and depleted concentrations of oxygen were noted within the domestic refuse/landfill waste during the gas monitoring rounds and the ground gas concentrations should be taken into consideration when working within or within close proximity to excavations.

11.6 ACCESS ROADS AND CAR PARKING AREAS

CBR testing using TRL (Transport Research Laboratory) dynamic cone penetrometer was completed at nine locations across the existing school site, the results of which are presented in Appendix H. The results have indicated near surface CBR values of between 14.8% and 32.2% for the northern site and 12.4% and 10.2% for the southern site respectively to 0.3m and 0.5m depths.

Following completion of the cut and fill earthworks, it is considered that a CBR value of >5% should be achievable within the engineered fill.

After proof rolling the formations, any ‘soft spots/areas’ should be removed and replaced with well compacted imported granular materials. Such materials should be to the approval of the local highway authority and should be compacted in layers, in accordance with the DTp Specification for Highways Works.

All materials should be considered frost susceptible.

11.7 DRAINAGE

Soil infiltration testing was carried out in 214 trial pits at location provided by Cambria Consulting across the site. Due to access constraints 4 trial pits locations were substituted for windowless sample hole locations where a falling head percolation test was undertaken instead (SA108, SA112, SA113 and SA114).

The results of soil infiltration tests are summarised in Section 7.1.7.

All soil infiltration test / falling head percolation test locations (with exception to TP14 west of Galon Uchaf Road) recorded insufficient infiltration to calculate design infiltration rates.

At trial pit TP14, a design infiltration rate of 8.3×10^{-5} m/s was calculated. The design infiltration rate provided is based on a worst case scenario. At this trial pit location, due to the thickness of the made ground along with instability of the trial pit sides, infiltration into the underlying natural glacial till deposits would not be possible.

It is considered that the land to the west of Galon Uchaf Road is not suited for the use of soakaway drainage due to:

- The variable nature of the made ground encountered across the area, including the presence of landfill waste.
- The potential for leaching of contaminants from the made ground at drainage/soakaway locations and migration of contaminants to the underlying groundwater.
- The thickness of the made ground.
- The negligible permeability of the underlying glacial till deposits.

The potential for leachate generation from the made ground at soakaway draining locations could result in a potential risk to groundwater quality.

Note that the soakaway test results are specific to the locations and depths of the tests undertaken. The soakaway results should be provided to a suitably qualified drainage engineer so that a soakaway design specific to the development can be completed and provided.

11.8 RECOMMENDED FURTHER WORKS

The following further site investigation works are recommended:

- It is recommended that a series of rotary boreholes are drilled across the site to determine the depth and condition of the recorded coal/ironstone workings, and to investigate the presence of any shallow unrecorded coal/ironstone workings. These works will allow for the assessment of the level of any residual risk to the proposed development. Where shallow mineworking with insufficient safe rock cover thicknesses are proven to be present, appropriate remediation / mitigation measures (such as drilling and grouting ground stabilisation) will be required.

- Further investigation works will be required to locate the recorded mine entries on site. These works will allow for the assessment of the level of any residual risk to the proposed development. Where mine entries are proven to still be present, appropriate remediation / mitigation and development no build zones will need to be implemented.

- Further delineation of the landfill materials beneath the land west of Galon Uchaf Road is recommended.

- Installation of deeper groundwater monitoring wells within the land west of Galon Uchaf Road, followed by a programme of groundwater sampling and detailed groundwater risk assessment.

- Due to the limited site access at the time of this site investigation, it is recommended that following site demolition and clearance of the existing school buildings, exposed formations are checked by a geotechnical engineer for signs of contamination and further soil samples are taken for laboratory contamination testing and further risk assessment.

- Additional boreholes and CPT probing across the land west of Galon Uchaf Road to prove depth of made ground and obtain geotechnical properties in areas of proposed ground level raising.

- Slope stability assessments and settlement assessments will be required once the engineering levels have been confirmed.

- Additional chemical and geotechnical sampling and testing to assist with an earthworks specification.

APPENDIX A

AVAILABLE DESK STUDY REPORTS

Technical Note	
Client	Willmott Dixon Construction / Merthyr Tydfil CBC
Project	3-16VA Catholic School Merthyr Tydfil (Bishop Headley)
Project ref	CC2208
Document title	Summary of Desktop Studies & Previous SIs
Document reference	CC2208-CAM-ZZ-XX-TN-S-0002
Prepared by	K House *MEng (Hons) CEng MIStructE*
Date	28th April 2021

1 Introduction

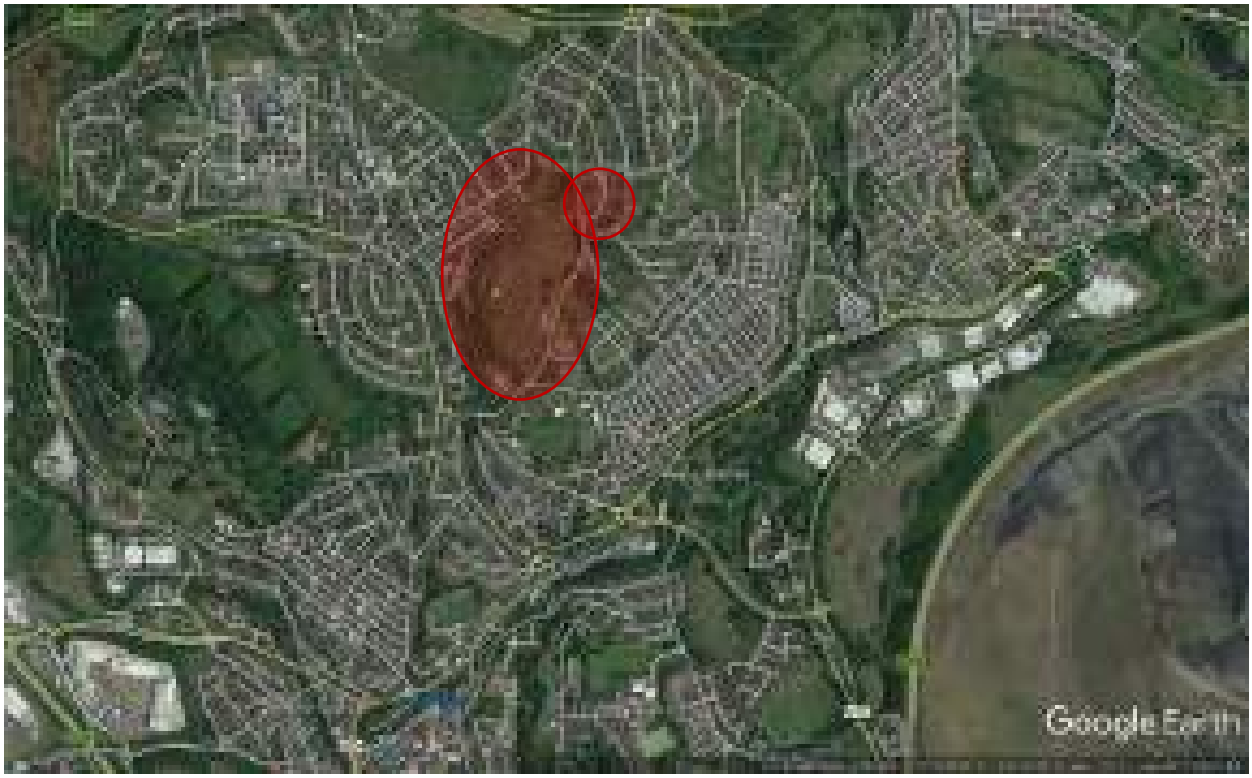
Cambria are the appointed Civil & Structural consulting engineers for a proposed new VA Catholic 3-16 All Through School at the 'Greenie' site, off Galon Uchaf Road, Merthyr Tydfil.

The proposed new All Through School will accommodate a 525-pupil place Primary School with 100 full-time equivalent pupil place nursery, and a 600 pupil (4 form entry) Secondary School.

The following technical note summaries all of the key information and constraints identified within the desktop studies carried out to date and previous site investigations.

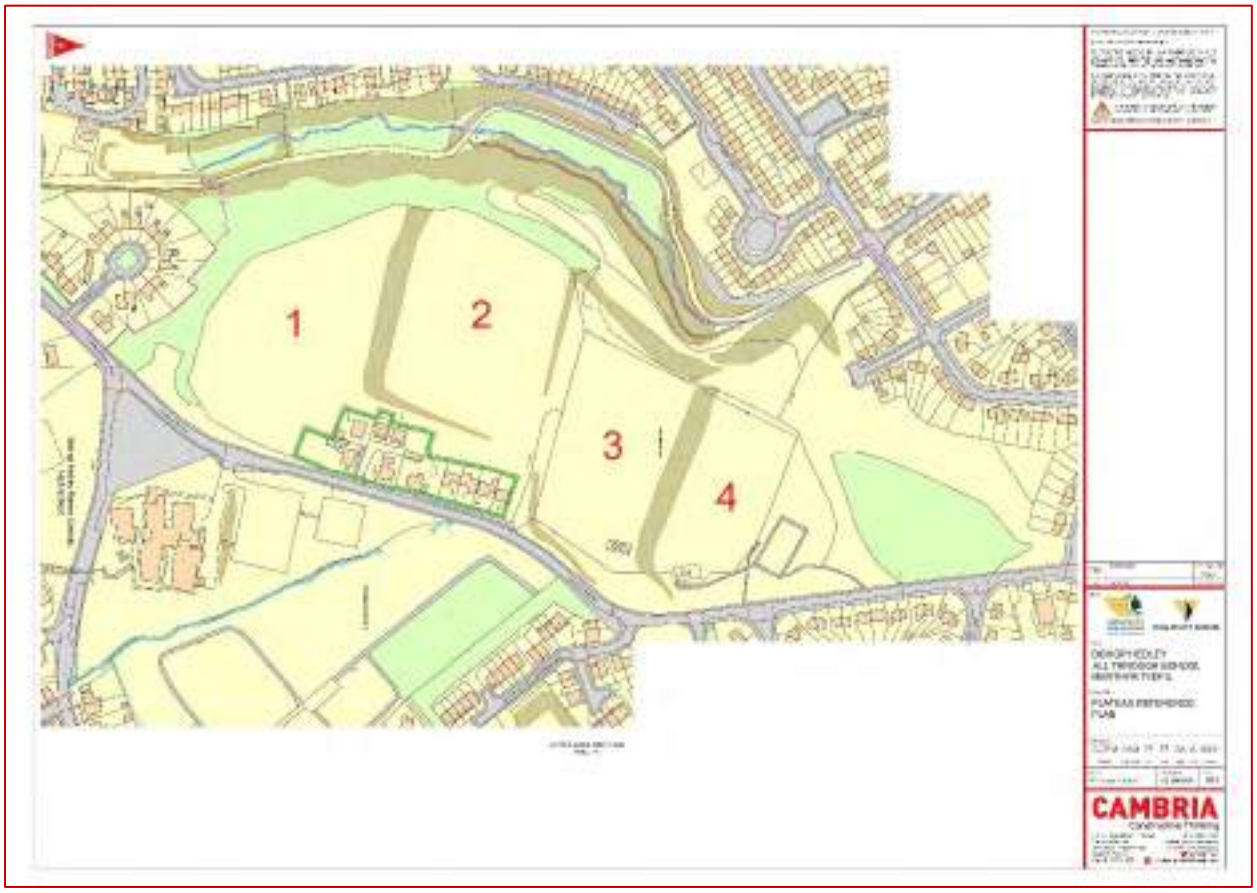
2 Site location

The site is located at Ordnance Survey Grid Reference 305248(E), 207736(N), in Galon Uchaf Park, immediately west of Galon Uchaf Road, Merthyr Tydfil. The postcode for the site is CF47 9SW.



3 Site Layout Options

The Galon Uchaf Park is simplest described as four plateaus as shown below. This has both benefit and detriment. The plateaus have been numbered for ease and will be referenced as above throughout this technical note.



The four plateaus all have an interesting history which affects the preferred selection for not only the building footprint, but also wider site development and large area requirements for the pitches and MUGAs.

The following is a summary of each plateaus history, features and constraints, which are then discussed further during the reviews of previous desktop and SI information.

3.1.1 Plateau 1

Plateau 1 escapes much of Coal Authority features (there is one adit in the south east corner), but is not without its problems. There are historical ponds located quite centrally and a large clay pit (now infilled) to the south side of the plateau.

3.1.2 Plateau 2

This central plateau is currently unused and is open parkland. Large parts of this plateau have been subject historically to clay pitting, although there are no obvious signs of the clay pits on site, indicating they have been infilled.

There are also two coal adits indicated in this part of the site.

The historical mapping shows this area of the site previously being used as a refuse tip between 1963-1977. With little to no regulation of landfill and the potential contaminants therein, it is reasonable to expect this area to be contaminated and highly variable in terms of material and consistency.

During our site walkover we found an unusual manhole which will justify a separate investigation. It does not correspond to any of the Envirocheck listed features. In terms of appearance, it relates to perhaps the top access hatch of a septic tank? Given its central plateau 2 location it could equally be related to a gas protection/collection regime. Cambria are investigating this currently and will instigate a physical investigation once our desktop options are exhausted.

This plateau has been discounted as an option for main school buildings but could be used for external facilities such as playing fields and MUGAs.

3.1.3 Plateau 3

Plateau 3 has two distinct constraints which preclude utilising this plateau for the main school buildings:

i. A fault line is indicated running west to east diagonally across the plateau, it is largely accepted in Structural Engineering that placing a building footprint over or within 10m of a fault line is not acceptable

ii. a 225mm DCWW foul sewerage pipe passing through plateau 3 which would potentially cause issues given DCWW build over agreements for new structures are not typically granted without strong evidence to show there is no alternative.

There is also an adit indicated to the centre of the plateau and a shaft to the eastern boundary.

For the above reasons, plateau 3 has been discounted as a preferred building location.

Refer to Cambria Top Plateau Constraints Plan drawing below:

3.1.4 Plateau 4

This plateau is currently being used as a community playing field and is perimeter fenced in combination with plateau 3.

There are further potential problematic features on all plateaus in addition to those shown above, and Appendix A shows the registered environmental site features for all plateaus, and whilst each will need to be considered separately, it is clear that plateau 4 shows significantly fewer historic entries.

Plateau 4 is expected to be made ground and reworked clay, which will likely preclude traditional foundations, but given the above, is favourable compared to other plateaus.

Plateau 4 is shown to have underlying Iron stone workings, and there is further discussion regarding mitigating risk from the entries rather than the underlying works.

3.1.5 Historical SI Report Information and Constraints Drawings

Cambria have produced drawings to combine as much of the available relevant information from the Envirocheck report, Atkins Geo Desk Study and available STATS into a concise reference of all the sites historical features and constraints.

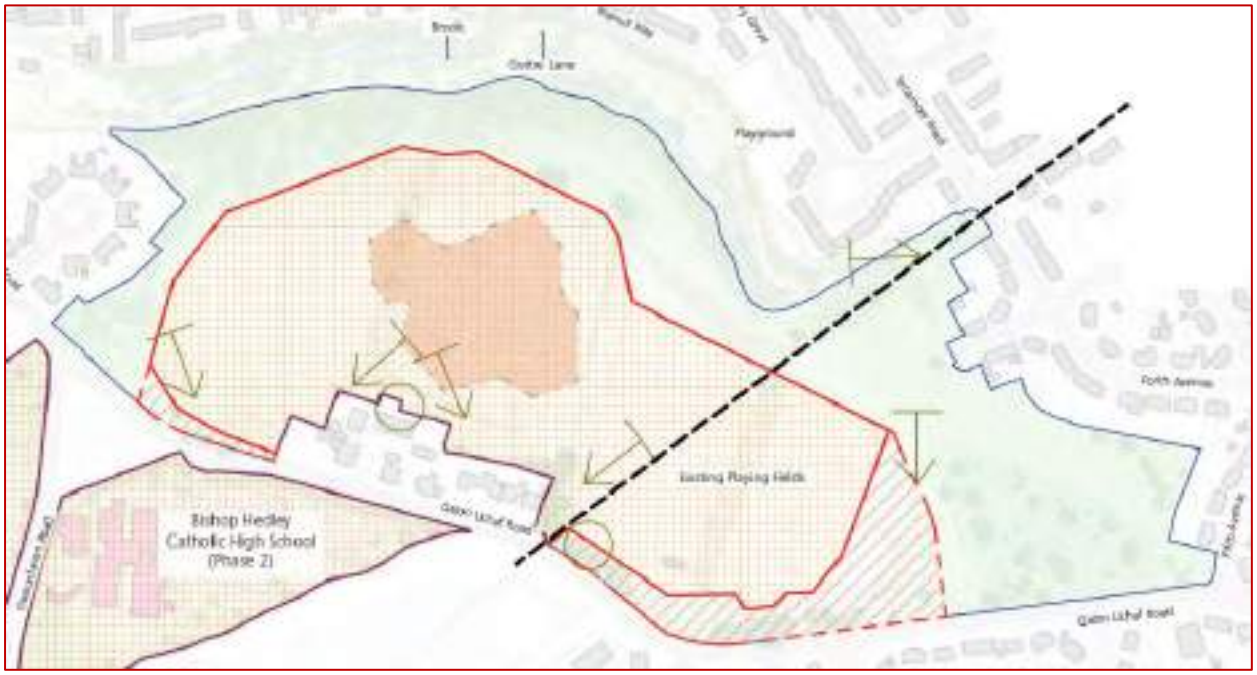
4 Previous Desktop Studies & SIs

4.1 Atkins Geo Desk Study & Envirocheck Report

Atkins were commissioned to undertake a feasibility study for the proposed school, which included a Geo Desk study, link to download here.

A Phase 1 Geotechnical desktop study including Envirocheck report has been undertaken by Atkins and the principal findings are listed below:

- Made ground is shown to be present.
- Site is underlain by coal measures.
- The Coal Authority CON29M coal mining report indicates the site could be affected by underground mining in 2 seams of coal at shallow to 70m depth last worked in 1897.
- The CON29M report notes there are 8 mine entries (2 shafts & 8 adits) within 20m of the site boundary.
- No subsidence damage notice or claim has been made within 50m of the site boundary since Oct 1994.
- A geological fault line crosses the northern half of the site across Plateau 3, another fault is shown approximately 160m north of the site.
- Coal and ironstone level is mapped in the northwest of the site and an airshaft.
- Clay pits were shown to be present on site from 1884-85 to 1975-79 to both Plateaus 1 & 2 to the south/centre of the site on the Envirocheck historic maps.
- A historical refuse tip is identified to Plateau 2 on the site from 1963, the depth and composition is unknown and is likely to contain contaminants including asbestos. The Envirocheck Report states that the landfill operated between 1960 and 1975 and accepted inert, industrial, household, commercial and special waste.
- Contamination may be present associated with the Made Ground and historic mine workings.
- BGS historic boreholes record groundwater levels of between 3.20 and 4.8m BGL in October 1989.



KEY:

- Extent of Identified areas for feasibility study
- Identified potential development areas
- Faultline
- Disused mineshaft
- Disused adit
- Heap (Historical landfill with unknown composite)

4.2 Coal Authority

A Coal Authority CON29M Coal Mining Report was procured by Atkins as part of the Geo Desk Study and identified likely shallow coal mining beneath the site and 8 mine entries within the site.

The report also references that a site investigation was carried out in June 2014 by Blandford Consulting. This has now been obtained and is reviewed in Section 4.3.

Following this Cambria also obtained a CA Consultants Coal Mining Report and relevant Abandonment Plans.

The report identifies that the Five Foot Gellideg coal seam dipping south was worked at 3m and 6m until 1897 and the Gellideg seam dipping northeast was worked at 66m until 1890.

It states there are no probable unrecorded shallow workings.

Each shaft and adit within and around the site boundary are referenced with nation grid reference which is accurate to a 100x100m grid (10,000m^2). This included the *no. shafts/adits within the proposed site as well as a further 8No. surround the site.

5No. abandonment mine plan catalogue numbers were identified which intersect the requested site boundary. These were subsequently ordered and reviewed and Cambria have produced overlays of the plans against the site boundary to show the approximate location of the previous coal workings. Note the abandonments plans are hand drawn and overlayed to best fit, therefore are not 100% accurate but give a good indication of the previous workings. Refer to Cambria Drawings CC2208-CAM-ZZ-ZZ-GA-C-0012 Mineshaft Location Plan & CC2208-CAM-ZZ-ZZ-GA-C-0013.

Link to download all CA report and abandonment maps here.

Link to down Cambria drawings here.

4.3 Blandford Mining Desk Study (1993)

Cambria have subsequently been provided with the Blandford Consulting Desk Study Report Ref: BEA/MB/03.93.03).

Link to download here.

A summary of the key information contained with the Blandford report are listed below:

- Superficial deposits of boulder clay would have generally been stripped away to expose the strata for mining activities, which has subsequently been infilled to form the current plateaus formed of made ground.
- Gyrnos Fault passes north-west to south-east across the site with a displacement of 17.4m of the fault. It is noted that the fault is indicated differently to that of the Coal Authority, it even differs quite significantly between Blandford own two drawings of Coal and Iron workings.
- Mining records indicate intensive coal and ironstone mining in area.
- Area is underlain at shallow depth by strata of Lower Coal Measure age, with the outcrop of the Five Feet Gellideg seam passing through the playing fields. The Five Feet Gellideg has been worked from the Galon Uwchaf Level underlying the east half of the playing fields extending to Galon Uchaf Road.
- Two shafts are associated with the works whilst the south westerly shaft also served the ironstone workings. There are also three adits associated with the works.
- There are a number of prominent ironstone bands contained within the siltstone and sandstones beneath the Five Feet Gellideg seam, typically 27m in thickness with its base at the Garw Coal Seam. There are five named bands, at least four of which have been extensively worked from the Penydarren Ironworks.
- Some ironstone was worked open-pit 'patches', although no records are available, it is understood the working were undertake under Plateaus 3 & 4, as shown in orange highlighted area on Blandford's Plan of Ironstone Workings (BEA/MB/03.93.03.04).
- The ironstone workings were then followed underground from the roadways, serviced both by adits and air shafts. The one air shaft to the southeast of Plateau 3 appears to have been used for both the coal and iron workings, however the other shaft appears to the centre of Plateau 3 appears to be an additional shaft used only for the ironstone workings and is not identified within any of the Coal Authority reports.
- The main roadways would have been where the greatest height of strata was excavated. There is evidence of previous collapsing roof measures along the roadways, most likely to be where the strata cover is lowest., which has migrated upwards to reach the rockhead, allowing the made ground to locally settle into the collapse resulting in subsidence at the surface.
- Settlement to the western edge of the site are likely to be due to collapse of the ironstone works, whilst to the east and upper pitch are likely due to the collapses of the Five Feet/Gellideg Seam workings. There was a circular collapse noted to the eastern end of the top field likely to be the presence and settlement of an air shaft.

4.4 Ove Arup & Integral Géotechnique SI (1994)

Due to a number of shallow subsidence depressions to the upper plateaus, which are noted to have been filled by ground staff over the years and continued to develop (presumably as the roof measures have collapsed), Ove Arup were commissioned in 1994 to carry out a preliminary investigation into the mining subsidence on the playing fields and Integral Géotechnique were appointed as the Geotechincal Engineer Site Investigation Contractors to undertake the intrusive SI works, which was scoped by Arup.

Cambria have been provided with the Arup & IG SI Reports

Link to download here.

4.4.1 Arup Desktop Study

The Arup Desktop Study identifies 6No. shafts/air pits (one of which is noted as a sub pit which doesn't reach the surface) and 6No. adits in total from various mine plan sources showing the workings of the ironstone and Four Foot Coal (Gellideg Seam) beneath the site. Therefore, there are 4 additional pits/air shafts identified by the Arup desktop study compared to the Coal Authority mining reports. They are however shown on the abandonment plans Cambria have obtained from the coal authority.

4.4.2 IG Intrusive SI

The IG intrusive SI consisted of seven trial pits and four rotary probe holes including contamination testing based on a scope prepared by Arup, who also prepared the trial pit logs and IG prepared the probe hole logs.

The made ground is stated to be loose to very loose, low density gravel to sandy gravel; with no sign that the fill had been compacted. The fill was c. 1m thick in the north, increasing to over 5m southwards and reducing back to c. 2m BGL.

A layer of soft organic matter (peat of granular texture – assumed partially decomposed woodchips/sawdust) was found in four of the seven trial pits between 0.7 to 1.6m BGL.

Boulder clay was encountered beneath in four out of the seven trail pits, consisting of firm silty clay. The full depth was not proved in any of the trial pits to max. 2.3m BGL, although terminated at 2.2m BGL in probe hole 4. In all trial pits where encountered the boulder clay appeared intact with no signs of disturbance due to subsidence.

The probe holes all encountered Coal Measures Mudstones to their full depth. Probe hole 1 encountered a coal seam in 3 leaves between 5.5 to 11.5m BGL, which correlates with the Four Feet Seam (Gellideg).

Probe holes 2 & 3 did not encounter any coal seams and are assumed to lie outside of the Gellideg Seam outcrop.

Probe holes 3 & 4 encountered voids and subsequent soft drilling around 20m BGL, considered to ironstone workings between the Gellideg and Garw Coal Seams.

Apart from the voids noted above, all of the probe holes encountered intact, undisturbed strata from rockhead, with no indication of broken strata due to subsidence.

4.4.3 Arup Discussion on Mechanism of Subsidence

Arups report discusses two possible mechanisms/causes of the subsidence:

i. Collapse of abandoned mine workings;
ii. Degradation/settlement of the fill.

They conclude that since the subsidence depressions are very shallow and varying in diameter from 1m to 3m, it is considered highly unlikely that the crown hole features would propagate to the surface through 6m of superficial deposits. Furthermore, there appears to be no correlation between the depressions and the recorded mine workings. Also, the trial pits and probe holes revealed the boulder clay underlying the depressions showed no signs of disturbance, therefore indicating the seats of subsidences were within the overlying fill. The fill is loose to verry loose with area of highly organic waste (peat) encountered, and it is therefore considered that the mechanism of subsidence is most likely due to consolidation/compaction of the fill.

4.4.4 Arup Discussion on Potential for Mining Subsidence

Whilst the subsidence was not considered to be due to mining at the time, due to the shallow workings across the site the potential for future mining subsidence was not ruled out and should be considered.

It is estimated that to the east of the Gellideg outcrop the seams have probably been excavated to the outcrop and therefore there could only be about 6m to 12m of total cover remaining. Therefore, where voids remain close to the surface, they could migrate upwards resulting in localised crownhole collapses.

To the west of the Gellideg outcrop several levels of ironstone have been worked via an extensive network of roadways, with voids identified within 15m of rockhead within two of the probeholes. Therefore, there is a significant potential for crownholing in this area also. However, the method of ironstone working would suggest that the mineworkings are largely backstowed on abandonment and therefore present much less risk, although the greatest potential is within the larger roadways.

The air shafts and adits recorded on site are likely to pose the greatest potential for ground disturbance, as the air shafts are likely to be only a few meters deep and only a metre or so in diameter. If they remain open, they may subsequently collapse causing a larger significant surface disturbance. The adit entries would have likely been backfilled on abandonment and present a smaller risk, although the roadways just inside could have remained open therefore still present potential for subsidence.

They conclude by stating that there is insufficient specific site data to carry out a full formal risk assessment for mining subsidence, although comparing it with similar sites would suggest the risk of sudden loss of ground by crownholing is very low.

4.4.5 Ground Contamination

The chemical analysis indicate the general fill across the site is acceptable for use as a playing field as the levels of contaminants are generally below the thresholds for parks and open spaces. This would need to be considered further when the use is changed for a school.

The highly organic waste is considered to have originated from the manufacturer of explosives and constitutes a significant health risk by skin contact, inhalation of dust and indigestion, albeit a low risk as it has only been identified in small areas covered by fill and topsoil. However, its presence should be considered when future excavations are undertaken and when encountered should be removed to a suitably licenced tip.

4.4.6 Arup Recommendation on Subsidence Remedial Options

Arup suggests there are two options for dealing with the sporadic areas of subsidence across the site, that is thought likely to have occurred due to settlement of the fill.

i. Excavate and recompact the existing fill and removal of any unsuitable materials;
ii. Dynamic compaction.

However, they then quick discount dynamic compaction based on it being a relatively small area and as such traditional methods would have been more economical. Therefore, excavating and recompacting the fill in layers to an earthworks specification to a maximum depth of 2m (or full depth if fill is shallower). They suggest this needs to be undertake widespread across the sites pitches due to the lack of rational of the areas experience subsidence at the time.

Arup also provide further options to address the subsidence risk associated with the abandoned mineworkings across the site, suggesting that mine entries are the most likely source of subsidence than the abandoned mineworkings themselves. They recommend searching for the shafts and adits to plug the shafts with mass concrete plugs and excavate and backfill the adits with compacted fill, with an allowance for grouting to the infill associated with the roadways where they are shallow.

Whilst the mineworkings themselves present a much lower level of risk that is no greater than that found else where in similar sites across the county, they left the decision of acceptable risk to Merthyr Tydfil Bough Council and advised of two potential options should the council have decided to mitigate the risk.

i. Incorporate a high tensile strength tensile membrane to the uppermost 500mm of compacted fill under the pitch areas and surrounding perimeter.
ii. Drilling and grouting to infill the mineworkings to virtually eliminate the future mining subsidence risk. However they highlight the cost of this as being 5 to 10 times more costly that the membrane solution at time for little gain which was considered excessive.

No details of any remedial measures carried out following Arup's report have been made available, although it is assumed the selected option would have been cost driven and therefore likely to have been to locally excavate and recompact the areas of subsidence.

4.5 Gwalia Topo & Utilities Surveys

Gwalia Surveyors have been commissioned to undertake Topographical & Utility surveys which were undertaken in Feb/March 2021.

Link to download here.

The topo shows the site slope down from plateau 4 to 1 from 284m to 270m AOD.

The utilities survey has located the DCWW drain cutting through Plateau 3, with a CL 280.63 & IL 278.53 to the east and CL 278.94 & IL 272.33 to the west indicating the sewer is c. 6.5-8.0m BGL. Note this sewer has been located to Quality Level QL-B4 which has an undefined location accuracy and provided as an assumed route between the manholes.

There are a few small weak traces to the south of plateau 3, but these are unknown and lose trace.

Three manhole covers are identified within Plateau 2, which are noted as possible mining air shafts.

Several electricity cables have traced to the north of Plateau 4 around the MUGA at depths between 0.3 to 1.5m BGL. Note these cables have been located to Quality Level QL-B2 which has an location accuracy of +/- 150mm or +/- 15% of depth horizontally (whichever is greater) and a +/- 40% of detected depth vertically.

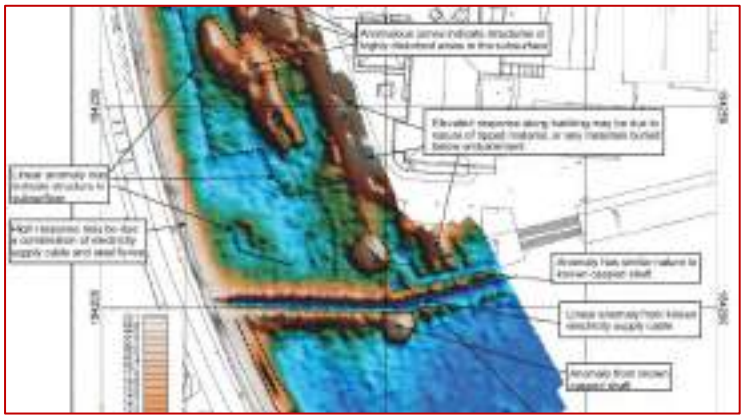
5 Next Steps

5.1 Zetica Geophysical Surveys

Zetica have been commissioned to undertake Frequency Domain Electromagnetic (FDEM) scan and also a Magnetometry scan across the site, which is due to be carry out mid-May. The results of the scanning is due to be issued on 21st May with Zetica's specialist interpretation report to follow soon after.

- Frequency Domain Electromagnetic (FDEM) mapping of the site to provide information on variations in the conductivity in the shallow subsurface. This technique also provides information on the presence of buried metallic objects.
- Magnetometry to provide the location of any buried ferro-magnetic object within range of the instrument.

As an example, below are the pictorial results from our Bridgend School investigation:



5.2 Intrusive Site Investigation

Following early-stage coordination and review of the site options with various considerations such as, likely ground conditions, drainage, SuDS/SAB, levels, parking & access, etc. the options have been narrowed down to either Plateau 1 or 4 with 4 being the preferred option at this stage.

The current proposed building footprints for each plateau can be access here.

Based on these layouts, Cambia have produced a proposed site investigation scope drawing based on the building located within Plateau 4 (CC2208-CAM-ZZ-ZZ-GA-S-0010 – P01).

Cambria are also producing a secondary proposed site investigation scope drawing based on the building located within Plateau 1 (CC2208-CAM-ZZ-ZZ-GA-S-0012 – P01)

Cambria will coordinate the final agreed scope with the appointed Geotechnical Engineers once a decision has been made on the buildings location to obtain a report for the client that satisfies any potential future queries and conditions that might come from Planning, SAB, NRW, Coal Authority, etc. and any other interested parties, without the need to go back for additional testing.

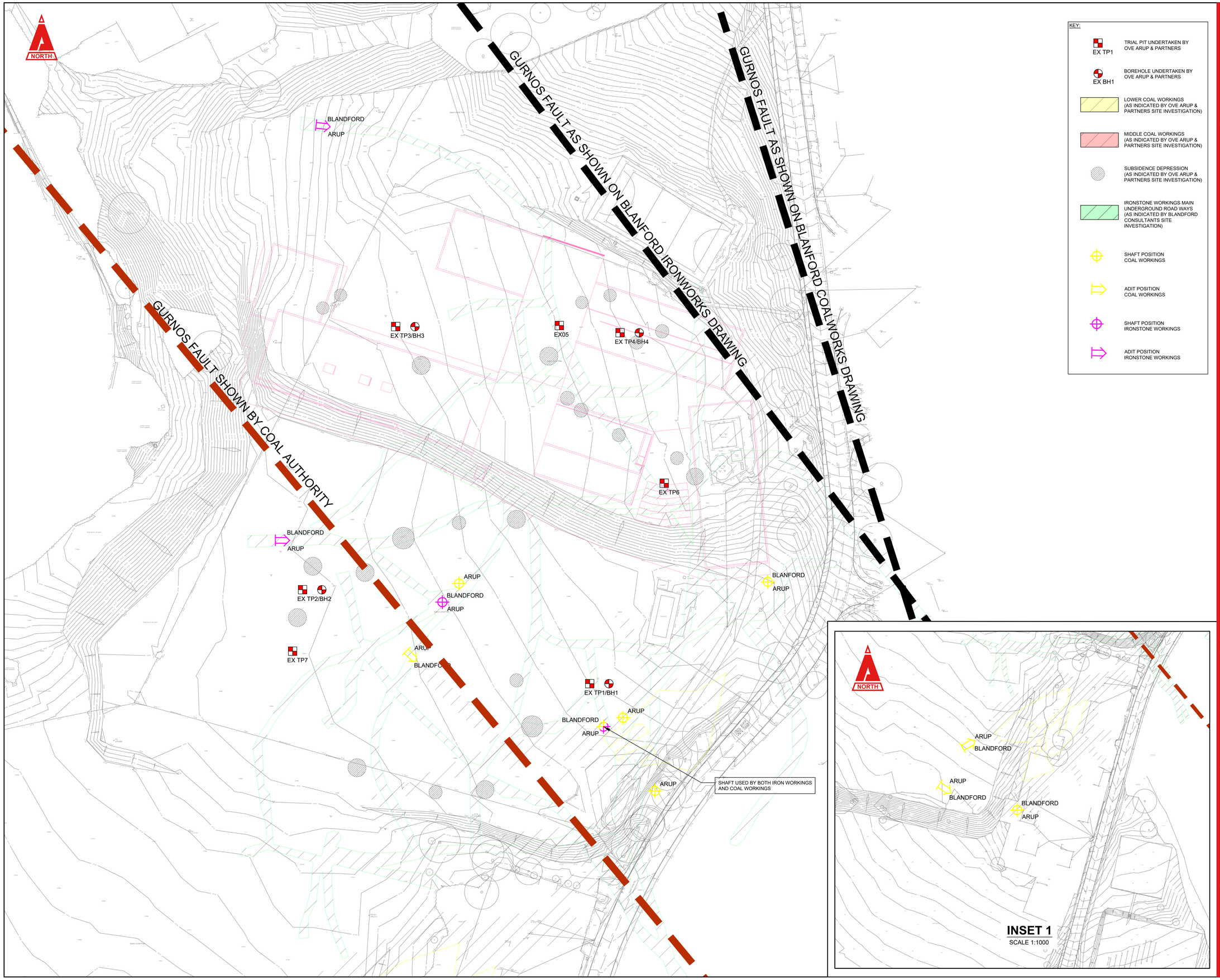
Cambria will coordinate with the appointed Geotechnical Engineer to approach the Coal Authority to seek approval and recommendation on any alterations required to the site investigation to guard against any objection at planning stage.

5.2.1 Proposed SI Scope

Cambria have proposed the following intrusive SI scope based on the main school building being located on Plateau 4:

- 10No. Boreholes beneath the proposed footprint to min. 30m depth to determine risk of shallow mine workings.
- 15No. Windowless Sampling to build a picture across the site and particularly Plateaus 3 and 4 to provides confidence in the general description of ground conditions and corresponding design recommendations.
- 17No. Trial Pits generally targeting Adits to test for responsible decommissioning, and more sampling to check the consistency across the site.
- 8-12No. CBR tests to provide recommended CBR design value for external areas.
- 9No. BRE365 infiltration testing required to satisfy the SAB Officer. All tests must be completed with min. 3No. consecutive cycles where possible and be min. 5m away from proposed buildings.
- Contamination Testing –allow for a full comprehensive suite of testing and include checking for hazardous material (Plateau 2) given future use for sports fields. Samples to be taken from across the site, Geotechnical Engineer to recommend a suitable distribution.
- Physical Testing – note piling is significantly more problematic since the NZC movement took hold, the embodied carbon and environmental implications mean we must exhaust all routes towards a less intrusive solution.
- Gas testing/monitoring in BH/WS identified – comprehensive testing required. Could potentially require six months. Geotechnical Engineer to advise on suitable monitoring regime.
- Cut and Fill – The project is likely to involved high volumes of cut and fill, early suggestions are lowering Plateau 4 and raising Plateau 3 to create a large workable plateau, a critical component of this is ensuring the cut material is suitable for re-use.
- Coal Authority Investigation – it is suspected we might need to investigate shafts to again prove responsible decommissioning, we have highlighted the shaft to the east of Plateau 3 on the plan as we suspect this one will be critical to proving and will likely attract attention from the CA.

Cambria will also scope out an SI based on the main school building being located on Plateau 1.



KEY:

- EX TP1 — TRIAL PIT UNDERTAKEN BY OVE ARUP & PARTNERS
- EX BH1 — BOREHOLE UNDERTAKEN BY OVE ARUP & PARTNERS
- LOWER COAL WORKINGS (AS INDICATED BY OVE ARUP & PARTNERS SITE INVESTIGATION)
- MIDDLE COAL WORKINGS (AS INDICATED BY OVE ARUP & PARTNERS SITE INVESTIGATION)
- SUBSIDENCE DEPRESSION (AS INDICATED BY OVE ARUP & PARTNERS SITE INVESTIGATION)
- IRONSTONE WORKINGS MAIN UNDERGROUND ROAD WAYS (AS INDICATED BY BLANDFORD CONSULTANTS SITE INVESTIGATION)
- SHAFT POSITION COAL WORKINGS
- ADIT POSITION COAL WORKINGS
- SHAFT POSITION IRONSTONE WORKINGS
- ADIT POSITION IRONSTONE WORKINGS

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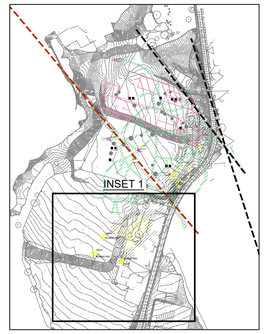

KEY PLAN

NOTES:

1. THE INFORMATION PRESENTED IS BASED ON TWO SITE INVESTIGATIONS UNDERTAKEN BY OVE ARUP & PARTNERS AND BLANDFORD, ESTERLING & ASSOCIATES.
2. THE PROPOSED BUILDING POSITION ON PLATEAU 4 IS SHOWN IN PINK.

NOTE:
ALL INFORMATION PRESENTED IS OBTAINED FROM HAND DRAWN SKETCHES.

Rev.	Description	By	Chk	App
P01	ISSUED FOR INFORMATION. 30/04/21	JM	BW	GM

Client: Cyngor Bwrdeistref Sirol Merthyr Tudful / Merthyr Tydfil County Borough Council; WILLMOTT DIXON CONSTRUCTION

Project: 3 - 16 VA CATHOLIC SCHOOL, MERTHYR TYDFIL

Drawing Title: HISTORICAL SITE INVESTIGATION OVERLAY

Drawing No. CC2208 CAM ZZ 00 GA C SK18
Project Originator Vol. Level Type Role Number

Status: S2 PRELIMINARY | Scale @A1: 1:500 | Rev: P01

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Rev.	Description	By	Chk	App
P01	FIRST ISSUE FOR COMMENT. 16/02/21	RD	EH	GM

Client:

Cyngor Bwrdeistref Sirol MERTHYR TUDFUL / MERTHYR TYDFIL County Borough Council

WILLMOTT DIXON CONSTRUCTION

Project:

BISHOP HEDLEY
ALL THROUGH SCHOOL
MERTHYR TYDFIL

Drawing Title:

MINESHAFT LOCATION PLAN

Drawing No.

CC2208 CAM ZZ ZZ GA C 0012

Status:	Scale @A1:	Rev:
S1 PRELIMINARY	AS SHOWN	P01

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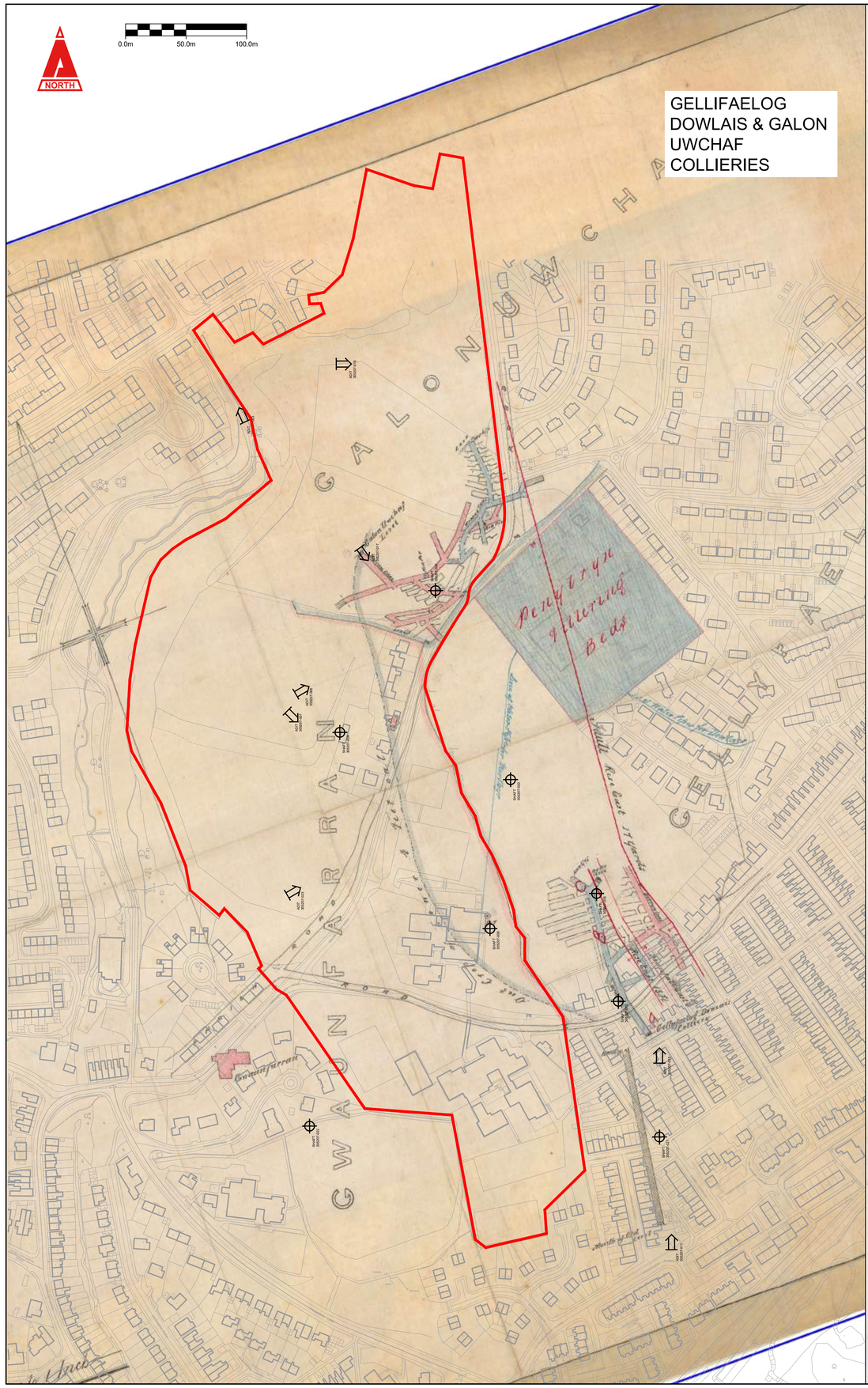

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Rev.	Description	By	Chk	App
P01	FIRST ISSUE FOR COMMENT. 16/02/21	RD	EH	GM

Client:

Cyngor Bwrdeistref Sirol MERTHYR TUDFUL / MERTHYR TYDFIL County Borough Council

WILLMOTT DIXON CONSTRUCTION

Project:

BISHOP HEDLEY
ALL THROUGH SCHOOL
MERTHYR TYDFIL

Drawing Title:

UNDERGROUND
MINEWORKINGS PLAN

Drawing No.

CC2208 CAM ZZ ZZ GA C 0013

Status:	Scale @A1:	Rev:
S1 PRELIMINARY	AS SHOWN	P01

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DETAIL TITLE
SCALE 1:1

ATKINS DESK STUDY
JULY 2020

- HISTORICAL CLAY PIT PRIOR TO REFUSE TIP
- HISTORICAL REFUSE TIP
- INFERRED FAULT

COAL AUTHORITY COAL MINING REPORT
MINE ENTRY LOCATIONS
JANUARY 2021

DISUSED FEATURES

- ADIT 305207-006
- SHAFT 305207-008

ENVIROCHECK REPORT
JUNE 2020
GROUND STABILITY DATA

- 124 POTENTIAL FOR COLLAPSIBLE GROUND STABILITY HAZARDS
- 126 POTENTIAL FOR COMPRESSIBLE GROUND STABILITY HAZARDS
- 127 POTENTIAL FOR LANDSLIDE GROUND STABILITY HAZARDS
- 135 POTENTIAL FOR RUNNING SAND GROUND STABILITY HAZARDS
- 137 POTENTIAL FOR SHRINKING OR SWELLING CLAY GROUND STABILITY HAZARDS

MODERATE | LOW | VERY LOW

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THIS SYMBOL IS USED TO HIGHLIGHT INSTANCES OF RISK WITHIN THE CONSTRUCTION PROCESS.

ALWAYS CHECK FOR LATER REVISIONS OF THIS DRAWING.

ENVIROCHECK REPORT
JUNE 2020

1 MINING AND NATURAL CAVITIES DATA

HISTORICAL LAND USE INFORMATION

- 37 UNSPECIFIED DISTURBED LAND
- 53 AIR SHAFT
- 17 LEVEL (COAL & IRONSTONE)
- 26 PEN-Y-BRYN WATER WORKS
- 52 FILTERING BEDS
- 36 UNSPECIFIED PIT
- 51 UNSPECIFIED DEPOSITED MATERIAL
- 38 POND
- 54 GENERAL QUARRYING
- 58 HEAP, UNKNOWN CONSTITUENTS
- 70 MINERAL RAILWAY
- 73 MINING OF COAL & LIGNITE
- 78 POTENTIALLY INFILLED LAND (NON-WATER)
- 86 POTENTIALLY INFILLED LAND (WATER)

ACCURATE TO 100m²

NOTATION OFFSET FOR CLARITY:

Rev.	Description	By	Chk	App
P01	FIRST ISSUE	MD	KH	GM
		02/02/21		

Client:

Cyngor Bwrdeistref Sirol MERTHYR TUDFUL / MERTHYR TYDFIL County Borough Council

WILLMOTT DIXON CONSTRUCTION

Project:

BISHOP HEDLEY
ALL THROUGH SCHOOL
MERTHYR TYDFIL

Drawing Title:

SITE INVESTIGATION
REPORT INFORMATION

Drawing No.

Project	Originator	Vol.	Level	Type	Role	Number
CC2208	CAM	ZZ	ZZ	GA	S	0001

Status:	Scale @A1:	Rev:
S1 PRELIMINARY	AS SHOWN	P01

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The Coal Authority

Consultants

Coal Mining Report

Site At 305230, 207660
Merthyr Tydfil
CF47 9

Date of enquiry:	**29 January 2021**
Date enquiry received:	**29 January 2021**
Issue date:	**29 January 2021**
Our reference:	**51002348776001**
Your reference:	**CC2208**

Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

Kiron House

Enquiry address

Site At 305230, 207660
Merthyr Tydfil
CF47 9

Approximate position of property

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/company/the-coal-authority
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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	FIVE FOOT GELLIDEG	Coal	4BCR	3	Beneath Property	2.3	South	157	1897
unnamed	FIVE FOOT GELLIDEG	Coal	4BCQ	6	Beneath Property	2.3	South	157	1897
unnamed	GELLIDEG	Coal	4BCT	66	Beneath Property	14.4	North-East	195	1890

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

Distance to spine roadway (m)	Direction to spine roadway
Within	N/A
Within	N/A

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Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	305207-002	305353 207727		Coal	
Adit	305207-003	305194 207871		Coal	
Adit	305207-006	305242 207644		Coal	
Adit	305207-007	305234 207624		Coal	
Shaft	305207-008	305274 207610		Coal	
Shaft	305207-009	305398 207448		Coal	
Shaft	305207-010	305504 207388		Coal	
Adit	305207-011	305548 207188		Coal	
Adit	305207-015	305538 207342		Coal	
Shaft	305207-016	305486 207477		Coal	
Adit	305207-017	305293 207758		Coal	
Adit	305207-019	305276 207914		Coal	
Shaft	305207-020	305415 207571		Coal	
Shaft	305207-021	305538 207276		Coal	
Shaft	305207-022	305249 207285		Coal	
Adit	305207-023	305235 207478		Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

SWR3608	3622	SW2358
PO0	SWR2510	

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

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Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property recorded.

Opencast mines

Please refer to the “Summary of findings” map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

Distance to site investigation (m)	Direction
Within	N/A
4.1	East

See Section 4 for further information.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

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Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	29 January 2021
Issued to	KIRON HOUSE CAMBRIA HOUSE 16-17A PLAS ST POL DE LEON PENARTH MARINA VALE OF GLAMORGAN CF64 1TR
Property search for	SITE AT 305230, 207660 MERTHYR TYDFIL CF47 9
Reference number	51002348776001
Date of issue	29 January 2021
Cost	£112.13
VAT @ 20%	£22.43
Total received	£134.56
VAT registration	598 5850 68

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Summary of findings

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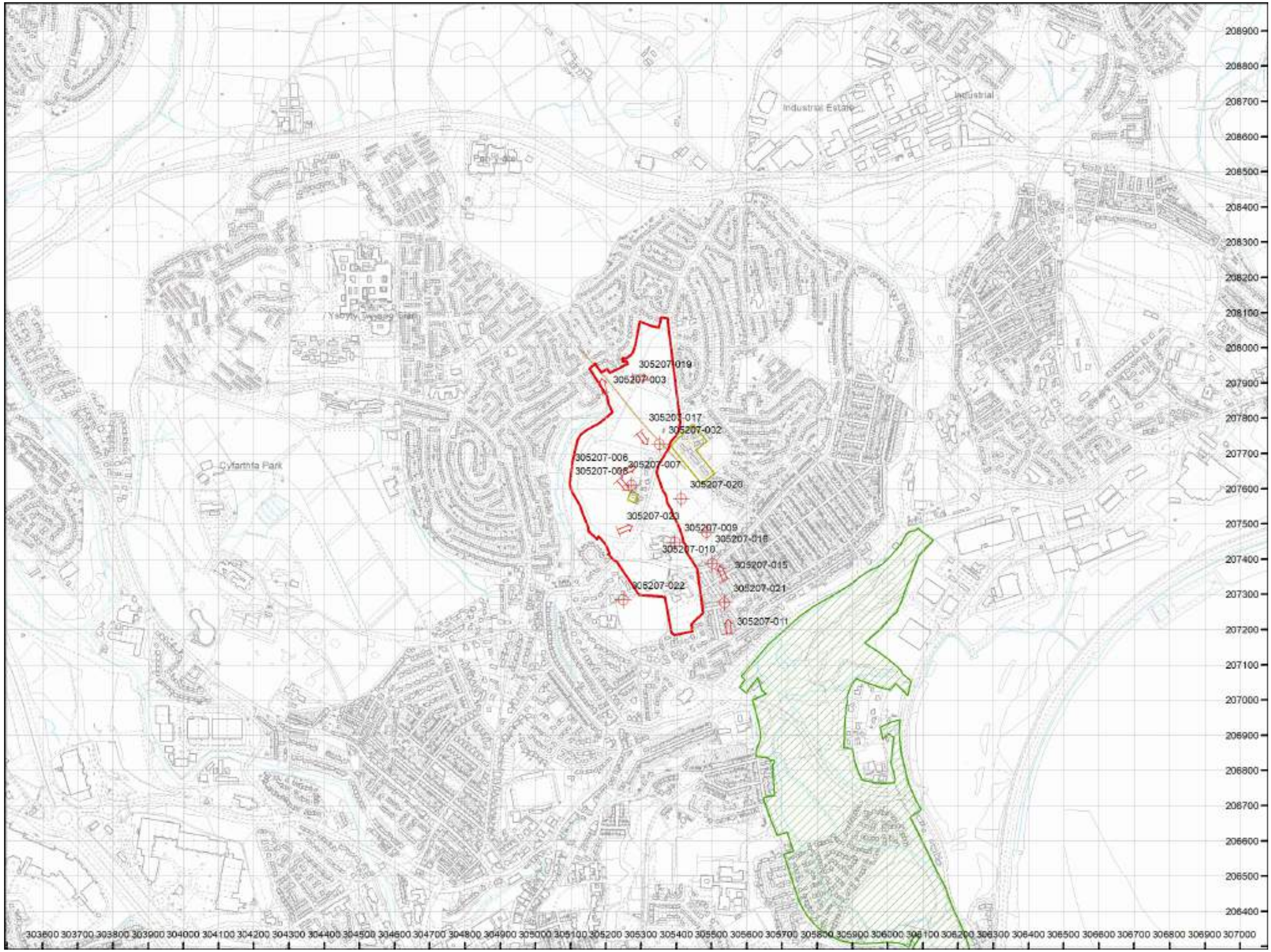
Map data

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

- Approximate position of the enquiry boundary shown
- Disused mine shaft
- Disused adit
- Geological faults
- Unlicensed opencast site
- Site investigations



How to contact us

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+44 (0)1623 637 000 (International)
www.groundstability.com

Report No: BEA/MB/03.93.03.

Mining Report on the Playing Fields at Galon Uchaf, Merthyr Tydfil.

- Desk Study -

Prepared for:

Merthyr Tydfil Borough Council.

BLANDFORD ESTERLING AND ASSOCIATES,

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Tel: (0685) 721466. Fax: (0685) 721459.

Report No: BEA/MB/03.93.03.

Mining Report on the Playing Fields at Galon Uchaf, Merthyr Tydfil.

- Desk Study -

Prepared for:

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Mining Report on the Playing Fields at Galon Uchaf, Merthyr Tydfil.

- Desk Study -

Contents.

		Page:
1.	Introduction.	1
2.	Brief Description of Site.	1
3.	Geology of the Area.	2
4.	Mining History.	2
5.	Discussion and Conclusions.	3

List of Plans.

Drawing No:		Scale:
BEA/MB/03.93.03.01.	*Part of the Stratigraphic Column.*	*See Drawing.*
BEA/MB/03.93.03.02.	*Site Location and General Geology.*	*See Plan.*
BEA/MB/03.93.03.03.	*Plan of the Workings in the Five Feet/ Gellideg Seam.*	*1:2500*
BEA/MB/03.93.03.04.	*Plan of Ironstone Workings.*	*1:2500*

Mining Report on the Playing Fields at Galon Uchaf, Merthyr Tydfil.

- Desk Study -

1. Introduction.

This report has been prepared on behalf of our clients:-

Merthyr Tydfil Borough Council,
Civic Centre,
Merthyr Tydfil,
Mid Glamorgan,
CF47 8AN.

The report is a desk study which has examined and assessed the mining and geological records for the area around the property and comments upon the implications of our findings. The following sources of information were studied in the compiling of this report:-

(i) Site visit to the property.

(ii) Search of geological records of the area.

(iii) Search of mining records held at Bretby by British Coal on behalf of Her Majesty's Inspector of Mines.

(iv) Search of archive records of Blandford Esterling and Associates.

2. Brief Description of Site.

This report studies the playing fields at Galon Uchaf, Merthyr Tydfil and which are known locally as "The Greeny". The playing fields are an area of artificially levelled land occupying an area of approximately 3.2 hectares. The land is situated immediately to the west the old parish road from

Cont/.....

Merthyr Tydfil to Pant: the road is now Galon Uchaf Road and Tenth Avenue.

The author visited the site with Mr. A. Gilchrist of the Borough's Engineering Department who indicated hollows that had developed on the playing fields. The hollows had been infilled with substantial tonnages of top-soil, but had re-appeared, indicating on-going subsidence.

2. Geology of the Area.

The study area is underlain at shallow depth by strata of Lower Coal Measure age. The outcrop of the Five Feet Gellideg Seam, known locally as the Lower Four Feet, passes through the area of the playing fields as indicated on the *Geology and Mining History plan (drawing number BEA/MB/03.93.03.02.)*. Beneath the Five Feet Gellideg Seam are a series of siltstones and sandstones containing a number of prominent ironstone bands. Whilst the detail of the ironstone sequence varies across the Taff Valley, there are normally five or six prominent ironstone veins which have been named in the past. The *"Part of the Stratigraphic Column" (drawing number BEA/MB/03.93.03.01.)* illustrates the typical ironstone sequence for this part of the Taff Valley. The measures containing the ironstones is typically 27m in thickness and at its base is the Garw Coal Seam.

The measures beneath the site dip gently to the south-west at a rate of approximately 1 in 10.

The Coal Measures of South Wales are affected by a number of fairly large normal faults which typically trend north-north-west to south-south-east and north-west to south-east. One such fault, the Gymos Fault, passes through the area of study where it trends north-west to south-east. The displacement of the fault in the area of study has been proved to be 17.4m (57 feet).

The published geological sheet for this area (SO 00 NE) indicates that the strata is generally overlain with superficial deposits: namely, boulder clay. However, much of the area of the playing fields has previously been subject to mining activities which stripped away the boulder clay to expose the strata. The area has subsequently been infilled and shaped in order to form the present groundslopes, and the geological sheet indicates that the immediate area of the playing fields is made ground.

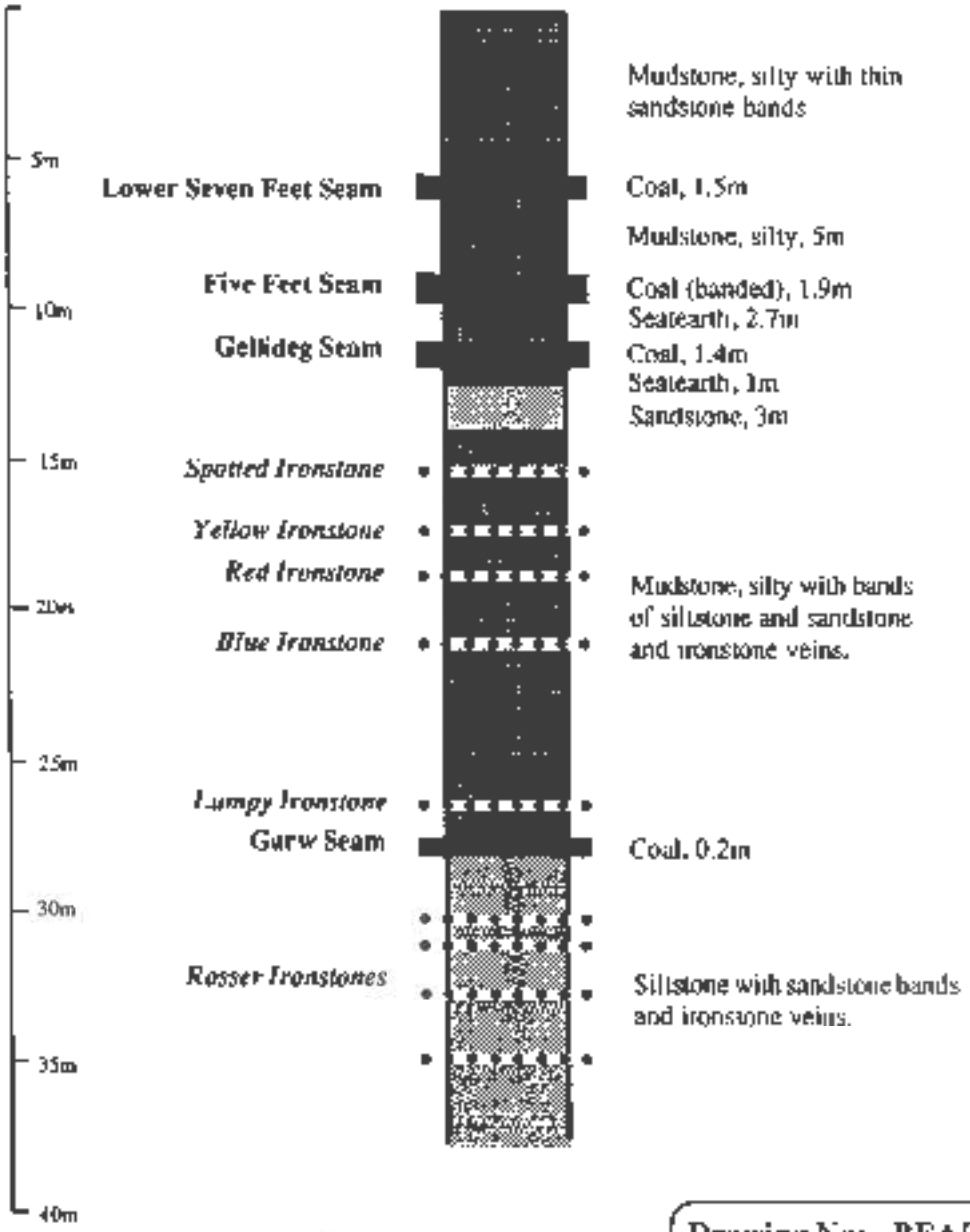
3. Mining History.

Our search of mining records indicates that there has been quite intensive mining in this area both for coal and for ironstone.

Cont/....

Mining Report on the Playing Fields at Galon Uchaf, Merthyr Tydfil.

Part of the Stratigraphic Column.



Drawing No:- BEA/MB/03.93.03.01.

Blandford Esterling and Associates
Consultant Mining and Engineering Geologists.

3.1. Coal Workings.

The Five Feet Gellideg has been worked from the Galon Uwchaf Level, the workings underlie the eastern half of the playing fields and extend to the present Galon Uchaf Road *(see Plan of the Workings in the Five/Feet Gellideg Seam, drawing no. BEA/MB/ 03.93.03.03.)*. There are two shafts associated with the workings, the south-westerly shaft also served the ironstone workings. At least two cross-measure drivages connect the coal workings to the underlying ironstone workings.

3.2. Ironstone Workings.

Beneath the Five/Feet Gellideg Seam is a sequence of siltstones and sandstones which contain a number of ironstone bands. There are five named ironstone bands in this area and at least four have been extensively worked from the Penydarren Ironworks.

The ironstones were exploited beneath the area of study. Some ironstone was worked in "patches", *i.e.* open-pit operations. Whilst we can find no detailed record of the patch workings the workings all took place within the area edged orange on the *Plan of Ironstone Workings, drawing no. BEA/MB/03.93.03.04.*

The ironstones were subsequently followed underground and the workings were serviced both by adits and air shafts. The records indicate that at least four ironstones were worked beneath the area of study and the Ironstone Workings Plan illustrates the main roadways of the workings. The roadways are not differentiated on the plan. The ironstones were worked from the roadways shown on the plan so that it can be presumed that there are fairly extensive workings beneath the study area.

The main roadways would have been where the greatest height of strata was excavated.

4. Discussion and Conclusions.

The past mining operations involved the excavation of strata both to mine ironstone by "patch" workings and also to construct adits, there are also three air shafts within the area of study. The area has been subsequently infilled in order to create the present landform and the playing fields.

Old mine workings tend to migrate upwards through the strata as the roof measures constantly collapse. The main underground roadways are usually where the greatest height was excavated and

Cont/.....

therefore represent those areas where workings are most likely to collapse upwards to reach rockhead and result in surface subsidence. Such mining subsidence will first reach the surface just inbye of the adit mouth where the strata cover is least. With the further passage of time, the continuing collapse of roof measures will result in surface subsidence where there is a greater thickness of overlying strata. Eventually, a point will be reached where the bulking effect of the collapsing roof measures chokes off the process, preventing it reaching rockhead and creating subsidence at the surface.

A examination of the playing fields indicates the presence of a number of areas of surface settlement. Some are linear and slightly arcuate in shape whilst others are circular. Towards the western boundary of the playing fields is one linear hollow which has already been filled with top-soil and has subsequently re-appeared.

We have no data on the past infilling of the general area so as to permit us to comment upon any settlement within the made ground. What is apparent from our searches is that the area is substantially underworked with several roadways having very little strata cover. The conditions present are those where mining subsidence is most likely to result in subsidence at rockhead. The observed subsidence hollows do not all neatly coincide with recorded mining roadways. However, some collapses at the surface could be the result of sections of more than one roadway collapsing underground. Futher, un-recorded roadways might be collapsing.

Given the intensity of mining beneath the playing fields, and given the very thin strata cover over the workings, we are of the opinion that the presently seen surface hollows are a result of the collapse of underground roadways. The roadways have migrated upwards through the strata to reach rockhead and then have permitted the made ground to seule into the collapse inducing the subsidence at the surface.

The collapses at the western end of the site are probably the result of settlement due to ironstone workings. To the east, and on the upper pitch, some of the subsidence may be a result of collapses in old workings in the Five Feet/Gellideg Seam. The circular collapse near the goalposts at the eastern end of the top field may be a result of settlement of an air shaft.

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Plans

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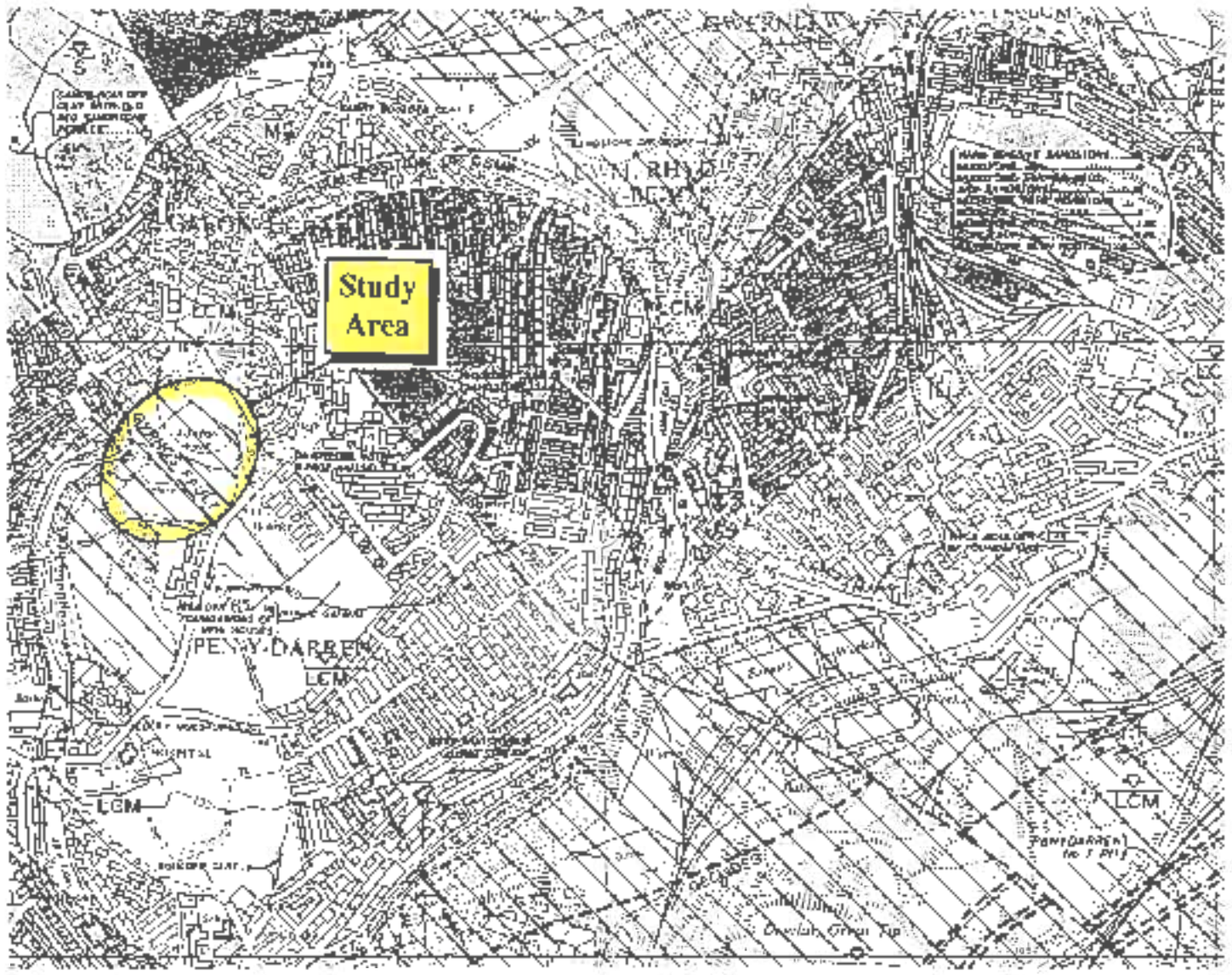
Site Location and General Geology.

North is at Top of Plans

Plan Scale:- 1:50,000.



Plan Scale:- 1:10,560.

Area of Study Highlighted in Yellow.

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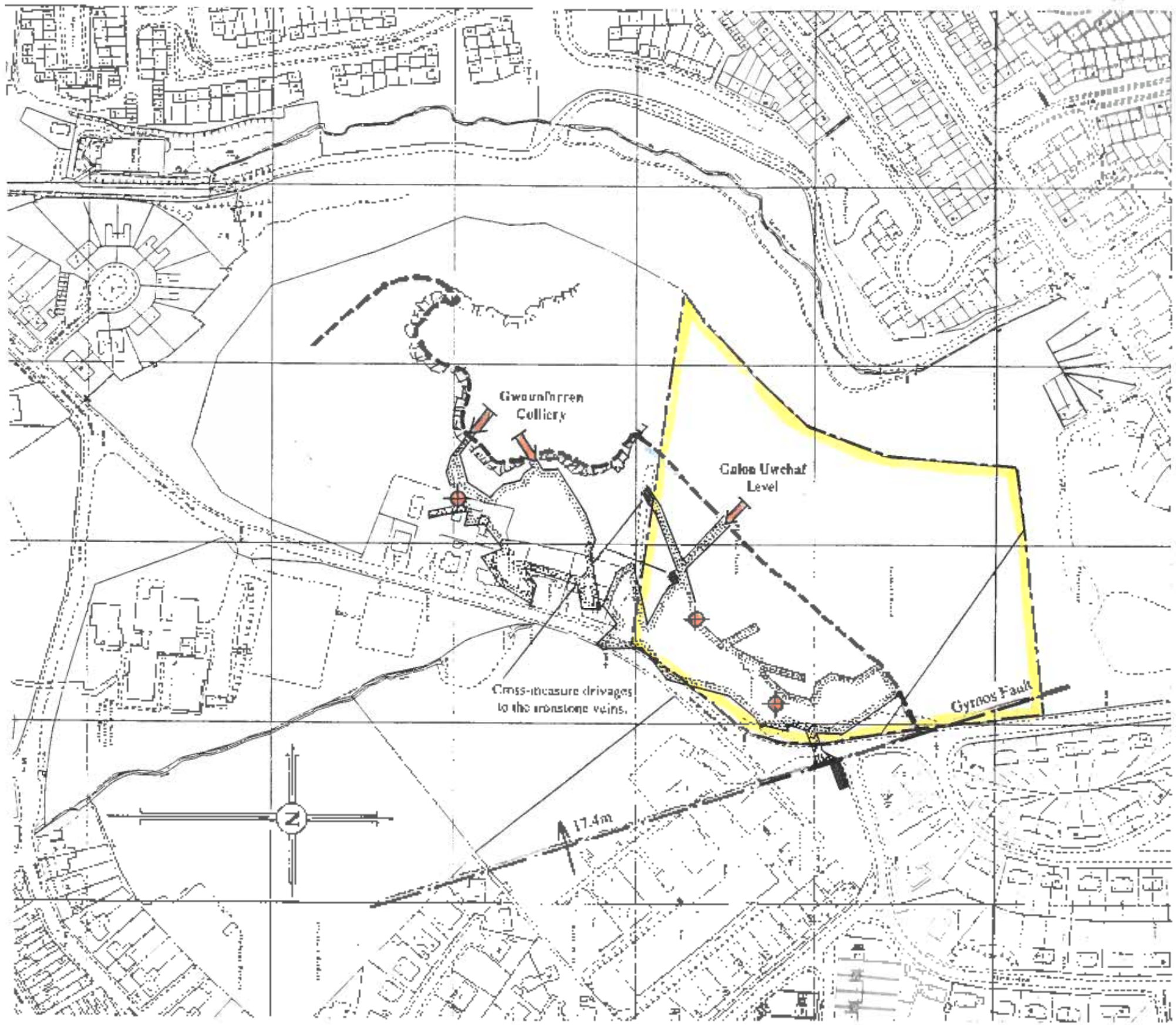
Drawing No: BEA/MB/03.93.03.02.



Mining Reports for the Playing Fields
at Galon Uchaf, Merthyr Tydfil.

A Desk Study.

Plan of the Workings in the Five Feet Gellideg Seam.

Plan scale: 1:1500

Key To Symbols:

- Limit of Study Area.
- Approximate Position of the Outcrop of the Five Feet Gellideg Seam (Locally known as the Lower Four Feet Seam).
- Approximate Limit of Workings in the Five Feet Gellideg Seam.
- Adit (Hazard).
- Shaft (Hazard).
- Position of Gyrnos Fault as Shown on Mining Records.

Note:-

The accuracy of the position of the workings cannot be guaranteed and should be read as approximate.

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Drawing No:- BEA/MR/03.93.03.03.

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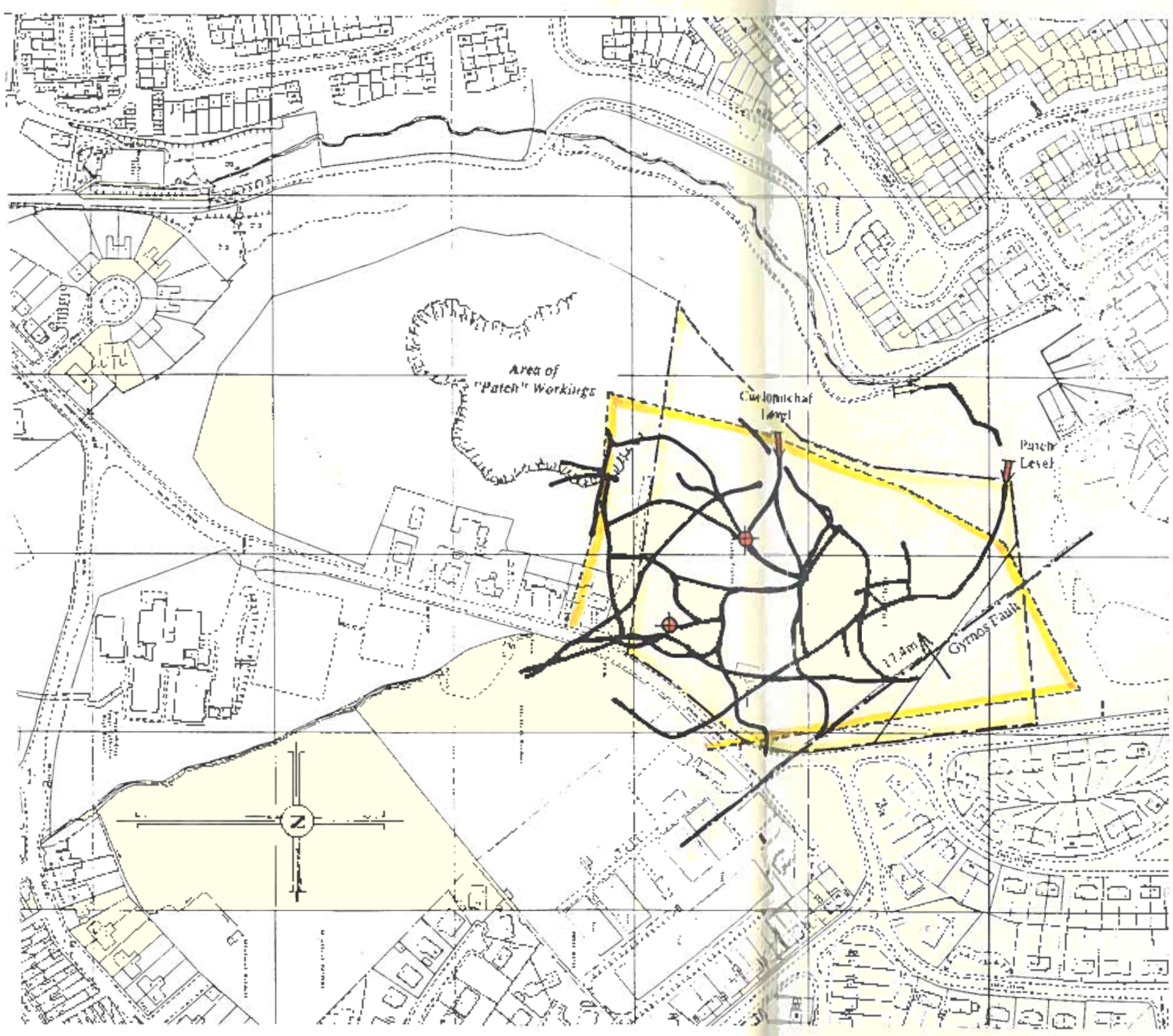

Report No: BEA/MB/03.93.03.

Mining Report on the Playing Fields at Galon Uchaf, Merthyr Tydfil.

- Desk Study -

Plan of Ironstone Workings.

Plan Scale:- 1;2500.

Key To Symbols.

- Limit of Study Area.
- Area Within Which Patch Workings Were Prosecuted.
- Main Underground Roadways in Ironstone Veins (Un-differentiated).
- Adit (Disused).
- Shaft (Disused).
- Position of Gurnos Fault as Shown on Mining Records.

Note:-

The accuracy of the position of the ironstone workings cannot be guaranteed and should be read as approximate.

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Drawing No:- BEA/MB/03.93.03.04.

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MERTHYR TYDFIL
BOROUGH COUNCIL

THE GREENIES PLAYING FIELDS, MERTHYR TYDFIL

SITE INVESTIGATION
INTO SUBSIDENCE
FEATURES

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THE GREENIES PLAYING FIELDS, MERTHYR TYDFIL

SITE INVESTIGATION INTO SUBSIDENCE FEATURES

DECEMBER 1994

Prepared By ..... Date 16/12/95

Reviewed By ..... Date 7/4/95

Approved By ..... Date 7/4/95

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Report Serial No. 94/2688

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APPENDIX

A. Draft Bill of Quantities

1. INTRODUCTION

A number of shallow subsidence depressions have developed in the Greenies Playing Fields, Merthyr Tydfil. Some of the features have been filled by ground staff over the years yet despite this, have continued to develop.

Merthyr Tydfil Borough Council commissioned Blandford Esterling and Associates to carry out a mining desk study of the site in 1993. They presented their findings in their Report No. BEA/MB/03.93 03. From mining records they identified extensive ironstone and coal workings at shallow depth beneath the site, and concluded that the subsidence features were probably due to the abandoned mining.

Merthyr Tydfil Borough Council have now commissioned Ove Arup and Partners to carry out a more detailed desk study, a preliminary site investigation to provide further evidence regarding the cause of the subsidence features, and to identify the level of risk from abandoned mining across the site. The brief is contained in a letter dated 27/05/94 from Merthyr Tydfil Borough Council and includes preparation of contract documents for remedial works as appropriate.

This report presents the findings of the desk study and preliminary site investigation, discusses the possible subsidence mechanisms and outlines remedial strategies for consideration by the client. It should be read in conjunction with the site investigation contractor's factual report for the fieldwork and laboratory testing; Integral Geotechnique Report No. 5655/C, dated November 1994.

2. THE SITE

2.1 Location and Topography

The site is some 2km north-east of Merthyr Tydfil centre at National Grid Reference SO 052 078, see Figure 1. It comprises The Greenies Playing Fields, which are bounded to the east by Galon Uchaf Road, a small stream on the west, an open area with housing beyond to the north, and housing to the south. The fields are developed on three levelled terraces. However, the area affected by subsidences is confined to the northern two terraces; see Figure 2. Access to the site is via a track from Galon Uchaf Road.

The ground generally falls from north to south in this vicinity and locally into the stream valley on the western side. However, the natural topography was completely masked by tipping, before being modelled to form the playing fields. It now consists of three level playing areas, separated by roughly east-west trending batters. A steep batter is also present on the western site, alongside the stream. The northernmost platform is at an elevation of 282 to 284m OD and the middle platform is at an elevation of 278 to 280m OD.

2.2 Published Geology

The 1:10,560 geological map shows fill across the site, in part overlying glacial deposits.

The superficial deposits are shown resting upon Lower Coal Measures strata, although there are no coal seam outcrops shown on the map to indicate what part of the stratigraphic sequence lies under the site. From previous investigations carried out by Ove Arup and Partners on sites in the vicinity, it can be established that the strata between the Garw and Gellideg Coal Seams cross the site, with the outcrop of the Gellideg seam crossing the eastern side of the site. Several ironstone horizons also occur in this part of the sequence.

The strata are expected to dip at about 1 in 9 to the south east in this area. The geological map shows the Gyrnos Fault crossing the site, trending NW to SE. A fault at this position is not confirmed by mine plan information. The mine plans do however, show a fault further to the east very close to the eastern site boundary.

The geological sequence and structure is discussed in more detail in Section 3.2.4 in the light of information from mineplans and the findings of the boreholes.

2.3 Site History

The history of the site has been researched from old mine plans, the tithe map, various editions of the ordnance survey 1:2500 scale plans and aerial photographs at a number of dates from 1947 onwards.

The tithe map for this area is dated 1840. This plan is of small scale and contains little detail. However, an area of excavation is shown to the south of the site located beneath the southernmost platform of the playing field. Comparison with mine plans and later, ordnance survey plans reveals this excavation to be a 'patch' working on the ironstone horizons. Patching was an early form of opencast mining and hence this indicates that mining had already been undertaken in this area before the middle of the 19th Century. The earliest mine plan for the ironstone workings indicates dates of mining in the 1830's

The 1st Edition 1:2500 scale Ordnance Survey plan, dated 1885 shows most of the site to be open land. A level (Entrance L, Figure 2) shown to be for 'coal and ironstone' was present on the western side of the site, next to the stream and an air pit (Entrance D, Figure 2) was present near to the road on the eastern side. The patch working was shown immediately to the south. The 2nd (1904) and 3rd (1919) Edition plans reveal a similar situation except that the level and air pit were not longer shown.

2.3 Cont'd...

The 1947 aerial photograph showed the roads and housing had been established around the south and east of the site. Extensive evidence of reworking or tipping was evident by the many tracks of earthmoving equipment across the site. By 1953, further tipping was evident.

It is understood from local information that the site was used as a tip by ICI, from their Dowlais Factory. This opened in 1938 as a government agency plant, manufacturing raw materials for fertilizers and explosives. It is known that ammonia, nitric acid and methanol were manufactured and also TNT during the 1940's. Coal was used as a raw material in the manufacture of methanol. This plant closed in 1963.

An aerial photograph dated 1967 shows that the site had been regraded to form the two platforms for the playing fields. The football pitches had been established in much the same positions as today. The patch excavation to the south of the site had also been filled by this date.

An aerial photograph dated 1985 revealed the site to be much the same as today, although this photograph is too small scale to identify any subsidence features. Further work had been carried out to the east of the site to create level platforms.

2.4 Abandoned Mining

The mining history of the site has been researched from mine plans held at British Coal's abandoned mining archive at Bretby, geological memoirs and Joseph (1881). The latter is a general account of ironstone mining on the northern crop of the South Wales Coalfield which describes the stratigraphy and methods of working of the ironstone horizons.

The site falls into the areas of Gwaunfarren, Gellifaelog and Galon Uchaf farmsteads, the mineral rights for which were acquired by the Penydarren Ironworks in the late 18th Century, subsequently taken over by the Dowlais Company.

Mine plans SWR 2510J and SWR 2510E show workings in the ironstone horizons which lie between the Garw and Gellideg coal seams beneath the site and in the general vicinity. These plans are of very poor quality and only record roadways and mine entrances. Reference is made to the particular ironstone horizons in which the roadways have been driven and beneath the site, roadways on the Red, Blue, Black and Pingarrow Veins are shown. The pattern of recorded roadways is shown on Figure 2. Dates on the plans indicate workings in the 1830's.

Mine plans SW 2358 and 3622 show workings in the Four Foot Coal (Gellideg Seam), beneath and adjacent to the site, from Galon Uchaf and Gellifaelog Collieries. These were worked from adit entrances located near to the outcrop of the seam, which is also shown on the mine plans. The layout of the workings is shown on Figure 3. The few dates shown on the plans indicate that the workings were mid to late 19th Century.

2.4 Cont'd...

The following mine entrances, shown on Figures 2 and 3, are recorded on and around the site:-

Entrance	Type	Source	Comments
A	Shaft	SW 2358	'Air Pit'
B	Shaft	SL 2358	'Air Pit'
C	Shaft	SWR 2510 J	'Air Pit'. Plots close to and possibly same as B but in view of difference in age of workings this cannot be assumed
D	Shaft	1st Edition OS	'Air Pit'. Not recorded on mine plans
E	Shaft	SWR 2510 J	'Sub Pit' on mine plan. Probably a staple pit connecting 2 levels and not reaching surface.
F	Adit	SW 2358	Calon Uchaf Level
G	Adit	3632	Gwaunfarren Colliery
H	Adit	3632	Gwaunfarren Colliery
J	Shaft	3632	'Air Pit'
K	Adit	SWR 2510 J	Caelonycha Level
L	Adit	SWR 2510 J and 1st Edition OS	Coal and Ironstone
M	Adit	SWR 2510 J	Patch Level

3. THE INVESTIGATION

3.1 Fieldwork and Laboratory Testing

A ground investigation was carried out at the site in October 1994, consisting of 7 Trial pits and 4 rotary probeholes, with samples of soil taken from the trial pits for subsequent laboratory analysis. The investigation was carried out by Integral Geotechnique, under the full time supervision of Ove Arup and Partners.

The objectives of the investigation were to:-

- determine the nature of the fill, its degree of contamination and its potential for volume reductions due to degradation, or other processes,
- determine the 'seat' of the subsidence at specific subsidence features; ie. whether the disturbance originated in the fill or in the underlying strata,
- obtain sufficient geological information to determine the depth of worked mineral horizons beneath the site.

The following laboratory analyses were carried out on the samples of soil taken from the pits:-

Arsenic, Cadmium, Total Chromium, Lead, Mercury, Selenium, Boron, Copper, Nickel, Zinc, pH, Polyaromatic Hydrocarbons, Free Cyanide, Organic Content and Toluene Extractable Matter.

Probehole and trial pit logs and the results of the chemical tests are contained in the contractors Factual Report No. 5655/C.

3.2 Ground Conditions Revealed

3.2.1 General Stratigraphy

The trial pits and probeholes revealed the following general sequence:-

Thickness (m)	Description
<1 to 6.5	FILL: Very loose gravelly ash.
absent to 2m	BOULDER CLAY
not proved (max penetrated 20.5m)	LOWER COAL MEASURES MUDSTONES with occasional coal and 'hard' (ironstone) bands.

No groundwater was encountered in any of the pits or probeholes.

3.2.2 Fill

The fill consisted predominantly of loose to very loose, low density black gravel to sandy gravel of ash and clinker. There was no sign that the material had been compacted and it was considered to be the result of end tipping. It was around 1m thick in the north (TP4 and 5), increasing southwards to over 5m at Probehole 1 and 2, although reducing to around 2m at TP7.

Layers or lenses of soft maroon/brown organic matter were found in Trial Pit 4 at 0.7 to 0.9m, Trial Pit 5 at 0.8 to 1.0m, Trial Pit 6 at 0.8 to 0.9m and Trial Pit 7 at 1.3m to 1.6m. This material resembled peat except for a granular texture, which suggested that it might have been partially decomposed wood chips or sawdust. Two organic matter determinations gave values of 44.8% and 50.8% for this material.

The following table contains a summary of the chemical test results for the samples of fill material.

SUMMARY OF CHEMICAL TEST RESULTS

Test	Range of Values		Mean	No. of Tests	ICRCL Threshold (Parks and Open Spaces)
	Min	Max			
Arsenic	7	36	17.6	8	40
Boron	<1	1	<1	8	3
Cadmium	<1	<1	<1	8	15
Chromium (total)	5	31	16	8	1,000
CN (free)	3	52	N/A	4	25
Copper	25	524	149	8	130
Lead	18	208	99	8	2,000
Mercury	<2	7	<2	8	20
Nickel	3	41	19	8	70
SO_4	1,200	13,200	9,200	3	2,000
Zinc	8	71	31	8	300
Toluene Extractable Matter	0.05	51.35	N/A	8	N/A
Organic Content %	6.1	50.8	N/A	4	N/A
pH (units)	1.7	7.8	5.6	23	5
Selenium	.8	82	N/A	4	6

Note: all values in mg/kg unless otherwise stated

3.2.3 Boulder Clay

Boulder Clay was encountered in Trial Pits 3, 4, 5 and 7, beneath the fill. It consisted of generally firm brown silty clay. None of the trial pits proved the full thickness of boulder clay. In Probehole 4 it was 2.2m thick, whilst the other probeholes did not conclusively identify this stratum. In all of the trial pits which encountered the boulder clay it appeared intact and there was no sign of disturbance due to subsidence.

3.2.4 Coal Measures Sequence

The probeholes all encountered Coal Measures Mudstones to their full depth. Probehole 1 encountered a coal seam in 3 leaves between 5.5m and 11.5m. The coal seam section for Gelliflaelog Colliery (Mine Plan SW 2358) correlates quite closely with the findings of the probehole and it is therefore considered that the seam encountered was the Four Feet Seam (Gellideg). Probehole 4 also encountered coal at rockhead. From its position and the nature of the underlying strata it is considered that this represents part of the lower leaf of the same seam.

Probeholes 2 and 3 did not encounter any coal seams and it is considered that they lie outside the outcrop of the Gellideg Seam. This is consistent with the outcrop position shown on mine plans. From the mine plan and findings of the probeholes an approximate outcrop position for the Gellideg Seam is shown on Figure 3.

Probeholes 3 and 4 encountered voids and associated soft drilling at depths of about 20m in each case. These positions are stratigraphically below the Gellideg Seam and are considered to be workings in the Ironstone horizons between the Garw and Gellideg Coal Seams. Since there are up to 6 named ironstone horizons in this part of the sequence, within only 25m of strata, it is impossible to confirm which horizons were encountered. By comparison with the published section for the Dowlais mineral take (Joseph 1881), shown in Figure 4, it is tentatively suggested that the void in Probehole 4 is in the Blue Vein, which is recorded as being some 14m below the Four Foot Coal. The dip of the strata recorded on mine plan 3622 is 1 in 9 to the south east and if this is consistent across the site, it is probable that the void recorded in Probehole 3 is within the Pingarrow horizon.

Apart from within the voids mentioned above all of the probeholes encountered intact and sensibly undisturbed strata from rockhead. There was no indication from the drilling rates, progress or flush returns of any broken ground or disturbance which might indicate broken strata due to subsidence.

4. DISCUSSION AND RECOMMENDATIONS

4.1 Mechanism of Subsidence

Two possible mechanisms of subsidence were identified at desk study stage:-

- collapse of abandoned mineworkings,
- degradation/settlement within the fill.

From extensive research and experience of mining subsidence assessments throughout the South Wales Coalfield, it has been found that the general mechanism of ground surface subsidence due to the collapse of abandoned mineworkings is crownholing. (South Wales Desk Study 1985; Statham and Treharne 1991). This is a process of progressive collapse and upward migration of a void to form a chimney, eventually breaking to surface as a sudden loss of ground. Typically, such collapses are 1m to 3m in diameter and roughly circular. Even through fill materials, they tend to propagate as a chimney. In very loose ground or water bearing granular superficial deposits it is more likely that the collapse would propagate from rockhead as a conical form. In these circumstances, it is more likely that surface subsidence would be manifested as a shallow depression over a wider area.

The subsidence depressions on this site are very shallow whilst at the same time, varying in diameter from only about 1m to 3m. It is considered highly unlikely that crownhole features would propagate to surface through up to 6m of superficial deposits in this restricted form. Either they would form a distinct collapse feature or they would result in a much broader, shallow feature. Mining subsidence incidents are relatively rare and widely spaced across the coalfield. Whilst not conclusive, for so many to be developing in one location at the same time would be very surprising indeed. A comparison of the distribution of features with the mine plan information indicates virtually no correlation with recorded mining features.

Finally the trial pits and probeholes revealed that the boulder clay and bedrock underlying the subsidence features investigated, showed no signs of disturbance. This indicates that the 'seats' of the subsidences investigated were within the overlying fill and not in the bedrock.

The fill itself was loose to very loose and in four of the trial pits, lenses of partially degraded, highly organic waste were encountered. The form and distribution of the features and the fact that they have slowly developed over many years is consistent with degradation. It is therefore considered that mechanism of subsidence is slow decomposition of organic rich layers, resulting in consolidation of the fill. Compaction of the loose, open texture may also be a contributory factor, resulting in small undulations of the ground surface.

4.2 Potential for Mining Subsidence

Whilst the subsidence features visible are not considered to be due to mining, nevertheless there are shallow workings under the site. The potential for future mining subsidence should therefore be considered.

To the east of the Gellideg Seam outcrop, shown on Figure 2, there are recorded coal workings and it is likely that workings extend beyond the recorded boundaries.

4.2 Cont'd...

These workings have been pursued virtually to outcrop and therefore they are present under a thin rock cover throughout the eastern part of the site. It is estimated that the total cover to the workings, including superficial materials, would vary from about 6m to 12m. Consequently, where voids remain, there is a significant potential for migration to surface, resulting in crownhole collapse. The greatest potential is expected over roadways which tend to be better engineered and therefore survive longer after abandonment. The pillar and stall workings themselves are more likely to be collapsed or backstowed and are less likely to result in subsidence long after abandonment.

To the west of the Gelliddg outcrop the remainder of the site is underlain by several ironstone horizons. Mine plans confirm that they have been worked on several levels via an extensive network of roadways, whilst two of the four probeholes encountered voids within 15m of rockhead. Therefore a significant potential for crownholing also exists in this area. Once again, the greatest potential is associated with the roadways. From Joseph (1888) the method of working of the ironstone would suggest that the ironworkings are largely backstowed on abandonment and present much less risk.

Several shaft and adit entrances are recorded on the site. From the South Wales Desk Study findings (Arup 1985), these are generally considered to present the greatest potential for ground disturbance. The shafts on this site were all air shafts and are likely to be only a few metres deep and only a metre or so in diameter. However, if they remain open beneath a staging, which may subsequently collapse, they could cause a significant surface disturbance. The adit entrances would almost certainly have been backfilled on abandonment and present little hazard. However, the roadways immediately inside could well have remained open and could still present a subsidence potential.

There is insufficient site specific data to carry out a formal risk assessment for mining subsidence. However, comparison with other areas in Merthyr Borough in a similar mining environment would suggest that the risk of sudden loss of ground by crownholing is very low. The risk of injury to people is even lower, since the chance of someone falling into a crownhole if one occurs, is itself relatively low. Nevertheless, the Borough should consider whether this low level of risk is acceptable for a playing field in their control.

4.3 Ground Contamination

The chemical analyses indicate that the general ash fill across the site is acceptable for its use as a playing field. Levels of contaminants in this material generally do not exceed Interdepartmental Committee on the Redevelopment of Contaminated Land (ICRCL) guideline threshold levels for parks and open spaces (ICRCL 59/83 revision 1987).

The lenses of degradable material exhibit low pH, high cyanide, copper, sulphate and selenium. Given the origin of this material it is probably highly decomposed organic waste from the manufacture of explosives. This material would constitute a significant health risk by skin contact, inhalation of dust or ingestion. However, given that it is present in small lenses and appears to be isolated from the surface by fill and topsoil, it is unlikely to be presenting a significant risk to site users at present. Its presence should be taken into account when excavations are carried out on the site in future and where encountered, it should be removed to a suitable licensed tip.

4.4 Subsidence Remedial Options

The investigation has established with reasonable certainty that the subsidence presently occurring at the site is attributable to slow degradation and lack of compaction of the fill. Abandoned mining is not considered to be the cause although there remains a potential for subsidence by this mechanism.

It follows from the above that there is no rationale for being selective about areas to be treated to mitigate the subsidence. The likelihood of degradable materials being present is similar everywhere across the site, since the fill came from a single source and is quite monotonous in character. The distribution of subsidence at the moment is widespread across both platforms. The following options have been considered to address the subsidence presently occurring:-

- excavate and recompact the existing fill with selective removal of unsuitable materials,
- dynamic compaction.

Dynamic compaction has been discounted. The site area is to be treated is small and the economic benefit of this process over conventional methods in this case is marginal. Further, the existing deep drain which crosses the site would require re-routing, further increasing the costs. In any event, conventional plant would still be necessary for treatment of abandoned mine entrances; see below.

The excavate and recompact option is considered the most suitable, and is easily carried out by small to medium size local earthworks contractors. It is only considered necessary to excavate the fill to a maximum of 2m or to full depth where this is less. Degradable materials should be removed to a suitable licensed tip and then the fill should be re-laid and compacted in accordance with a suitable earthworks specification. The pitches may then be reinstated. A typical bill of quantities with estimated rates for this option is given in Appendix A.

There remains the subsidence risk associated with abandoned mineworkings at the site. From experience around the coalfield the risk of subsidence from abandoned mine entrances is greater than for the abandoned workings themselves and it is recommended that these are searched for and treated as part of the earthworks contract. The shafts (probably 3 No.) are almost certainly of very limited size and it is considered that mass concrete plugs would be adequate to seal them. The adit (4 No.) entrances may be excavated and backfilled with compacted fill, with an allowance for a limited amount of grouting to infill the associated roadways where they are sufficiently shallow.

4.4 Cont'd...

The mineworkings themselves present a much lower level of risk than mine entrances. The degree of risk is no greater than is found in many open areas in Merthyr Tydfil Borough in the coalfield at large. Whether this is considered acceptable for a Borough playing field facility, which people are encouraged to use, must be decided by Merthyr Tydfil Borough Council. If it is decided to mitigate the risk, two options are feasible:-

- geotextile solution - a high tensile strength geotextile membrane can be incorporated into the uppermost 500mm of compacted fill. In the unlikely event of a subsidence occurring, in some instances the membrane will be sufficient to prevent it causing surface disturbance. Where the subsidence is of too great a diameter the surface will 'dish' but the membrane prevents collapse. Hence people would be protected from injury and the feature can be quickly identified and backfilled. The membrane would need to be extended some 5m beyond the pitch perimeter to provide an anchorage.

- drilling and grouting - the most robust method of treatment is to infill the mineworkings by drilling and grouting. Provided this is carried out in a careful manner, the risk of future subsidence is virtually eliminated. However, this is likely to be between 5 and 10 times more costly than the membrane solution and for a low order level of risk, is considered excessive.

The following is a summary of estimated costs to carry out the works (see also Appendix A):-

Process	Estimated Cost
Excavate and recompact up to 2m fill and reinstate playing field.	£ 78,000
Treat mine entrances (7No.)	£ 10,000
Geotextile membrane to protect against mining subsidence	£ 60,000
Drilling and grouting to infill mineworkings	£275,000*

* NB average price for moderate grout take could vary considerably either side.

It should be noted that no allowance has been made in the above estimates for the inclusion of drainage in the reinstated pitches. This may be considered necessary due to the reduced permeability of the compacted fill. Permeability tests should be carried out on compacted samples to determine the need for this item, prior to reinstatement

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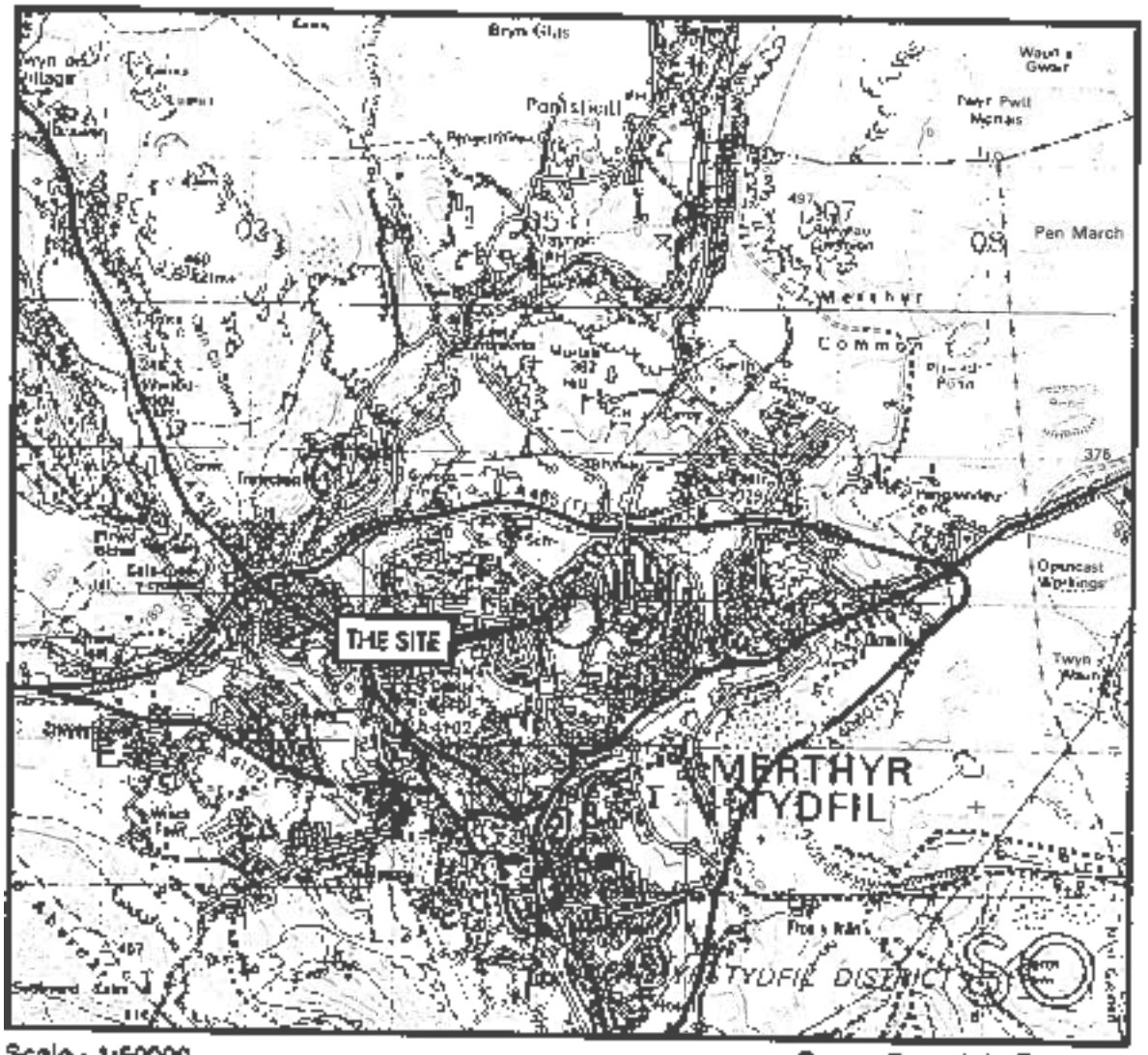
1. Joseph T (1881), Observations on the Clayband Ironstone or Mine of the Northern Outcrop of the South Wales Coalfield South Wales Institute of Civil Engineers Proceedings Vol XII p255.

2. Statham I and Treharne G (1991), Subsidence due to abandoned mining in the South Wales Coalfield UK : Causes Mechanisms and Environmental Risk Assessment. LAND SUBSIDENCE, IAHS Publication No. 200, pp143 - 152.

3. ICRCL (1987) Guidance on the Assessment and Redevelopment of Contaminated Land Interdepartmental Committee on the Redevelopment of Contaminated Land ICRCL 59/83 2nd Edition

4. Arup (1985) South Wales Desk Study - Mining Subsidence. DoE/Welsh Office Research Report on open file at Welsh Office.



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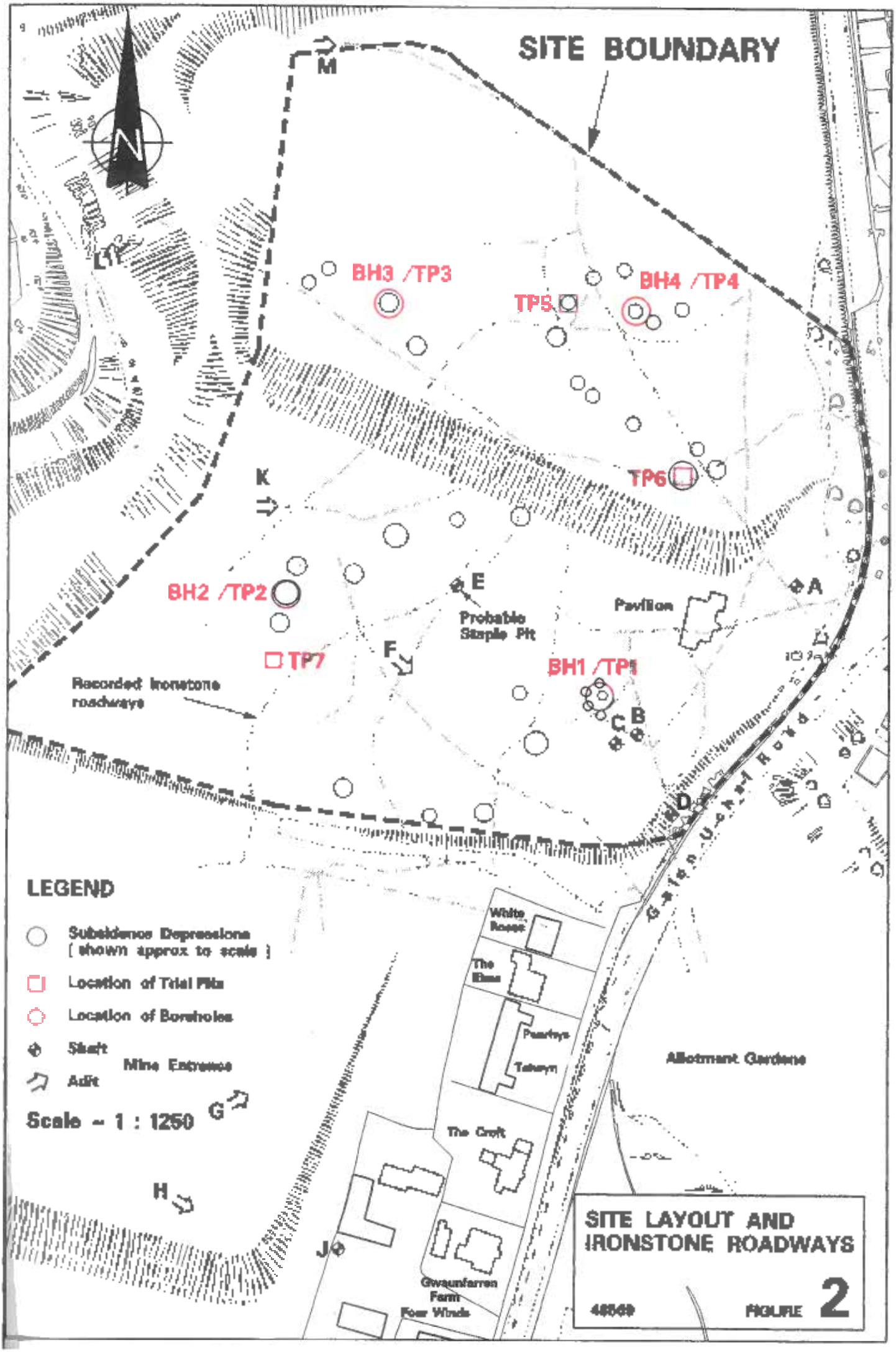
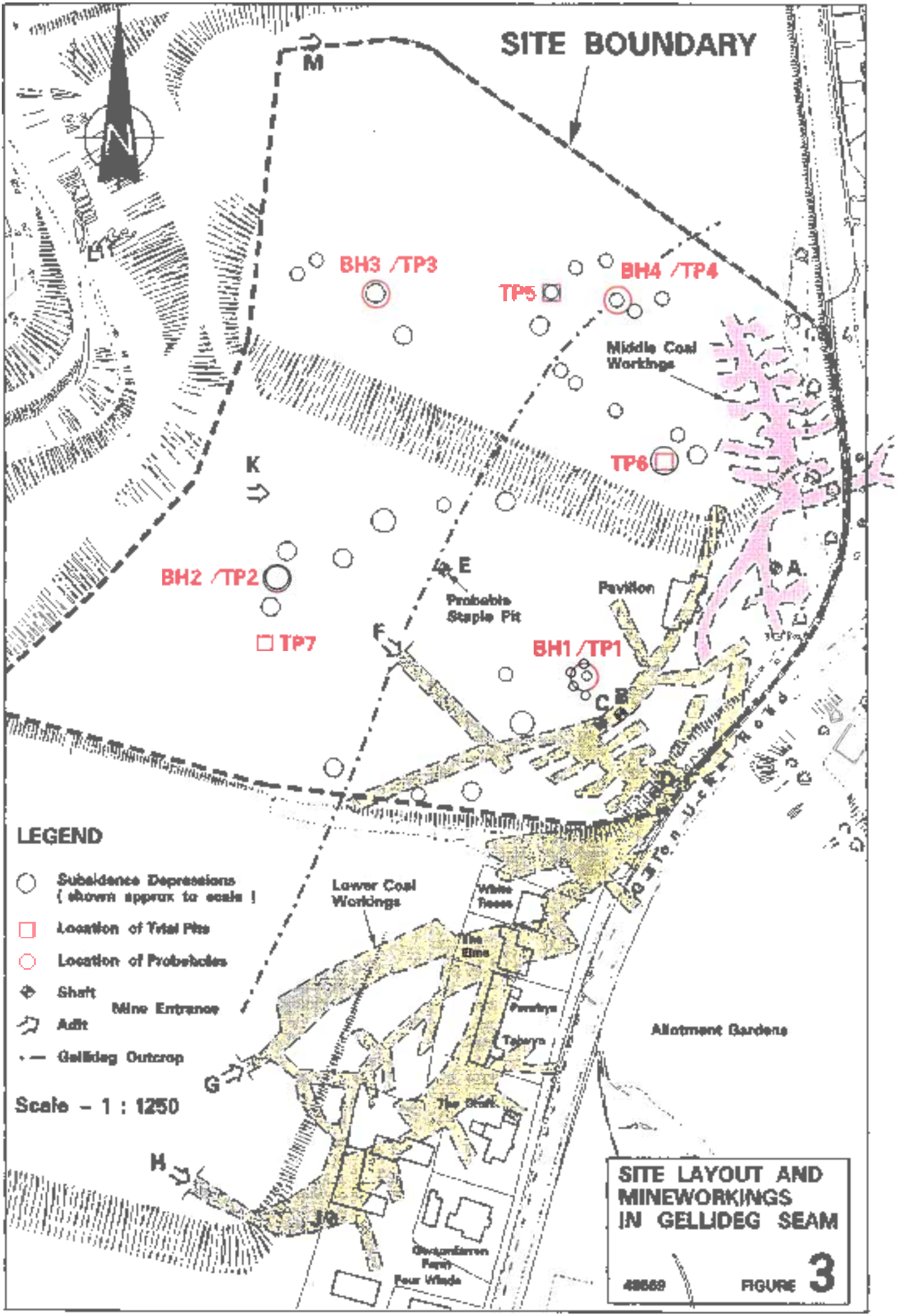
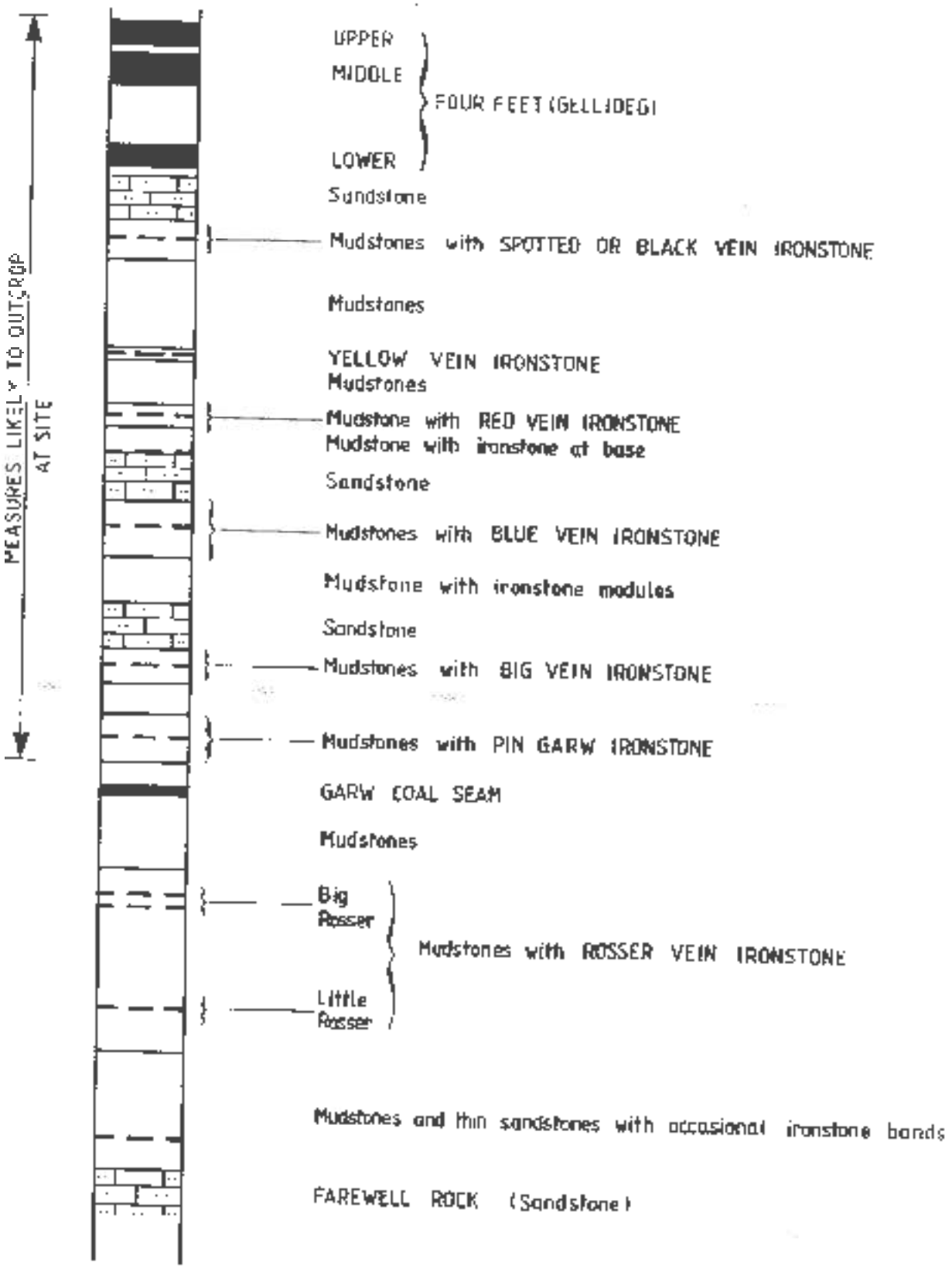
SITE LOCATION

48589 FIGURE 1


SITE BOUNDARY
N
M
L
K
BH3 /TP3
TP5
BH4 /TP4
TP6
BH2 /TP2
TP7
E
Probable Staple Pit
F
Pavilion
A
BH1 /TP1
B
C
D
Recorded Ironstone roadways
LEGEND
Subsidence Depressions (shown approx to scale)
Location of Trial Pits
Location of Boreholes
Shaft
Adit
Mine Entrance
Scale - 1 : 1250
G
H
J
White Roost
The Elms
Pearleys
Talwyn
The Croft
Gwaunfarren Farm
Four Winds
Allotment Gardens
SITE LAYOUT AND IRONSTONE ROADWAYS
FIGURE 2


SITE BOUNDARY
M
BH3 /TP3
TP5
BH4 /TP4
Middle Coal Workings
TP6
K
BH2 /TP2
E
Probable Staple Pit
Pavilion
A
TP7
F
BH1 /TP1
C
B
LEGEND
Subsidence Depressions (shown approx to scale)
Location of Trial Pits
Location of Probeholes
Shaft
Mine Entrance
Adit
Gelldeg Outcrop
Scale – 1 : 1250
Lower Coal Workings
White Fence
The Elms
Allotment Gardens
G
H
J
SITE LAYOUT AND MINEWORKINGS IN GELLIDEG SEAM
FIGURE 3



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GEOLOGICAL COLUMN

4

APPENDIX A

Draft Bill of Quantities for Subsidence Treatment

BUDGET COST ESTIMATES

ITEM	GENERAL ITEMS					
	Contractual Requirements					
A	Bond			Sum	1000	00
B	Insurance of Works			Sum		
C	Insurance of Plant			Sum	1000	00
D	Insurance Third Party			Sum		
E	Allow with complying with further Conditions of Contract (Minor Works ICE)			Sum	NIL	
	Specified Requirements					
A	Engineer's Charges			Sum	750	00
B	Temporary Works			Sum	1500	00
C	Method Related Charges			Sum		
D	Mobilise and De-mobilise to site all plant, materials, labour and supervision, etc			Sum	INCL	
	TOTAL CARRIED FORWARD				4250	00

THE GREENIES

BUDGET COST ESTIMATES

ITEM	GENERAL ITEMS					
	Provisional Sums					
A	Estimate			Sum	5000	00
	Dayworks					
A	Estimate			Sum	500	00
	TOTAL CARRIED FORWARDS TO COLLECTION				9750	00
	MINEWORKINGS STABILISATION - SEARCH AND TREAT					
A	Shaft Capping (3No.)		3	No.	750	00
B	Adit Sealing (4No.)		4	No.	500	00
C	Allowance for 'Searching' for Entrances to depths of up to 4m.		1600	m²	3200	00
D	Selective Grouting of Adits and Shafts			Sum	5000	00
	TOTAL CARRIED FORWARD				9450	00

THE GREENIES

BUDGET COST ESTIMATES

ITEM	GENERAL ITEMS					
	EARTHWORKS					
A	Excavation of Topsoil for re-use maximum depth m/e 0.25m.	2750	m^3	0.75	2062	50
B	Excavation of Material for re-use other than topsoil, rock or artificial hard material.	22000	m^3	0.70	15400	00
C	Excavation of Material for disposal other than topsoil, rock or artificial hard material (waste material - must go to registered tip).	440	m^3	7.50	3300	00
D	Filling and compaction of non-selected excavated materials other than topsoil or rock	22000	m^3	1.30	28600	00
E	Filling and compaction of imported natural material other than topsoil and rock (from adjacent site)	3500	m^3	1.50	5250	00
F	Preparation of fill surfaces - subgrade compaction	11000	m^3	0.15	1650	00
G	Filling to 0.20m topsoil previously stockpiled under item B.	11000	m^3	1.20	2640	00
	TOTAL CARRIED FORWARD				58902	50

THE GREENIES

48569/PHE/NL.045

BUDGET COST ESTIMATES

ITEM	GENERAL ITEMS					
				c/f	58502	
H	Landscaping - grass seeding	11000	m²	0.45	4950	50
J	Rotovating of topsoil and storing prior to seeding	11000	m²	0.40	4400	00
	TOTAL CARRIED FORWARD TO COLLECTION					
	PITCH DRAINAGE					
	Not Included					
	TOTAL CARRIED FORWARD				68252	50

THE GREENIES

48569/PHE/ML.045

BUDGET COST ESTIMATES

ITEM	GENERAL ITEMS					
	SUMMARY					
	GENERAL ITEMS				9750	00
	MINEWORKINGS STABILISATION - SEARCH AND TREAT OF MINE ENTRANCES				9450	00
	EARTHWORKS				66252	50
	PITCH DRAINAGE (excluded of present)				-	-
	SUB TOTAL				87452	50
	CONTINGENCIES 10%				8745	25
	GRAND TOTAL				96197	75

5655/C

GREENIES PLAYING FIELDS
MERTHYR TYDFIL
MID GLAMORGAN

SITE INVESTIGATION FACTUAL REPORT

INTEGRAL GEOTECHNIQUE (WALES) LIMITED
90, CATHEDRAL ROAD
CARDIFF
CF1 9LL.

TEL: 0222 220452

NOVEMBER 1994

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2.0 THE SITE

2.1 Location and Description
2.2 Geology

3.0 THE SITE INVESTIGATION

3.1 General
3.2 Trial Pits
3.3 Probeholes
3.4 Laboratory Chemical Testing

APPENDICES

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APPENDIX B - Probehole Logs
APPENDIX C - Sample List
APPENDIX D - Laboratory Contamination Test Results

FIGURES

FIGURE 1 - Location of Trial Pits and Probeholes

1.0 INTRODUCTION

Merthyr Tydfil Borough Council have commissioned Ove Arup and Partners as the Geotechnical Engineers to investigate mining subsidence at the Greenies Playing Fields, near Galon Uchaf, Merthyr Tydfil.

Integral Geotechnique (Wales) Limited have been appointed as the Site Investigation Contractors.

The scope of the site investigation and the locations of the trial pits and boreholes were determined by Ove Arup and Partners.

This report gives the findings of the site investigation including the ground conditions encountered by the trial pits and boreholes. It also gives the results of the laboratory contamination testing.

2.0 THE SITE

2.1 Location and Description

The site is located 2km north east of the centre of Merthyr Tydfil at the Greenies Playing Fields near Galon Uchaf, at a National Grid Reference of SO 052078.

The topography of the area is generally irregular, but large areas have been levelled to create playing fields. The site is grassed over at present.

The site is broadly bounded by Galon Uchaf Road to the east, and a north-south trending stream to the west. The areas to the north and south of the site are grassed playing fields

2.2 Geology

The 1:10,560 geological map shows the site to be underlain by the Lower Coal Measures of Carboniferous age. These rocks consist mainly of mudstones and siltstones, with some sandstones and coal seams. These measures also contain ironstones.

The map shows the Farewell Rock outcropping to the north-west of the site and the Gellideg coal seam conjecturally outcropping to the south-east. In between lie the Garw coal seam and the Rosser Ironstone Veins which may outcrop in the vicinity of the site.

The strata in general dips gently to the south east. However this may be locally disturbed by faulting. The map shows that the Gyrnos Fault runs on a north-west to south-east trend through the centre of the site and downthrows to the north-east.

The map shows that these rocks are overlain by glacial boulder clay in the southern part of the area, and that there is little or no drift in the northern part of the site.

The map also shows that most of the site is covered by made ground.

3.0 THE SITE INVESTIGATION

3.1 General

A site investigation comprising seven trial pits and four rotary probeholes, including sampling for contamination laboratory testing, was carried out during October 1994.

The scope of the investigation was planned by Ove Arup and Partners, who also determined the positions and depths of the trial pits and probeholes.

The locations of the trial pits and probeholes are shown on Figure 1.

3.2 Trial Pits

Seven trial pits were excavated under the supervision of Ove Arup and Partners. The trial pits were logged by Ove Arup and Partners and copies of the logs are presented in Appendix A.

Samples of the fill materials were taken for contamination testing.

3.3 Probeholes

Four rotary probeholes were drilled by means of a Gryphon Minor rotary drilling rig. Ove Arup and Partners supervised the drilling of the probeholes. Integral Geotechnique (Wales) Limited prepared the summary probehole logs given in Appendix B. Field observations from driller's log are also included in Appendix B.

3.4 Laboratory Chemical Testing

Samples of the fill materials were taken from the trial pits and despatched to the laboratories of British Coal TES for chemical testing, in accordance with testing schedules prepared by Ove Arup and Partners.

A list of the samples taken is given in Appendix C.

The following laboratory tests were undertaken on the air dried samples:

Arsenic, Cadmium, Chromium total, Lead, Mercury, Selenium, Boron, Copper, Nickel, Zinc, pH, Polyaromatic Hydrocarbons, Free Cyanide, Organic Content, TEMs.

The results of the above tests are presented in Appendix D.

APPENDIX A

Trial Pit Logs

TRIAL PIT 1

Depth (m)	Stratum
0.00 - 0.2	Topsoil
0.2 - 2.0	Loose grey black low density honeycombed GRAVEL of ash and clinker. Rotting timber at 1.6m trace metal fragments, and a boulder of coarse grained quartzitic sandstone (millstone grit?).

NOTES:

1. Sides unstable.
2. No groundwater encountered
3. Samples abandoned due to [illegible] by third party

TRIAL PIT 2

Depth (m)	Stratum
0.00 - 0.3	Topsoil
0.3 - 1.0	Loose black low density sandy GRAVEL of ash and clinker (FILL)
1.0 - 1.2	Soft to firm brown grey very silty CLAY with a trace of old roots (BURIED TOPSOIL).
1.2 - 1.5	Loose black low density fine GRAVELS with some sand of ash.
1.5 - 3.0	Very loose black medium to coarse honeycombed low density GRAVELS of ash and clinker with a little to some fine GRAVEL and coarse sand of ash and clinker.
3.0	Max proven.

NOTES:

1. No groundwater ingress.
2. Sides unstable below 1.2m.
3. Samples
   Hand 0.3 - 1.0

TRIAL PIT 3

Depth (m)	Stratum
0.00 - 0.6	Sandy topsoil.
0.6 - 2.0	Very loose grey sandy GRAVEL of clinker (FILL).
2.0 - 2.2	Firm silty brown CLAY (weathered boulder clay).

NOTES:

1. Obstruction at 2.2 - boulder?
2. No groundwater seepage.
3. Sides unstable in fill.
4. Samples

Hand	1.0 - 2.0
Bulk	1.0 - 2.0

TRIAL PIT 4

Depth (m)	Stratum
0.00 - 0.3	Topsoil
0.3 - 0.4	Medium dense red ash SAND and GRAVEL with a little coal (FILL).
0.4 - 0.7	Loose black grey SAND o ash with a little fine gravel (FILL).
0.7 - 0.9	Very soft maroon organic odorous matter (?) (FILL).
0.9 - 1.1	Very loose grey honeycombed GRAVEL of clinker and ash with some sand of ash.
1.1 - 2.3	Firm pale silty CLAY with some sub-angular gravels of sandstone (weathered boulder clay).

NOTES:

1. Dampness at surface of boulder clay.
2. Sides unstable between 0.9 1.1
3. Samples taken
   Hand 0.3-0.4, 0.4-0.7, 0.7-0.9, 0.9-1.1
   Bulk 0.7-0.9

TRIAL PIT 5

Depth (m)	Stratum
0.00 - 0.2	Topsoil
0.2 - 0.6	Medium dense brown SAND
0.6 - 0.8	Loose blue grey sandy GRAVEL of ash and clinker (FILL).
0.8 - 1.1	Very soft maroon organic matter (?)
1.1 - 1.3	Soft pale clayey SILT with the occasional cobble of sandstone (Weathered Boulder Clay)
1.3 - 1.6	Stiff brown silty CLAY with some gravels cobbles and a little boulder of sandstone (Boulder Clay).

NOTES:

1. No groundwater ingress
2. Sides slightly unstable in fill.
3. Samples
   Hand 0.2-0.6, 0.6-0.8, 0.8-1.1, 1.1-1.2

TRIAL PIT 6

Depth (m)	Stratum
0.00 - 0.2	Topsoil
0.2 - 0.3	Loose grey gravelly SAND of ash and a little coal.
0.3 - 0.6	Medium dense brown silty slightly clayey fine SAND with a trace of gravels of sandstone and coal.
0.6 - 0.8	Medium dense blue grey sub-angular honeycombed GRAVEL with some sand of ash.
0.8 - 0.9	Very soft maroon organic odorous matter (?)
0.9 - 1.0	Soft pale very silty CLAY.
1.0 - 1.2	Loose to medium dense grey sub angular sub-rounded honeycombed gravel.

NOTES:

1. No groundwater ingress.
2. Sides stable.
3. Samples
   Hand 0.2-0.3, 0.3-0.6, 0.6-0.8.

TRIAL PIT 7

Depth (m)	Stratum
0.00 - 0.3	Topsoil
0.3 - 0.8	Loose to medium dense grey black SAND and GRAVEL of clinker and ash.
0.8 - 1.1	Firm brown very silty CLAY with gravels of sandstone.
1.1 - 1.3	Loose sandy GRAVEL with boulders of clinker.
1.3 - 1.6	Very soft maroon organic odorous matter (?).
1.6 - 2.2	Loose blue grey gravels of ash and clinker.
2.2 - 2.5	Firm pale orange silty CLAY with some sub-angular gravels of sandstone.
2.5 - 2.8	Stiff brown silty CLAY with sub-angular gravel of sandstone.

NOTES:

1. No groundwater ingress.
2. Sides of pit slightly instable in fill.
3. Samples.
   Hand 0.3-0.8, 0.8-1.1, 1.1-1.3, 1.3-1.6, 1.6-2.2

APPENDIX B

Probehole Logs

5655/C

PROBEHOLE NO. 1

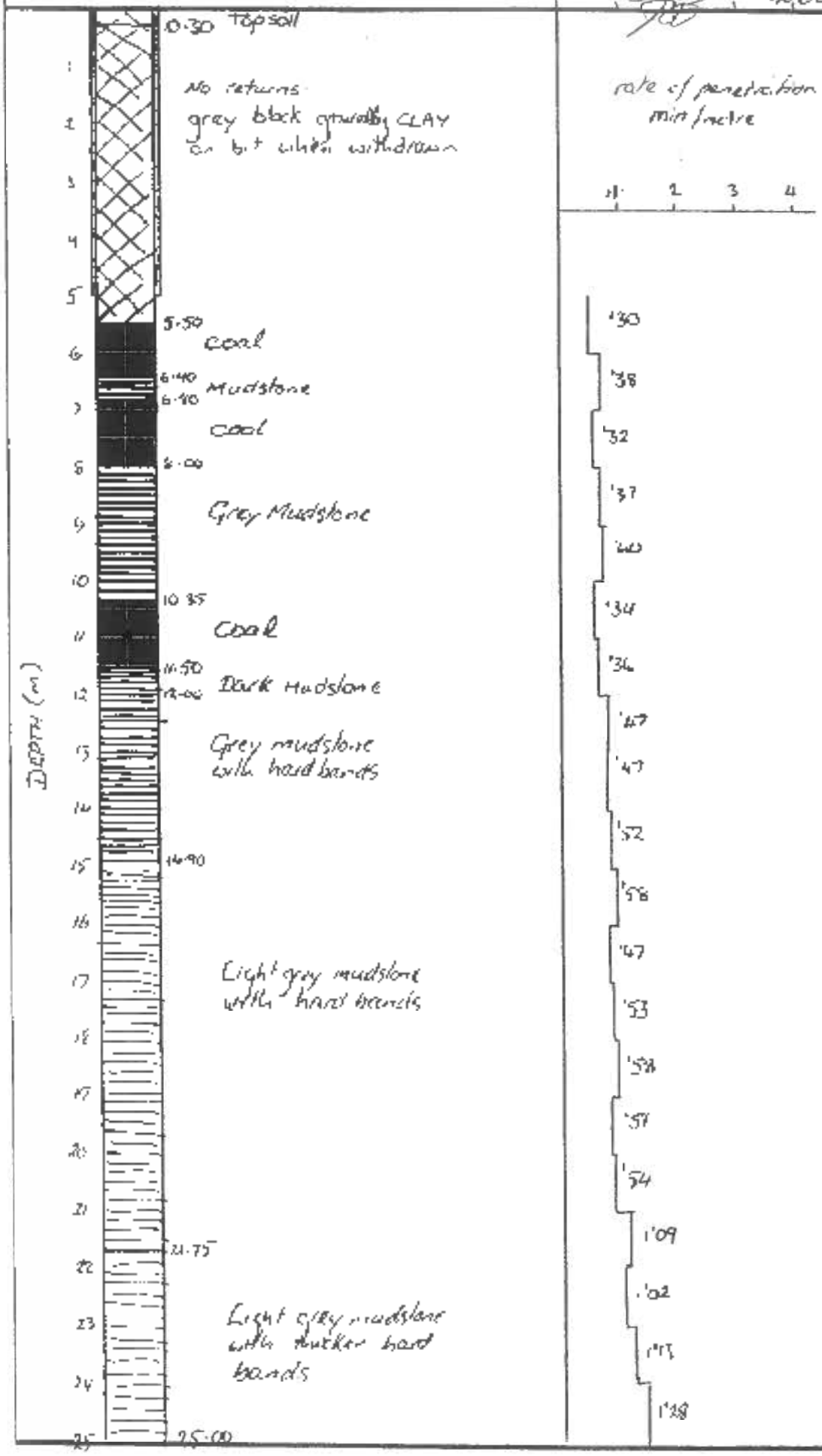
Depth (m)	Stratum
GL - 1.50	Very soft (no returns)
1.50 - 5.45	FILL (Gravelly ASH mixed with some clay)
5.45 - 6.40	COAL
6.40 - 6.80	MUDSTONE
6.80 - 8.00	COAL
8.00 - 10.35	MUDSTONE
10.35 11.50	COAL
11.50 - 25.00	MUDSTONE with siltstone and sandstone bands

Notes:

1. No groundwater
2. Equipment: Gryphon Minor rotary drilling rig.
3. Compressed air used as flushing medium.
4. Description of strata based on air flush returns.
5. Cased to 6.00m - 140mm diameter.
6. Diameter of hole from GL to 6.00m - 140mm.
7. Diameter of hole from 6.00m to 25.00m - 115mm.

ARUP **Ove Arup & Partners**
Calculation Sheet

Job No	48569
Sheet No	
Rev.	
Member/Location	BOREHOLE 1
Job Title	THE GREENIES PLAYING FIELDS
Drg. Ref	
Made by	DEE
Date	12 OCT 94
Chd	



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PROBEHOLE NO. 2

Depth (m)	Stratum
GL - 2.00	Very soft (no returns)
2.00 - 2.80	VOID
2.80 - 6.50	Soft (no returns)
6.50 - 22.50	MUDSTONE with hard bands
22.50 - 23.10	Dark MUDSTONE
23.10 - 24.50	MUDSTONE
24.50 - 25.00	SANDSTONE

Notes:

1. No groundwater
2. Equipment: Gryphon Minor rotary drilling rig.
3. Compressed air used as flushing medium.
4. Description of strata based on air flush returns.
5. Cased to 6.00m - 140mm diameter.
6. Diameter of hole from GL to 6.00m - 140mm.
7. Diameter of hole from 6.00m to 25.00m - 115mm.

ARUP Ove Arup & Partners
Calculation Sheet

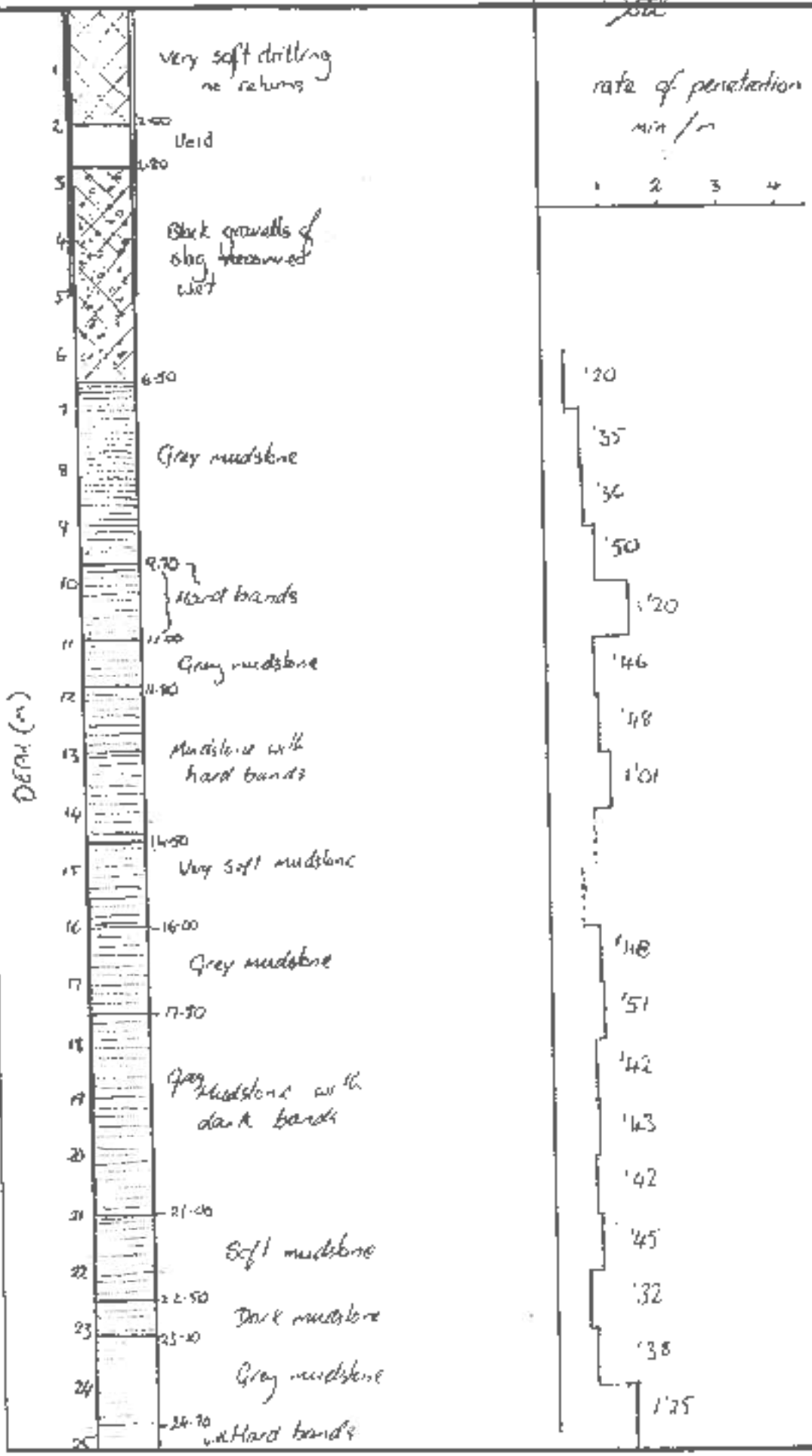
Job No. 48569

Member/Location BOREHOLE 2

Job Title THE GREENHES PLAYING FIELDS

Drg. Ref.

Made by DEE Date 12OCT94 Chd



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PROBEHOLE NO. 3

Depth (m)	Stratum
GL - 0.40	TOPSOIL
0.40 - 5.50	FILL (very soft ASH)
5.50 - 8.00	Weathered sandy MUDSTONE
8.00 - 8.80	MUDSTONE
8.80 - 8.90	Dark MUDSTONE
8.90 - 16.80	MUDSTONE
16.80 - 17.00	Dark MUDSTONE
17.00 - 19.30	MUDSTONE with silty bands
19.30 - 20.30	VOID
20.30 - 22.45	Normal drilling with hard bands (no returns)
22.45 - 25.00	Hard drilling (no returns)

Notes:

1. Borehole relocated 1m one side after hitting obstruction.
2. No groundwater
3. Equipment: Gryphon Minor rotary drilling rig.
4. Compressed air used as flushing medium.
5. Description of strata based on air flush returns.
6. Cased to 6.00m 140mm diameter.
7. Diameter of hole from GL to 6.00m 140mm.
8. Diameter of hole from 6.00m to 25.00m - 115mm.

ARUP Ove Arup & Partners
Calculation Sheet

Job No: 48569
Sheet No:
Rev:

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Dwg. Ref.
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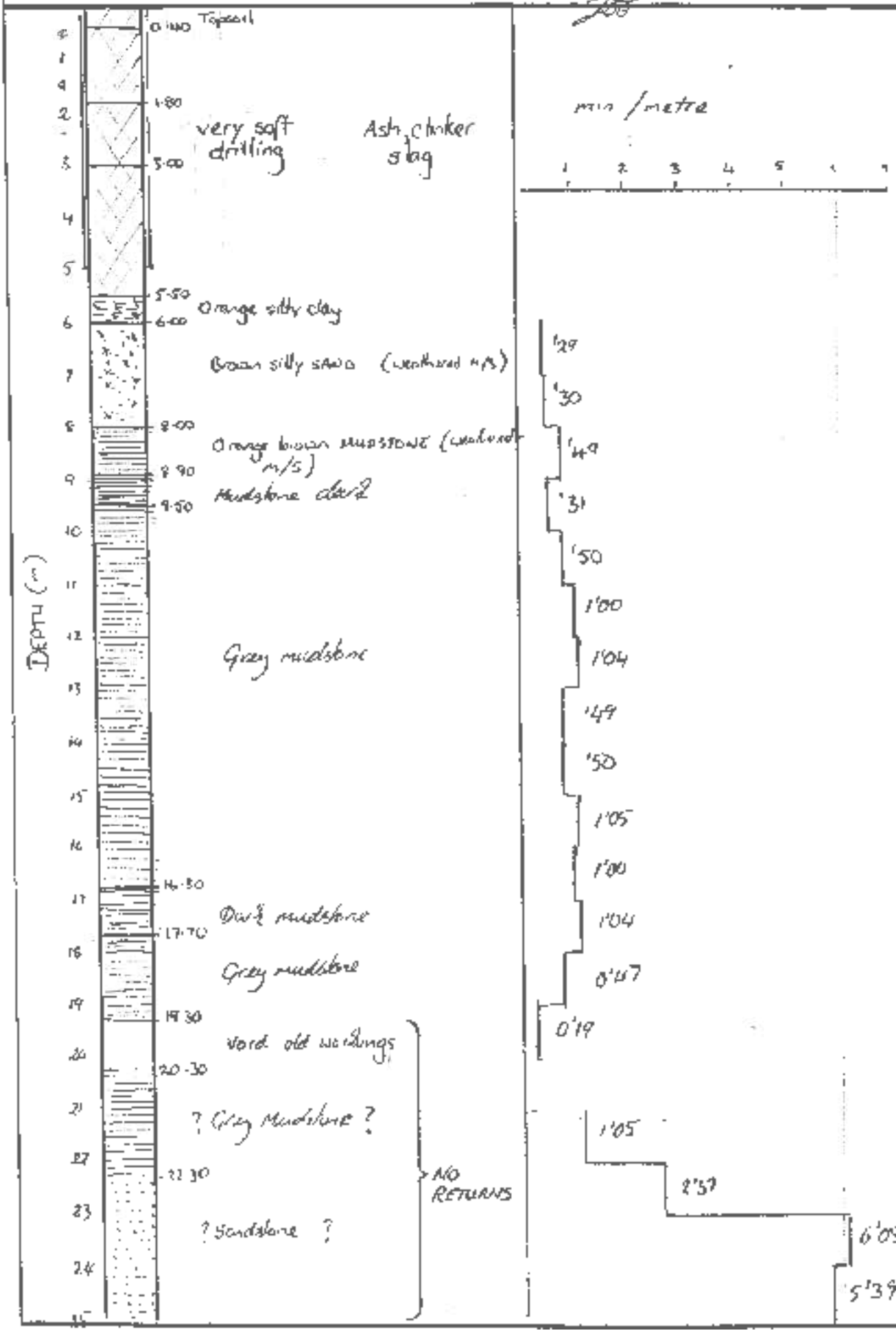


5655/C

PROBEHOLE NO. 4

Depth (m)	Stratum
GL - 0.20	TOPSOIL
0.20 - 1.80	FILL
1.80 - 4.00	Boulder CLAY
4.00 - 4.50	MUDSTONE
4.50 - 4.80	COAL
4.80 - 18.00	MUDSTONE with hard bands
18.00 - 19.00	VOID
19.00 - 20.00	Soft drilling (no returns)
20.00 - 25.00	MUDSTONE with hard bands

Notes:

1. No groundwater
2. Equipment: Cryphon Minor rotary drilling rig
3. Compressed air used as flushing medium.
4. Description of strata based on air flush returns.
5. Cased to 6.00m - 140mm diameter
6. Diameter of hole from GL to 6.00m - 140mm.
7. Diameter of hole from 6.00m to 25.00m - 115mm.

ARUP Ove Arup & Partners
Calculation Sheet

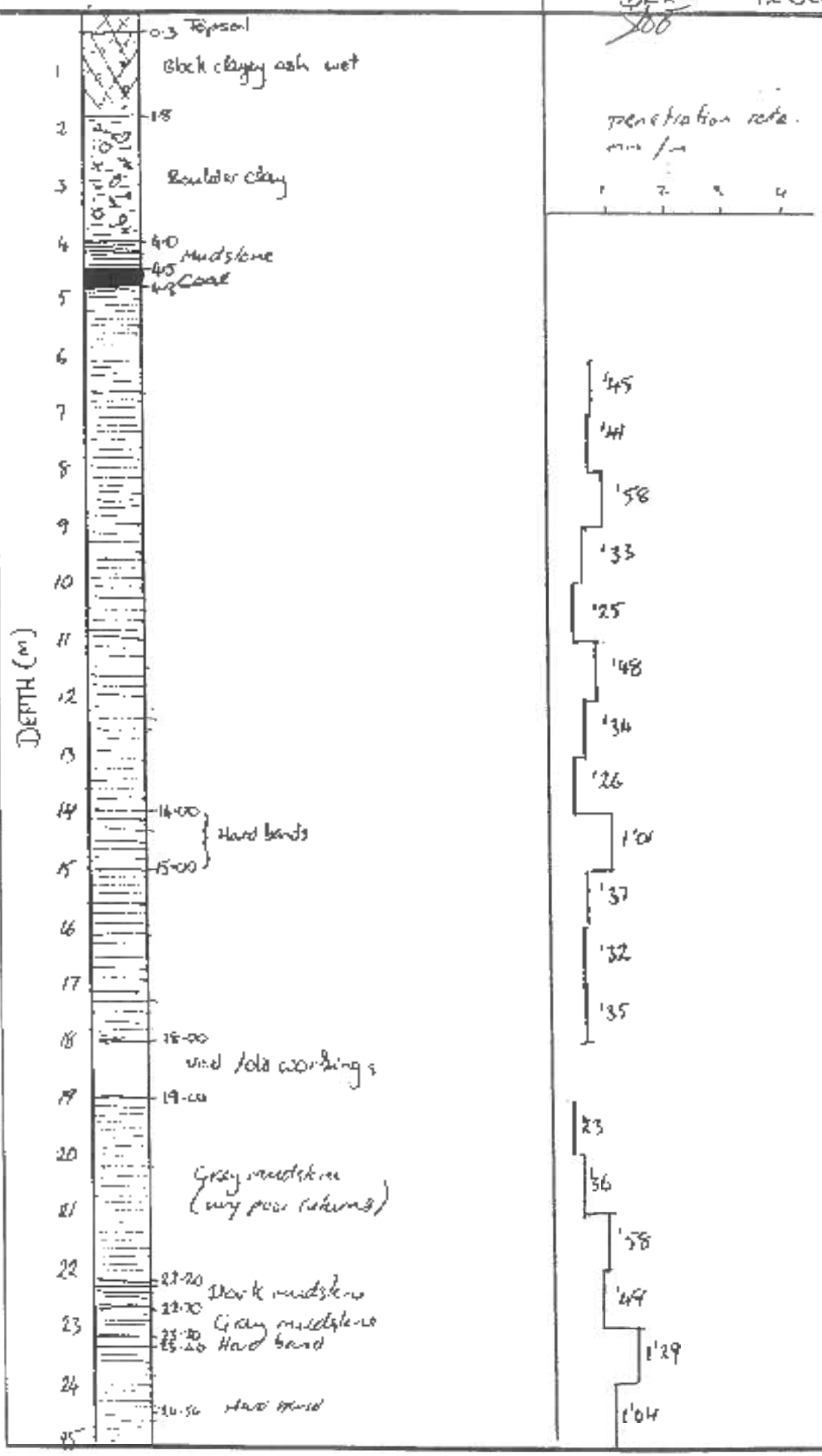
48569

Member/Location: BOREHOLE 4

Job Title: THE GREENIES PLAYING FIELDS

Drg Ref:

Made by: DEE Date: 12 Oct 94 Chd:



APPENDIX C

Sample List

SAMPLE LIST

Trial Pit	Depth (m)	Hand	Bulk	Description
2	0.3-1.0	✓	✓	Loose black low density SAND and GRAVEL of ash and clinker.
2	1.2-1.4	✓	✓	Loose black low density fine GRAVEL of ash with some sandy of ash.
2	1.5-2.0	✓	✓	Very loose black medium to coarse honeycombed low density GRAVEL of ash/clinker
3	1.0-2.0	✓	✓	Very loose to loose sandy GRAVEL of clinker
4	0.3-0.4	✓		Medium dense red ash gravel with a little coal gravel
4	0.4-0.7	✓		Loose black grey SAND of ash with a little fine gravel.
4	0.7-0.9	✓	✓	Very soft very we maroon organic odorous matter ?
4	0.9-1.1	✓		Very loose grey honeycombed GRAVEL and sand of clinker and ash.
5	0.2-0.6	✓		Medium dense brown SAND.
5	0.6-0.8	✓		Loose blue grey sandy GRAVEL of ash and clinker.
5	0.8-1.1	✓		Very soft maroon organic odorous matter. ?
5	1.1-1.2	✓		Soft cream coloured clayey SILT with occasional boulder of sandstone.
6	0.2-0.3	✓		Loose grey gravelly SAND of ash and a little coal.
6	0.3-0.6	✓		Medium dense brown silty slightly clayey fine sand with a trace of sandstone coal.
6	0.6-0.8	✓		Medium dense blue grey sub-angular honeycombed GRAVEL with some sand of ash.
6	0.8-0.9	✓	✓	Very soft very wet maroon organic odorous matter. ?
6	0.9-1.0	✓		Soft pale very silty CLAY.
6	1.0-1.2	✓		Loose to medium dense grey sub-angular and sub-rounded honeycombed gravel.
7	0.3-0.8	✓		Loose medium dense grey black GRAVELS and SAND of ash and clinker.
7	0.8-1.1	✓		Firm brown very silty CLAY with some gravels of sandstone.
7	1.1-1.3	✓		Loose grey sandy GRAVEL of ash and clinker with boulders of clinker.
7	1.3-1.6	✓		Very soft maroon organic odorous matter. ?
7	1.6-2.2	✓		Loose blue grey gravels of ash and clinker

APPENDIX D

Laboratory Contamination Test Results

TES Bretby

TEST REPORT

NAMAS

Testing No. 1252 /1411

Integral Geotechnique
50 Cathedral Road
Cardiff
CF1 9LL

Amended Report
Report No. 2099 Table 2 Sheet 1 of 6

Extended Analysis Results

Site: Merthyr Tydfil

ID Number	CL9410205	CL9410192	CL9410206	CL9410201
Customer reference	T/P 0002	T/P 0002	T/P 0002	T/P 0003
Depth (m)	0.30 to 1	1.20 to 1.4	1.50 to 2	1.20
Date logged	04/11/94	04/11/94	04/11/94	04/11/94

NAMAS accredited	Test No.	CL9410205	CL9410192	CL9410206	CL9410201
Arsenic	ICPSSS11	22		27	
Boron	ICPB41	<1		<1	
Cadmium	ICPSSS11	<1		<1	
Chromium (total)	ICPSSS11	12		19	
CN- (free)	ISECN51			17	
Copper	ICPSSS11	64		108	
Lead	ICPSSS11	52		70	
Mercury	ICPSSS11	<2		<2	
Nickel	ICPSSS11	33		33	
SO4-- (acid sol)	ICPACS58			1200	
Sulphide	ICTSCN28	<10			
TEM %	TEM56	0.05		0.15	
Zinc	ICPSSS11	71		38	

not NAMAS accredited		CL9410205	CL9410192	CL9410206	CL9410201
Organic Content %				6.1	
pH units		6.7	6.6	7.3	6.2
Selenium (AA)		0.8		5.6	

Results expressed as mg/kg Air Dried unless stated
Selenium (AA) was sub-contracted to another laboratory

Approved by: D. Thornewill
D Thornewill Project Co-ordinator

Date of Issue: 28/11/94

Tests marked "not NAMAS accredited" in this report are not included in the NAMAS Accreditation Schedule for our laboratory

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TES Bretby

TEST REPORT

NAMAS

Testing No. 2252 /1411

Integral Geotechnique
50 Cathedral Road
Cardiff
CF1 9LL

Amended Report
Report No. 2099 Table 2 Sheet 2 of 6

Extended Analysis Results

Site: Merthyr Tydfil

ID Number	CL9410194	CL9410196	CL9410207	CL9410198
Customer reference	T/P 0004	T/P 0004	T/P 0004	T/P 0004
Depth (m)	0.30 to 0.4	0.40 to 0.7	0.70 to 0.9	0.90 to 1.1
Date logged	04/11/94	04/11/94	04/11/94	04/11/94

NAMAS accredited	Test No.	CL9410194	CL9410196	CL9410207	CL9410198
Arsenic	ICPSSS11			15	
Boron	ICPB41			<1	
Cadmium	ICPSSS11			<1	
Chromium (total)	ICPSSS11			23	
CN- (free)	ISECN51			52	
Copper	ICPSSS11			164	
Lead	ICPSSS11			173	
Mercury	ICPSSS11			<2	
Nickel	ICPSSS11			16	
SO4-- (acid sol)	ICPACS58				
Sulphide	ICTSCN28				
TEM %	TEM56			2.7	
Zinc	ICPSSS11			24	

not NAMAS accredited		CL9410194	CL9410196	CL9410207	CL9410198
Organic Content %				44.0	
pH units		4.9	5.6	3.4	6.6
Selenium (AA)				82	

Results expressed as mg/kg Air Dried unless stated
Selenium (AA) was sub-contracted to another laboratory

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D Thornewill Project Co-ordinator

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TEST REPORT

NAMAS

Testing No. 1252 /1411

Integral Geotechnique
50 Cathedral Road
Cardiff
CF1 9LL

Amended Report
Report No. 2099 Table 2 Sheet 3 of 6

Extended Analysis Results

Site: Merthyr Tydfil

ID Number	CL9410204	CL9410200	CL9410203	CL9410208
Customer reference	T/P 0005	T/P 0005	T/P 0005	T/P 0005
Depth (m)	0.20 to 0.6	0.60 to 0.8	0.80 to 1.1	1.10 to 1.2
Date logged	04/11/94	04/11/94	04/11/94	04/11/94

NAMAS accredited	Test No.	CL9410204	CL9410200	CL9410203	CL9410208
Arsenic	ICPSSS11				8
Boron	ICPB41				<1
Cadmium	ICPSSS11				<1
Chromium (total)	ICPSSS11				5
CN- (free)	ISECN51				
Copper	ICPSSS11				25
Lead	ICPSSS11				123
Mercury	ICPSSS11				<2
Nickel	ICPSSS11				3
SO4-- (acid sol)	ICPACS58				
Sulphide	ICTSCN28				<10
TEM %	TEM56				0.25
Zinc	ICPSSS11				9

not NAMAS accredited		CL9410204	CL9410200	CL9410203	CL9410208
Organic Content %					
pH units		6.7	6.8	6.3	4.2
Selenium (AA)					

Results expressed as mg/kg Air Dried unless stated
Selenium (AA) was sub-contracted to another laboratory

Approved by: D. Thornewill
D Thornewill Project Co-ordinator

Date of Issue: 28/11/94

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TES Bretby

TEST REPORT

NAMAS

Testing No 1252/1411

Integral Geotechnique
50 Cathedral Road
Cardiff
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Amended Report
Report No. 2099 Table 2 Sheet 4 of 6

Extended Analysis Results

Site: Merthyr Tydfil

ID Number	CL9410193	CL9410209	CL9410197	CL9410191
Customer reference	T/P 0006	T/P 0006	T/P 0006	T/P 0006
Depth (m)	0.20 to 0.3	0.30 to 0.6	0.60 to 0.8	0.80 to 0.9
Date logged	04/11/94	04/11/94	04/11/94	04/11/94

NAMAS accredited	Test No.	CL9410193	CL9410209	CL9410197	CL9410191
Arsenic	ICPSSS11		36		
Boron	ICPB41		1		
Cadmium	ICPSSS11		<1		
Chromium (total)	ICPSSS11		10		
CN- (free)	ISECN51		3		
Copper	ICPSSS11		32		
Lead	ICPSSS11		208		
Mercury	ICPSSS11		<2		
Nickel	ICPSSS11		10		
SO4-- (acid sol)	ICPACS58				
Sulphide	ICTSCN28				
TEM %	TEM56		0.05		
Zinc	ICPSSS11		43		

not NAMAS accredited		CL9410193	CL9410209	CL9410197	CL9410191
Organic Content %					
pH units		6.3	5.8	6.4	6.1
Selenium (AA)					

Results expressed as mg/kg Air Dried unless stated
Selenium (AA) was sub-contracted to another laboratory

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D Thornewill Project Co-ordinator

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TEST REPORT

NAMAS

Testing No. 1252 /1411

Integral Geotechnique
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Amended Report
Report No. 2099 Table 2 Sheet 5 of 6

Extended Analysis Results

Site: Merthyr Tydfil

ID Number	CL9410210	CL9410195	CL9410190	CL9410202
Customer reference	T/P 0006	T/P 0006	T/P 0007	T/P 0007
Depth (m)	0.90 to 1	1.00 to 1.2	0.00 to 0.8	0.80 to 1.1
Date logged	04/11/94	04/11/94	04/11/94	04/11/94

NAMAS accredited	Test No.	CL9410210	CL9410195	CL9410190	CL9410202
Arsenic	ICPSSS11	11			
Boron	ICPB41	<1			
Cadmium	ICPSSS11	<1			
Chromium (total)	ICPSSS11	31			
CN- (free)	ISECN51	21			
Copper	ICPSSS11	524			
Lead	ICPSSS11	18			
Mercury	ICPSSS11	4			
Nickel	ICPSSS11	5			
SO4-- (acid sol)	ICPACS58	13200			
Sulphide	ICTSCN28				
TEM %	TEM56	51.35			
Zinc	ICPSSS11	8			

not NAMAS accredited		CL9410210	CL9410195	CL9410190	CL9410202
Organic Content %		50.8			
pH units		1.7	4.7	7.8	4
Selenium (AA)		9.2			

Results expressed as mg/kg Air Dried unless stated
Selenium (AA) was sub-contracted to another laboratory

Approved by: D. Thornewill
D Thornewill Project Co-ordinator

Date of Issue: 28/11/94

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TEST REPORT

NAMAS

Testing No. 1252 /1411

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Amended Report
Report No. 2099 Table 2 Sheet 6 of 6

Extended Analysis Results

Site: Merthyr Tydfil

ID Number	CL9410211	CL9410199	CL9410212	
Customer reference	T/P 0007	T/P 0007	T/P 0007	
Depth (m)	1.10 to 1.3	1.30 to 1.6	1.60 to 2.2	
Date logged	04/11/94	04/11/94	04/11/94	

NAMAS accredited	Test No.	CL9410211	CL9410199	CL9410212	
Arsenic	ICPSSS11	15		7	
Boron	ICPB41	<1		<1	
Cadmium	ICPSSS11	<1		<1	
Chromium (total)	ICPSSS11	20		9	
CN- (free)	ISECN51				
Copper	ICPSSS11	233		44	
Lead	ICPSSS11	75		75	
Mercury	ICPSSS11	7		<2	
Nickel	ICPSSS11	41		10	
SO4-- (acid sol)	ICPACS58			13200	
Sulphide	ICTSCN28	17			
TEM %	TEM56	0.1		0.05	
Zinc	ICPSSS11	44		10	

not NAMAS accredited		CL9410211	CL9410199	CL9410212	
Organic Content %			8.2		
pH units		6.9	4.8	3.1	
Selenium (AA)					

Results expressed as mg/kg Air Dried unless stated
Selenium (AA) was sub-contracted to another laboratory

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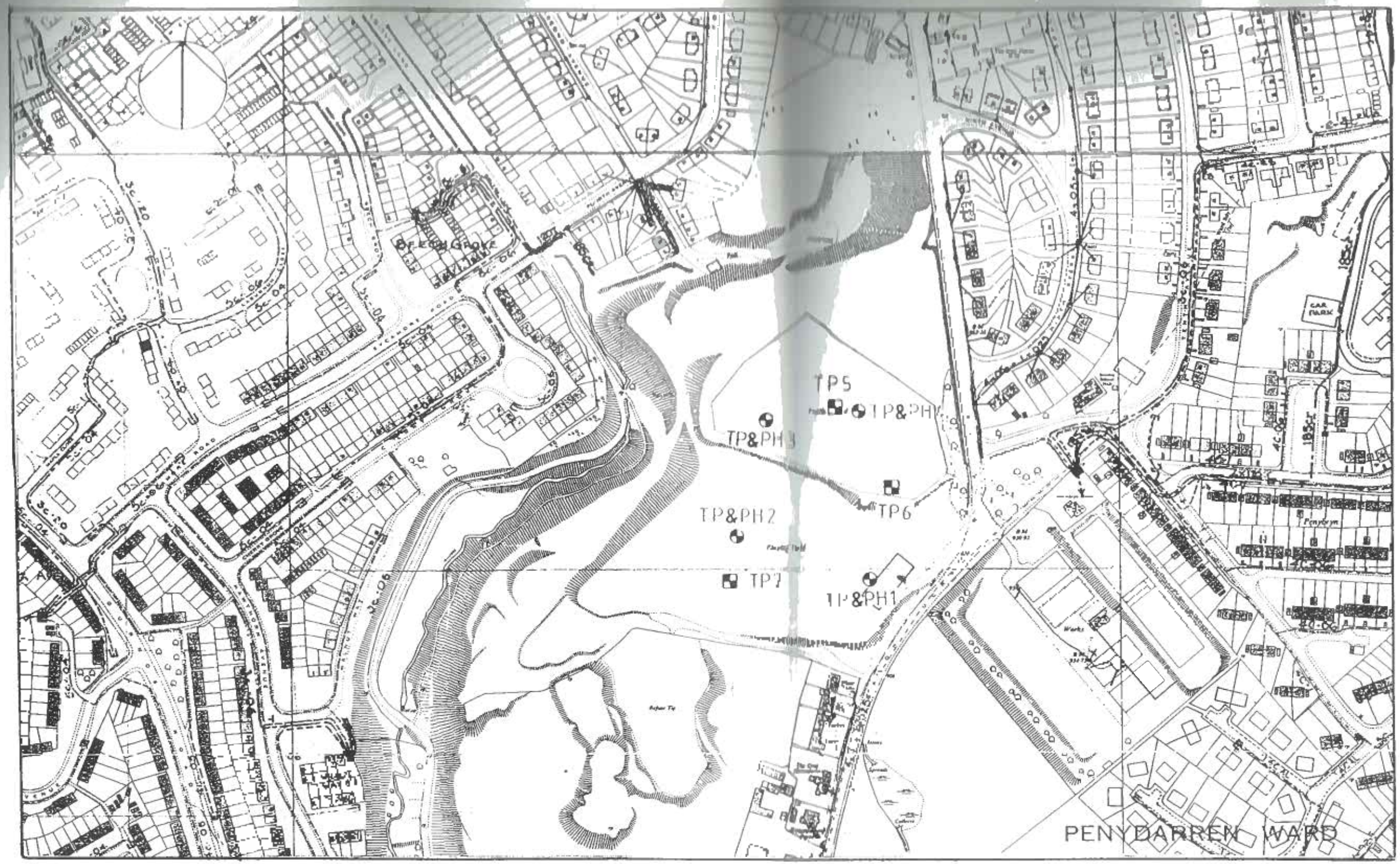

LEGEND

TP1 - Location of Trial Pits

PH1 - Location of Probeholes

TP1,2,3&4 are located on positions of BH 1,2,3&4 respectively

Scale - 1 : 2600

SITE LAYOUT

FIGURE 1

Technical Note

Project:	Bishop Headley School		
Subject:	Geotechnical Desk Study Technical Note		
Author:	Ed Lupton		
Date:	10/07/2020	Project No.:	TBC

Document history

Revision	Purpose description	Origin-ated	Checked	Reviewed	Author-ised	Date
Rev 1.0	Issue	EL	NSW	AKG		10/07/20

Client signoff

Client	Merthyr Tydfil County Borough Council
Project	Bishop Headley School
Project No.	TBC
Client signature / date	

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1. Introduction

1.1. Project Description and Scope

Atkins, part of the SNC-Lavalin Group, has been commissioned by Merthyr Tydfil County Borough Council (the Client) to produce a Geotechnical Phase 1 Desk Study for a proposed new school development, namely Bishop Headley in north east Merthyr Tydfil. The school is to be constructed as part of the 21st Century School Programme.

1.2. Site Location

The site is located at Ordnance Survey Grid Reference 305248E, 207736N, in Galon Uchaf Park, immediately west of Galon Uchaf Road, Merthyr Tydfil. The postcode for the site is CF47 9SW. The site is located approximately 700 m east of the Prince Charles Hospital and 1.3 km northeast of Merthyr Tydfil town centre. A plan showing the location of the site is presented in Figure 1 in Appendix A.

2. Sources of Information

The sources of information relevant to the Bishop Headley School development are presented below in Table 2-1. These sources have been used to provide information on the site history and anticipated ground conditions, as well as to assess the likely geotechnical and geo-environmental risks for the design and constructions phases of the project.

Table 2-1 - Sources of Information

Information	Type	Reference and Additional Comments	Author / Publisher
Topography	Online Database	Natural Resources Wales and The Welsh Government Lle Geo Portal **[1]**	NRW
Geology	Maps	British Geological Survey (BGS) Geological Map Great Britain. Sheet 231 (Merthyr Tydfil) Solid and Drift Edition, 1:63 360/ 1:50 000 Series **[2]**	BGS
	Online Database	BGS GeoIndex **[3]**	BGS
		BGS Lexicon of Named Rock Units **[4]**	BGS
Mapping / Aerial Photography	Historical Ordnance Survey (OS) Maps	Envirocheck Report **[5]**	Landmark Group
	Aerial Photographs	Envirocheck Report **[5]**	Landmark Group
	UXB	Zetica Unexploded Bomb (UXB) risk map **[6]**	Zetica UXO
Hydrogeology, Hydrology	Online Database	BGS GeoIndex **[3]**	BGS
	Online Maps	Natural Resources Wales (NRW) **[7]**	NRW
		Hydrogeological Map of South Wales	BGS
Environment	Online Maps	Natural Resources Wales and The Welsh Government Lle Geo Portal **[8]**	NRW

3. Site Description

3.1. Introduction

The site is an approximately 80,000 m^2 area of land located within Galon Uchaf Park in north east of Merthyr Tydfil. The site is approximately 500 m in length at its longest point and has a width that ranges from approximately 120 m to approximately 230 m. The topography of the site shows that it is formed of three gently sloping terraces, each descending approximately 5m in elevation, falling from 291 m Above Ordnance Datum (AOD) in the north of the site to 269 mAOD in the south of the site. Immediately west of the site, the elevation sharply decreases from 274 mAOD to 253 mAOD over a distance of approximately 54 m down to Goitre Lane.

3.2. Geology

The geology of the site is summarised below and is based on BGS 1:50,000 sheet 231, Merthyr Tydfil the BGS Geoindex and the BGS Lexicon of named rocks. The superficial geology underlying the site is presented in Figure 2 and underlying bedrock geology in Figure 3 enclosed in Appendix A.

3.2.1. Made Ground

Unspecified made ground has been identified to underly the site of a variable composition [3]. Made ground is described by the BGS as “an area where the pre-existing (natural of artificial) land surface is raised by artificial deposits” [4].

3.2.2. Superficial Geology

Published information from the BGS indicates that the majority of the site in underlain by Glacial Till, with a small area in the north of the site mapped as having no superficial deposits present [3]. Glacial Till is described by the BGS as "unsorted and unstratified drift, generally overconsolidated, deposited directly by and underneath a glacier without subsequent reworking by water from the glacier. It consists of a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape” [4].

No other superficial deposits are mapped as being within 1 km of the site.

3.2.3. Bedrock Geology

The whole site is underlain by mudstone, siltstone and sandstone of the South Wales Lower Coal Measures Formation [3]. The South Wales Lower Coal Measures Formation is described by the BGS as “Grey, coal-bearing mudstones and siltstones, with seatearths and minor sandstones” [4].

BGS mapping also indicates that sandstone of the South Wales Lower Coal Measures Formation is located immediately west of the site.

3.2.4. Structural Geology

The regional dip of the strata in this area is 16° to the southeast [2]. The Gurnos fault crosses through the north half of the site in a northwest to southeast orientation. The downthrow is shown the east. The Dowlais fault also orientated in a northwest to southeast direction is located approximately 160 m northeast of the site. The downthrow is shown to the west. The nature of these two faults indicates a possible graben feature. A graben feature refers to a region of land that lies in between two normal faults and has been down thrusted by the fault movements. An inferred coal seam, possibly the Gellideg seam, is mapped approximately 700 m southeast of the site orientated in a northeast to southwest direction. It is anticipated the seam has a dip direction to the southeast, aligning with the regional dip of the area. These features as shown on Figure 4.

3.2.5. Mass Movement Deposits

No mass movement deposits are recorded on the available BGS mapping information [3].

3.2.6. Coal and Mineral Deposits

The historical coal mining activity within the site area, as reported in the Coal Authority Envirocheck Screening Report [9], is summarised in Table 3-1 and shown on Figure 4. The complete coal mining report can be found enclosed in Appendix B.

Table 3-1 - Coal Authority report summary

Coal Mining Activity / Hazard	Description
Underground coal mining	The property is in a surface area that could be affected by underground mining in 2 seams of coal at shallow to 70m depth, and last worked in 1897. The two coal seams are not named in the Coal Authority report but likely to be the Gellideg and Garw coal seams as identified in geological mapping [2]. The property is not within a surface area that could be affected by present underground mining. The property is not in an area likely to be affected from any planned future underground coal mining. However, reserves of coal exist in the local area which could be worked at some time in the future.
Mine entries	There are eight known mine entries within, or within 20 m of, the site boundary. The approximate locations of these entries can be found in the Coal Authority report enclosed in Appendix B.
Coal mining geology	The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.
Opencast mining	The property is not within the boundary of an opencast site from which coal has been removed and does not lie within 200 m of a present opencast site. There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary. The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.
Coal mining subsidence	The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.
Mine gas	The Coal Authority has no record of a mine gas emission requiring action.

3.3. Site History

Key notable land use developments of the site and surrounding area within a 500 m radius, indicated in historical mapping provided in the Envirocheck Report, area summarised in Table 3-2. The full Envirocheck Report can be found in Appendix C.

Table 3-2 - Historical development of the site and surrounding area

Plan Date	Scale	On-site Development	Development in the surrounding area (within 500 m of the site)
1875	1:2,500	The site is shown to be largely an open field with both coniferous and non-coniferous trees present. An airshaft has been identified in the centre of the site to the east and a coal and ironstone level is mapped in the northwest of the site. A small building is also located in the northwest of the site that looks to be associated with the coal and ironstone workings.	Agricultural fields occupy most of the surrounding area to the north and west of the site. An embankment runs north to south along immediately west of the site boundary. A track is located along the top of the embankment, likely associated with the coal/ironstone works. An unnamed road runs along the eastern boundary of the site.

			An engine house and filtering beds are labelled approximately 110 m east of the site which look to be associated with the Pen-y-bryn waterworks. A small urban development is located approximately 200 m southwest of the site consisting of a number of buildings including Gwaelod-y-garth cottage and Gwaun-Farren farm. A coal shaft has been identified approximately 240 m south east of the site. Two old quarries have been identified approximately 240 m and 310 m east of the site. An old coal level is located approximately 360 m south east of the site. Goitre pond has been identified approximately 400 m northwest of the site. A large urban development, namely Pen Y Darren, is located approximately 450 m southeast of the site which further expands outside of the 500 m boundary. Pen Y Darren school shown approximately 450m south east of the site.
1884 - 1885	1:10,560	The coal and ironstone level is still present along with the airshaft. A large clay pit has now appeared in the centre of the site, below the air shaft. A second clay pit has also appeared in the south of the site.	The small urban development located approximately 200 m southwest of the site has increased in size. A well is now visible approximately 210 m southwest of the site. No significant changes have happened to the large urban development located approximately 450 m south east of the site.
1887	1:2,500	No significant changes.	No significant changes.
1900	1:2,500	Both the coal and ironstone level and airshaft are no longer labelled on the historical maps.	Track along the western boundary of the site no longer shown. A watercourse is shown flowing north to south approximately 75m west of the site. A single small building has appeared approximately 30 m north east of the site. The urban development approximately 200 m southwest of the site has continued to increase in size. The well located 210 m southwest of the site is now labelled as a well. The Pen Y Darren urban development located outside the 500 m boundary southeast of the site has expanded with Bryn-Hyfryd Street protruding within 500 m of the site boundary. The end of Bryn-

			Hyfryd Street is located approximately 395 m east of the site and looks to have terrace housing on both sides of the street. In addition, a school has now appeared approximately 400 m south east of the site.
1901	1:10,560	No significant changes.	No significant changes.
1904	1:2,500	No significant changes.	No significant changes.
1905	1:10,560	No significant changes.	No significant changes.
1919	1:2,500	The small building located in the northwest of the site where the old coal and ironstone level was mapped is now labelled as a kennel. A third small clay pit is now located in the south of the site, east of the pre-existing clay pit located in the south of the site.	A second building is now located approximately 30 m east of the site. In addition, non-coniferous trees have been planted immediately east of the site, next to the two small buildings. A spring has now appeared approximately 170 m west of the site. The urban development located southwest of the site has now expanded and merged with the Pen Y Darren estate. The urban development has further expanded towards the site in the southeast with the development now approximately 260 m southeast from the site boundary. Swimming bath is shown approximately 100m south east of the site.
1922	1:10,560	No significant changes.	No significant changes.
1945	1:10,560	The building in the most northwest corner of the site which was most recently labelled as a kennels is no longer present.	An urban development, namely Galon Uchafhas now appeared immediately north of the site which is approximately 500 m in length.
1951	1:10,560	No significant changes.	Allotment gardens are now mapped approximately 250 m east of the site. Quarry shown approximately 350m east of the site.
1963	1:2,500	A refuse tip is shown in the centre of the site.	No significant changes.
1965	1:10,000	A football field and playing field are now mapped in the north half of the site with the clay pits still mapped in the southern half of the site.	The buildings immediately east of the site are now labelled as Gwaunfarren Farm. The Pen Y Darren estate located to the south and east of the site has further expanded and is now at the site boundaries. The Galon Uchaf estate has expanded further south, west and east and now surrounds the northern half of the site.
1975 - 1979	1:2,500 1:10,000	The clay pits are no longer mapped on site.	The urban development surrounding the site has continued to expand and now the site is completely encompassed by the surrounding development.

			A weir is labelled approximately 50 m west of the site. A school mapped as Bishop Headley High School has appeared approximately 180 m southeast of the site. A hockey field has been labelled approximately 250 m south of the site. Hospital shown within 250m south of the site.
1992	1:10,000	No significant changes.	An area approximately 400 m northwest of the site is now labelled as a playing field.
2003	1:10,000	No significant changes.	No significant changes.
2009	1:10,000	No significant changes.	No significant changes.
2013	1:10,000	No significant changes.	No significant changes.
2020	1:10,000	The north half of the site is now mapped as a recreation ground instead of a playing field and football field.	No significant changes.

3.4. Hydrology

Information contained in the Envirocheck Report [5]does not indicate the site at risk of flooding.

A weir has been identified approximately 50 m west of the site in the Envirocheck Report [5]. Small areas of the site have been identified as being at low to medium risk to surface water flooding on the east and west boundary of the site. The weir to the west of the site has been identified as being at high risk of surface water flooding.

The groundwater vulnerability of both the superficial deposits and bedrock are classified as being of low vulnerability from contamination by human activities [3].

3.5. Hydrogeology

The BGS indicates that the superficial Glacial Till deposits on site are classified as a Secondary (Undifferentiated) aquifer and the South Wales Lower Coal Measures Formation located on site is classified as a Secondary A aquifer [3]. A Secondary (Undifferentiated) aquifer is described by the Environment Agency as where an aquifer “has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type” [10]. A Secondary A aquifer is described by the Environment Agency as “permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers” [10].

3.6. Unexploded Ordnance

Freely available online UXB risk mapping, produced by Zetica UXO [6], provides an estimate of the potential risk associated with unexploded WW2 air dropped ordnance. The site has been identified as an area that is of low risk from unexploded ordnance with an estimated bombing density of 15 bombs per 1000 acre or less. It should be noted that this assessment does not consider other sources of enemy or allied air dropped or ground unexploded ordnance. A copy of the UXB risk map provided by Zetica UXO is enclosed in Appendix D.

3.7. Historical Borehole Records

No historical boreholes are located within the site boundaries according to the BGS [3]. The nearest available borehole records are located approximately 100 m east of the site with a second cluster of boreholes located

approximately 380 m south of the site. The available borehole records are summarised Table 3-3 along with approximate distances to the site.

Table 3-3 - Summary of BGS borehole records

BGS borehole no. (distance from site)	Borehole elevation (mAOD)	Groundwater level (mAOD)	Depth to base (mbgl)	Strata	Description
SO00NE331 (105 m east)	285.00[1]	281.80 (Struck at 3.50 mbgl and rose to 3.20 mbgl)	1.50	Made Ground	Tarmac, concrete and hardcore overlying stiff brown silty clay with fine to medium angular gravel of pottery, sandstone and ash fragments.
			3.50	Gravel	Fine to medium sandy gravel with cobbles in a sandy clay matrix.
			4.15	Clay	Mudstone fragments with a clay matrix.
SO00NE332 (120 m east)	289.00[1]	285.70 (Struck at 3.60 m and rose to 3.30 mbgl)	0.50	Topsoil	Topsoil with cobbles.
			2.40	Clay	Firm silty sandy clay with some fine to medium subrounded gravel. Becoming gravelly with cobbles with depth.
			3.60	Gravel	Clayey sandy silty gravel with cobbles.
			4.30	Mudstone	Weak dark greyish black thinly laminated, weathered silty mudstone.
SO00NE330 (135 m east)	289.00[1]	284.20 (Struck at 5.40 mbgl and rose to 4.80 mbgl)	0.65	Topsoil	Topsoil
			5.40	Clay	Firm to stiff sandy silty clay with fine to medium subrounded gravel. Becoming very sandy and gravelly with cobbles with depth.
			6.00	Mudstone	Very weak dark greyish black thinly laminated, completely weathered silty mudstone.
SO00NE329 (165 m east)	285.00[1]	N/A	0.35	Topsoil	Topsoil
			5.00	Clay	Firm silty sandy clay with fine to medium subangular gravel and some cobbles.
SO00NE328 (170 m east)	286.00[1]	N/A	0.50	Topsoil	Topsoil
			5.00	Clay	Firm sandy silty clay with fine to medium subangular gravel. Cobbles and bands of very gravelly clay present.
SO00NE326 (180 m east)	288.00[1]	N/A	0.30	Topsoil	Topsoil
			6.00	Clay	Firm silty sandy clay with some fine to medium subangular to subrounded gravel with occasional cobble content increasing with depth.
SO00NE327 (180 m east)	288.00[1]	N/A	0.30	Topsoil	Gravelly topsoil.
			6.35	Clay	Silty sandy clay with gravel and cobbles.

BGS borehole no. (distance from site)	Borehole elevation (mAOD)	Groundwater level (mAOD)	Depth to base (mbgl)	Strata	Description
SO00NE61 (385 m south)	99.00	N/A	0.75	Made Ground	Fill comprising of brick rubble and unspecified boulders.
			9.50	Clay	Stiff clay with boulders present.
			12.50	Mudstone	Moderately weak to strong slightly silty mudstone.
			15.00	Siltstone	Moderately strong laminated siltstone.
			26.80	Mudstone	Strong to very strong silty mudstone.
SO00NE62 (340 m south)	99.00	N/A	0.70	Made Ground	Fill comprising of shale and brick rubble.
			7.50	Clay	Firm to stiff clay with presence of boulders. Becomes slightly silty with depth.
			26.50	Mudstone	Strong to very strong silty mudstone. Slightly weathered at shallower depths. Beds of siltstone are present ranging from approximately 0.5 m to 1.75 m thick.
SO00NE64 (420 m south)	95.00	N/A	0.20	Made Ground	Tarmac surface over hardcore.
			13.00	Clay	Stiff clay with the presence of boulders.
			15.50	Siltstone	Highly weathered, very strong siltstone. Very broken strata throughout, possible collapsed mine workings.
			24.50	Mudstone	Strong to very strong mudstone with beds of siltstone and sandstone. Siltstone and sandstone beds range from approximately 0.3 m 1.2 m thick.
			27.60	Sandstone	Very hard fine grained sandstone.
SO00NE63 (425 m south)	94.50	N/A	0.60	Made Ground	Fill comprising of brick rubble.
			9.50	Clay	Stiff clay with large boulders present.
			12.40	Mudstone	Strong to very strong, very silty mudstone.
			15.00	Siltstone	Moderately strong, laminated siltstone.
			26.80	Mudstone	Strong to very strong silty mudstone.

[1] Modern day LiDAR used to obtain borehole elevation.

3.8. Landfills

The Envirocheck Report [5] highlights that a small historic landfill has been recorded on site. The Envirocheck Report [5] states that the landfill operated between 1960 and 1975 and accepted inert, industrial, household, commercial and special waste. The historic landfill identified on site is likely to be associated with the refuse tip identified in the historical mapping. The presence of this landfill located on site may account for the artificial ground recorded by the BGS [3]. No other landfills are recorded within 1 km of the site.

3.9. Environmental Statutory Designations

The site is not located within any sensitive land use areas. The nearest statutory designation is the Fechan Woodlands which is classified as a Site of Special Scientific Interest (SSSI) and a Local Nature Reserve and located approximately 1.5 km west of the site. In addition, further sensitive land use areas are ancient woodlands located approximately 580 m and 920 m west of the site as well as approximately 930 m northwest of the site. The Brecon Beacons National Park is also located approximately 2.2 km west of the site.

4. Anticipated Ground Conditions

No ground investigation data is available within the site boundaries, therefore, it is not possible to determine the exact ground conditions underling the site. This section summarises the anticipated ground conditions underlying the site based on the BGS 1:50,000 sheet 231 Merthyr Tydfil [2], the closest, most appropriate borehole records [3] and historical mapping information.

4.1. Made Ground

Made Ground is expected to be present across the site associated with the historic mine works, historic landfill and terracing of the site to create the playing fields. The historical maps identified a coal and ironstone workings in the northwest of the site and two clay pits, all of which are no longer present. It is anticipated that Made Ground, including waste associated with the historic landfill has been used to infill these workings and level the site so that it is appropriate for public use. An accurate thickness of the Made Ground cannot be established as no ground investigation information is available for the site.

4.2. Superficial Deposits

The superficial deposit anticipated to underlie the Made Ground is Glacial Till. All boreholes in close proximity to the site record a sandy gravelly clay and clayey gravel layers with the presence of cobbles and boulders, which is indicative of Glacial Till as mapped by the BGS. In additions, the presence of clay pits recorded in the historical maps indicate that clay, from the Glacial Till, can be expected on site. The thickness of the deposit cannot be accurately established as will likely vary across site as a result of the excavation activity associated with the clay pits. However, based on the historical borehole information the thickness of glacial Till is expected to vary from 2 to 4 m thick where encountered.

4.3. Bedrock Geology

Based on the BGS mapping and nearby historical boreholes, it is expected that the bedrock geology of the site will comprise mostly of silty mudstone with bands of siltstone and sandstone of the South Wales Lower Coal Measures Formation. The mudstone is expected to be highly weathered and weak near the surface, becoming less weathered with increasing strength with depth. Beds of sandstone are expected to be encountered with greater depth. Based on nearby boreholes, and the regional dip of the strata, bedrock is expected at a relatively shallow depth, approximately 4 to 5 mbgl.

The seven boreholes located approximately 105 to 180 m east of the site, which reached a maximum depth of 6.35 mbgl, and the four boreholes located approximately 385 to 425 m south of the site, which reached a maximum depth of 27.60 mbgl, did not encounter coal or evidence of mine workings.

4.4. Groundwater

Historic boreholes SO00NE330, SO00NE331 and SO00NE332 located to the east of the site record groundwater levels of between 3.20 and 4.80 mbgl in October 1989. However, the groundwater levels do not account for seasonal variation and are unlikely to be representative of those on site.

5. Geotechnical Risk Register

A geotechnical risk register is presented in Table 5-2 and should be updated as the scheme progresses. The scoring system used in the register is as detailed in Table 5-1. In addition, some of the geotechnical risks associated with the site are displayed in Figure 4 enclosed in Appendix A.

Table 5-1: Risk Rating Classification

Probability (P)		Impact/Consequence (I)		Risk Rating	RISK (P x I)
Very likely	5	Very high	5	Intolerable	17 to 25
Probable	4	High	4	Intolerable	13 to 16
Likely	3	Medium	3	Substantial	9 to 12
Unlikely	2	Low	2	Tolerable	5 to 8
Negligible	1	Very low	1	Trivial	1 to 4

Table 5-2 - Geotechnical Risk Register

Hazard	Risk	Initial Hazard Rating			Mitigation Measures	Hazard Rating after Mitigation Measures		
		Likeli-hood of Hazard	Impact of Hazard	Risk Rating		Likeli-hood of Hazard	Impact of Hazard	Risk Rating
Presence of underground mine workings	Presence of shallow underground mine workings relating to the coal seams recorded in close proximity to the site which may lead to excessive total and differential settlement.	3	4	12	Ground investigation to target the presence of underground mine workings and to assess the potential impact on the proposed structure.	1	4	4
Mine entries	Subsidence and development of crown holes due to the presence of untreated mine entries.	4	5	20	Ground investigation to determine the presence of mine entries. If suitable, use of geophysics to locate the mine entries and target the ground investigation.	2	5	10
Presence of heterogenous ground conditions associated with the Glacial Till	Delays in construction and increases in cost increases due to difficulty excavating the material. Differential settlement due to hard spots.	3	3	9	Undertake ground investigation to prove/disprove these features to inform construction works. Design foundations to accommodate differential settlement.	2	3	6
Soft, compressible ground associated with Made Ground and Glacial Deposits	Excessive settlement and failure in bearing due to loading.	4	4	16	Ground investigation to identify any soft compressible layers and foundations to be designed appropriately.	1	4	4
Unexpected groundwater conditions	Re-design, increase cost and delays in works if identified late in the programme.	3	3	9	Ground investigation to determine the groundwater regime underlying the site.	1	3	3

Presence of Made Ground	Unexpected thick layers of Made Ground with poor engineering properties and compressible layers.	3	3	9	Ground investigation to determine the presence, thicknesses and nature of Made Ground.	1	3	3
Unidentified buried services	Harm to site personnel, plant and equipment. Delay in programme and cost implications for service repairs. Disruption to local residents and businesses.	3	5	15	Contractor to ensure all statutory service plans have been obtained and ensure the location of all services on site have been confirmed with hand dug inspection pits and CAT scanning.	1	5	5
Contaminated land	Potential for contaminated ground to be presented associated with historic landfill and mine workings.	3	4	12	Undertake ground investigation to determine the presence of contaminated land. Ground investigation information to refine the conceptual site model and potential risk to sensitive receptors.	2	4	8

6. References

[1] Natural Resources Wales, “Lle A Geo-Portal for Wales,” Natural Resources Wales, [Online]. Available: http://lle.gov.wales/GridProducts#data=LidarCompositeDataset. [Accessed 12 June 2020].

[2] British Geological Survey, “Geological Survey of England and Wales, Merthyr Tydfil. Sheet 231. Solid Edition, 1:5000 Series,” 1979.

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[5] Landmark Information Group, “Envirocheck - Bishop Headley School,” 2020.

[6] Zetica UXO, “Unexploded Bomb Risk Map,” 2020.

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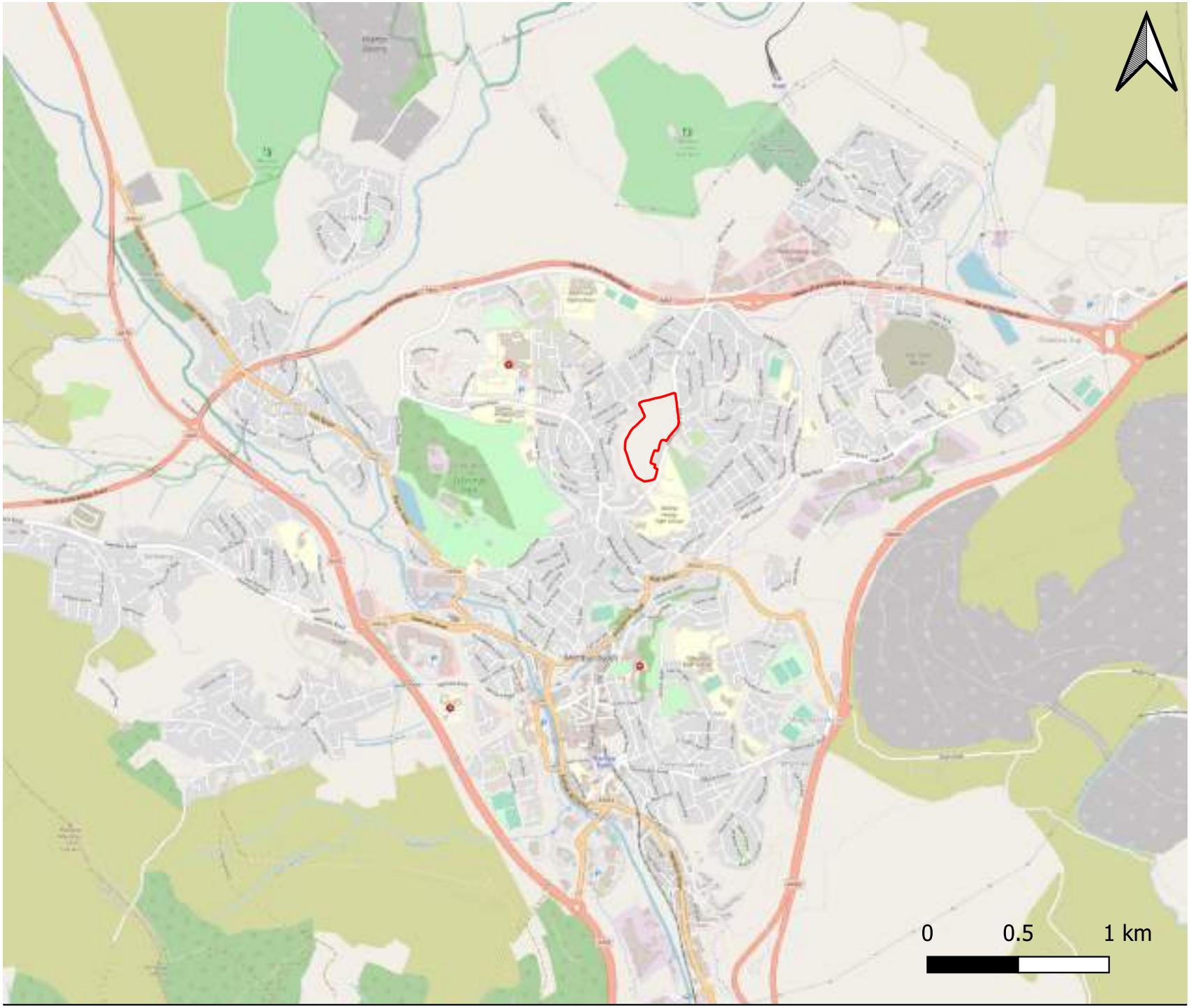
[9] The Coal Authority, “CON29M Coal Mining Report,” 2020.

[10] Environment Agency, “Aquifers,” Environment Agency, [Online]. Available: http://apps.environment-agency.gov.uk/wiyby/117020.aspx. [Accessed 11th June 2020].

Appendices

Appendix A. Drawings and Figures



Legend:

Site Boundary

ATKINS

2 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

Tel: 02920485159

CLIENT

Merthyr Tydfil County Borough Council

PROJECT

Bishop Headley School

TITLE

Figure 1: Site Location Plan

Base map: (c) OpenStreetMap Contributors (http://a.tile.openstreetmap.org 2020)

Legend

- Site Boundary
- Glacial Till

ATKINS

2 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ
Tel: 02920485159

CLIENT

Merthyr Tydfil County Borough Council

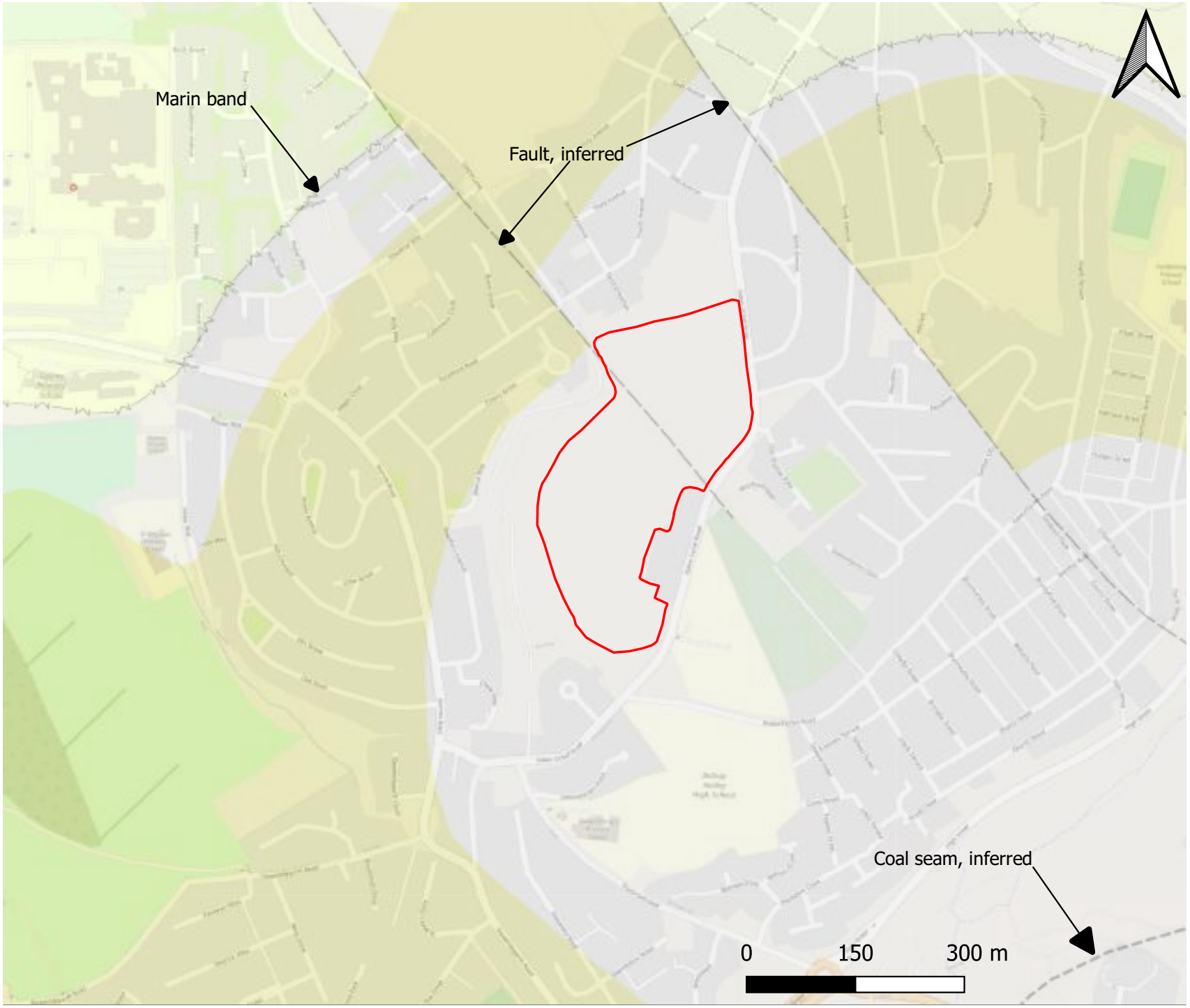
PROJECT

Bishop Headley School

TITLE

Figure 2: Superficial Geology

Base map: (c) OpenStreetMap Contributors (http://a.tile.openstreetmap.org 2020); Contains British Geological Survey materials ©NERC 2020



Legend

- Site Boundary
- South Wales Lower Coal Measures Formation - Sandstone
- South Wales Lower Coal Measure Formation - Mudstone, Siltstone and Sandstone

ATKINS

2 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

Tel: 02920485159

CLIENT

Merthyr Tydfil County Borough Council

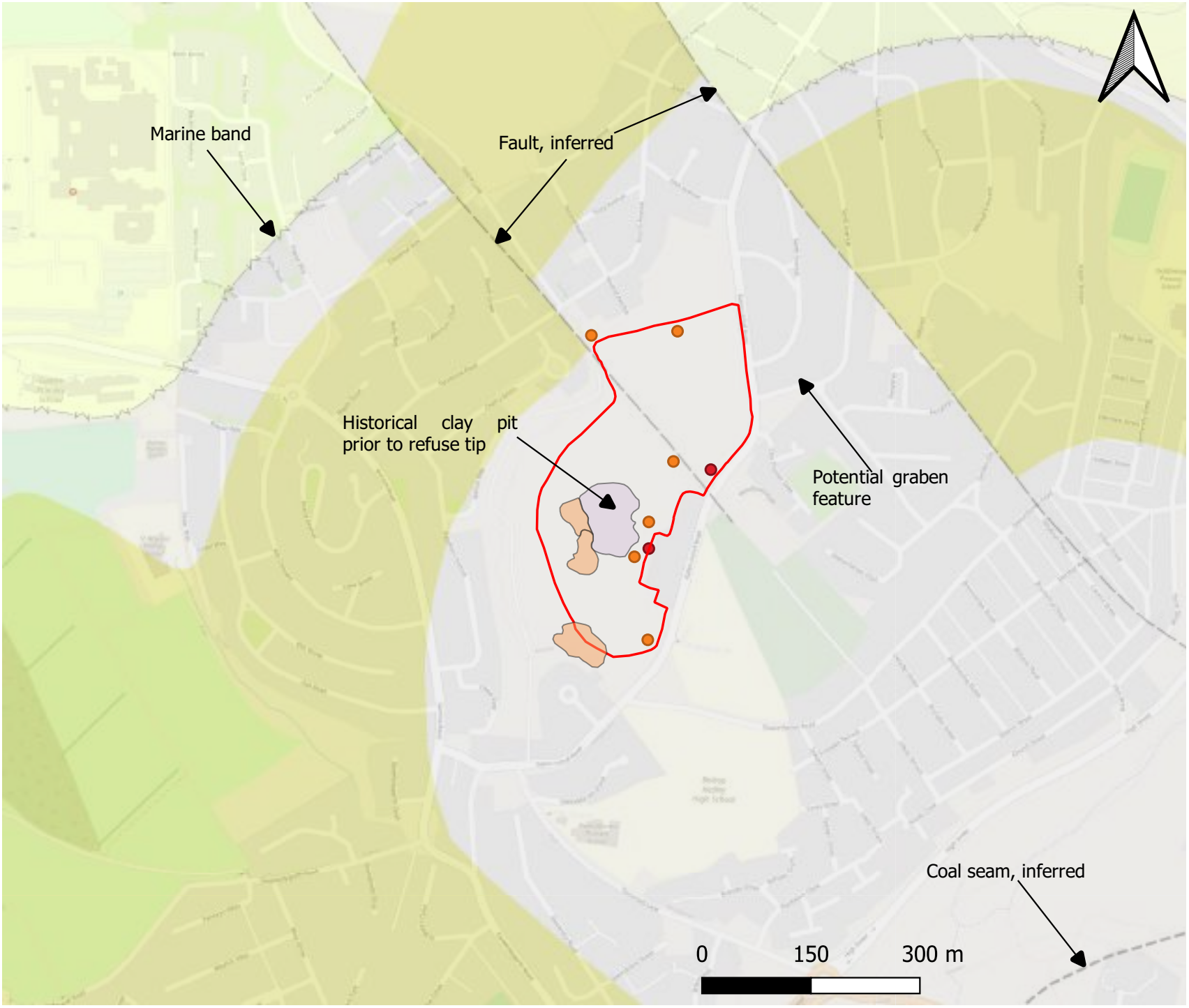
PROJECT

Bishop Headley School

TITLE

Figure 3: Bedrock Geology

Base map: (c) OpenStreetMap Contributors (http://a.tile.openstreetmap.org 2020); Contains British Geological Survey materials ©NERC 2020



Legend:

- Site Boundary
- Glacial Till
- South Wales Lower Coal Measure Formation - Mudstone, Siltstone and Sandstone
- South Wales Lower Coal Measures Formation - Sandstone
- Historical clay pit
- Historical refuse tip

Mine Entries

- Adit
- Shaft

ATKINS

2 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ
Tel: 02920485159

CLIENT

Merthyr Tydfil County Borough Council

PROJECT

Bishop Headley School

TITLE

Figure 4: Geotechnical Risk Map

Base map: (c) OpenStreetMap Contributors (http://a.tile.openstreetmap.org 2020); Contains British Geological Survey materials ©NERC 2020

Appendix B. Coal Authority Mining Report

The Coal Authority

CON29M
coal mining report

SITE AT 305230, 207660, MERTHYR TYDFIL

Known or potential coal mining risks

Past underground coal mining	Page 5
Future underground coal mining	Page 5
Mine entries	Page 6

Further action

These additional reports can give further detail on the risks identified:

- Mine entry interpretive report
- Mine entry plan and data sheets

For more information please see our Further action reports on page 11

Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site. Please see page 3 for further details on Future development.

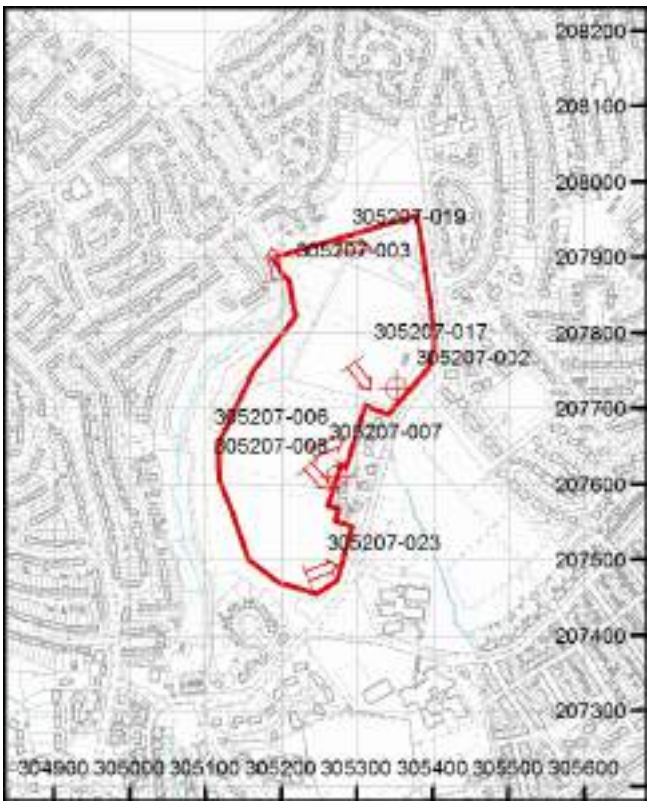
Enquiry boundary

Key

Approximate position of enquiry boundary shown

Disused adit

Disused mineshaft



We can confirm that the location is **on the coalfield**

Map data

Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved. Ordnance Survey Licence number: 100020315.

This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.

Accessibility

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.

Professional opinion

Mine entries

The enquiry boundary shows the approximate location of the disused mine entry/entries referred to in this report. Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage caused by disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by visiting www.coal.gov.uk. Please note this Act is not valid where coal was worked or extracted by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you wish to discuss the relevance of any of the information contained in this report, you should seek the advice of a qualified mining engineer or surveyor. If you or your advisor wishes to examine the source plans from which the information has been taken, these are available to view, at our Coal Authority head office in Mansfield. To book an appointment please call 01623 637 225. Should you or your advisor wish to carry out a physical investigation that may enter, disturb or interfere with any disused mine entry, prior permission must be sought from the owner. For coal mine entries, the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency, 24 hour call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). To report an emergency you can call 01623 646 333.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on 0345 762 6848 or email cmra@coal.gov.uk.

Site investigations

The following site investigation(s) took place in the location area:

A site investigation was carried out in June 2014 by Blandford Consulting., The Enterprise Centre, Merthyr Industrial Park, Pentrebach, Merthyr Tydfil CF48 4DR..

Additional information regarding these investigations may be available from the company or companies listed above.

Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

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1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 2 seams of coal at shallow to 70m depth, and last worked in 1897.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4 Mine entries

Within, or within 20 metres of, the boundary of the property there are 8 mine entries, the approximate positions of which are shown on the enquiry boundary plot. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.

There is no record of what steps, if any, have been taken to treat the mine entries.

This information is based on the information that the Coal Authority has at the time of this enquiry.

Based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal Authority records.

For an additional fee, the Coal Authority can provide a Mine Entry Interpretive Report. The report will provide a separate assessment for the mine entry/entries referred to in this report. It gives an opinion on the likelihood of mining subsidence damage caused from ground movement as a consequence of the mine entry/entries. It also gives details of the remedies available for subsidence damage where the mine entry was sunk in connection with coal mining.

Please note that it may not be possible to produce a report if the main building to the property cannot be identified from Coal Authority plans (ie for development sites and new build).

For further advice on how to order this additional information please visit www.groundstability.com.

5 Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9 Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

12 Withdrawal of support

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13 Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14 Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Statutory cover

Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.
www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form

Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call 01623 646 333. Further information can be found on our website: www.gov.uk/coalauthority.

Glossary

Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

Further action reports

Mine entry interpretive report - assesses the risk of ground movement from mine entries in, or within 20 metres of, the property boundary. To order this report, use the same boundary as the CON29M report, then draw the building on the additional map screen.

For more information and to order this report please visit:
https://www2.groundstability.com/interpretive-report

Mine entry plan and data sheets - give additional information on mine entries recorded on a piece of land. To order this report use the same boundary as the CON29M report and a member of our team will contact you to confirm the mine entries to include in this bespoke report.

For more information and to order this report please visit:
https://www2.groundstability.com/plan-and-data-sheets

Appendix C. Landmark Envirocheck Report

The Envirocheck Report has been provided separately to this report.

Appendix D. Unexploded Bomb Risk Map

UNEXPLODED BOMB RISK MAP

zeticauxo

SITE LOCATION

Map Centre: 305235,207712

LEGEND

- **High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- **Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- **Low:** Areas indicated as having 15 bombs per 1000acre or less.

miltary | **industry** | **UXO find**
transport | **dock** | **Luftwaffe targets**
utilities | **Bombing decoy** | **other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: **(https://zeticauxo.com/downloads-and-resources/risk-maps/)**

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgment. The copyright remains with Zetica Ltd.

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Appendix E. BGS Historical Borehole Records

Norwest Holst Soil Engineering Ltd.

Borehole No. 4

BOREHOLE LOG

Contract No. F8617
Location Penybryn Reservoir
Client Welsh Water Authority
Method of Boring Cable Percussion
Diameter of Borehole 150mm

SOOONE 330
0550 0771

Sheet 1 of 1
Chainage
Ground Level m.A.O.D.
Date 5/10/89

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
TOPSOIL					0.00-0.70		
		0.65					
Firm to stiff orange brown sandy silty CLAY with fine to medium subrounded gravel					0.70-1.15 s	"24"	
					1.15-1.50		
					1.50-1.95 (44)		
... becoming very sandy and gravelly with cobbles and grey clayey sandy gravel					1.95-2.00		
					2.20-2.60		
					2.60-3.05 s	"34"	
					3.05-3.50		
					3.50-3.85 s	"95" for 375mm	
					4.00-4.50		
					4.50-4.95 s	"48"	
					5.10-5.40		
		5.40			5.40		
Dark grey black thinly laminated completely weathered silty MUDSTONE very weak					5.50-5.95 s	"54"	
		6.00					
Borehole complete at 6.00m							

Type of Sample

Is	S.P.T.	■	Undisturbed
Ic	C.P.T.	x	Vane
o	Jar	△	Water
●	Bulk	▮	Piezometer

Remarks (Observations of Ground Water etc.)

Inspection pit dug to 0.70m
Groundwater strike at 5.40, rising to 4.80 after 20 mins
Chiselling 2.20-2.60, 1 hr
3.85-4.25 1½ hr

Norwest Holst Soil Engineering Ltd.

Borehole No. 5

BOREHOLE LOG

Contract No. P8617
Location Penybryn Reservoir
Client Welsh Water Authority
Method of Boring Cable Percussion
Diameter of Borehole 150mm

SO00NE 331
0547 0771

Sheet 1 of 1
Chainage
Ground Level m.A.O.D.
Date 2-3/10/89

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
MADE GROUND: Tarmac, concrete, hardcore		0.50					
MADE GROUND: Stiff brown silty clay with some fine to medium angular gravel of pottery, sandstone and ash fragments		1.50			0.60-0.80 s 0.80-1.45	50for 75mm "	
Orange brown fine to medium sand GRAVEL with cobbles in a sandy clay matrix					1.50-1.95 (81) 2.00-2.75 2.50-2.75 s 2.75-3.15	78for 150mm	
MUDSTONE FRAGMENTS with a clay matrix		3.50 4.15			3.50-3.70 s 3.70-4.00 4.00-4.15 s	50for 75mm 73for 150mm	
Borehole complete at 4.15m							

Type of Sample

Is	S.P.T.	■	Undisturbed
Ic	C.P.T.	X	Vane
D	Jar	△	Water
●	Bulk		Piezometer

Remarks (Observations of Ground Water etc.)

Water struck at 3.50m
standing at 3.20m
Chiselling 0.80-1.45m 1½ hr
2.75-3.15m 1¼ hr
3.15-3.40m ¾ hr
3.70-4.00m 1¼ hr

Norwest Holst Soil Engineering Ltd.

Borehole No. 3

BOREHOLE LOG

Contract No. F8617
Location Penybryn Reservoir
Client Welsh Water Authority
Method of Boring Cable Percussion
Diameter of Borehole 150mm

SC00NE 329
0552 0766

Sheet 1 of 1
Chainage
Ground Level m.A.O.D.
Date 8/10/89

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
TOPSOIL		0.35			0.00-0.50		
Firm brown and orange brown mottled silty sandy CLAY with fine to medium subangular gravel and some cobbles					0.50-0.95 s	"41"	
					1.00-1.35	•	
... becoming grey brown with zones of clayey sandy gravel					1.60-2.05 s	"20"	
					2.05-2.50		
					2.50-2.95 s	"19"	
					3.00-3.50		
					3.50-3.70 s	"62*" for 225mm	
					4.10-4.50		
				4.50	4.50-4.95 s	"41"	
		5.00					
Borehole complete at 5.00m							

Type of Sample

Is	S.P.T.	■	Undisturbed
Ic	C.P.T.	x	Vane
0	Jar	△	Water
●	Bulk	▮	Piezometer

Remarks (Observations of Ground Water etc.) * including seating blows

Borehole dry during boring
Chiselling 1.35-1.60 ¼ hr
3.70-4.10 1½ hr

Norwest Holst Soil Engineering Ltd.

Borehole No. 1

BOREHOLE LOG

Contract No. F8617
Location Penybryn Reservoir
Client Welsh Water Authority
Method of Boring Cable Percussion
Diameter of Borehole 150mm

SO00NE 326
0555 0769

Sheet 1 of 1
Chainage
Ground Level m.A.O.D.
Date 6/10/89

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
TOPSOIL		0.30			0.00-0.50		
Firm becoming stiff brown silty sandy CLAY with some fine to medium subangular to subrounded gravel and occasional cobbles increasing with depth					0.50-0.95 s	"20"	
					1.00-1.50		
					1.50-1.95 (69)		
... 1.95 grey brown silty sandy CLAY					1.95-2.00		
					2.25		
					2.50-2.95 (51)		
					2.95-3.00		
					3.25		
					3.50-3.60 (50)		
					4.00-4.50		
					4.50-4.95 s	"34"	
					5.10-5.60		
(boulder obstruction)		6.00			5.85-6.00		
Borehole complete at 6.00m							

() U100 blows

Type of Sample

Is	S.P.T.	■	Undisturbed
Ic	C.P.T.	x	Vane
0	Jar	△	Water
●	Bulk		Piezometer

Remarks (Observations of Ground Water etc.)

Borehole dry during boring
Chiselling 3.60-3.95 1hr
Chiselling 5.10-5.60 1¾ hr
Chiselling 5.85-6.00 1¾ hr

Norwest Holst Soil Engineering Ltd.

Borehole No. 2

BOREHOLE LOG

Contract No. PB617
Location Penybryn Reservoir
Client Welsh Water Authority
Method of Boring Cable Percussion
Diameter of Borehole 150mm

SO 00 NE 328
0553 0767

Sheet 1 of 1
Chainage
Ground Level m.A.O.D.
Date 8/10/89

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
TOPSOIL					0.00-0.50		
		0.50			0.50-0.95	"18"	
Firm grey brown and orange mottled sandy silty CLAY with fine to medium subangular gravel and some cobbles with bands of very gravelly clay					s 1.00-1.95	-	
					1.50-1.95	"21"	
... 2.70 becoming stiff and dark brown gravelly					s 2.30-2.70		
					2.70-2.85	"67"*	
					2.85-3.95 s	for150mm	
					3.50-3.95	"36"	
					s 4.00-4.50		
				4.00	4.50-4.95	"48"	
		5.00			s		
Borehole complete at 5.00m							

* Seating blows only

Type of Sample

Is	S.P.T.	■	Undisturbed
Ic	C.P.T.	x	Vane
O	Jar	△	Water
●	Bulk		Piezometer

Remarks (Observations of Ground Water etc.)

Borehole dry during boring
Chiselling 2.30-2.70 1½ hr
2.85-3.40 1½ hr

Norwest Holst Soil Engineering Ltd.

Borehole No. 6

BOREHOLE LOG

Contract No. F8617
Location Penybryn Reservoir
Client Welsh Water Authority
Method of Boring Cable Percussion
Diameter of Borehole 150mm

SO00NE 332
0549 0772

Sheet 1 of 1
Chainage
Ground Level m.A.O.D.
Date 4/10/89

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
TOPSOIL with cobbles					0.00-0.50		
		0.50			0.50-0.95		
Firm brown silty sandy CLAY with some fine to medium subrounded gravel					s	"22"	
					1.25		
... becoming gravelly with cobbles					1.50-1.95 (48)		
					1.95-2.00		
					2.25		
		2.40			2.50-2.80	"89" for 300mm	
Brown clayey sandy silty GRAVEL with cobbles					2.80-3.25 s		
		3.60			3.50-3.95	"92"	
Dark grey black thinly laminated weathered silty MUDSTONE, weak					s 4.00-4.30		
		4.30					
Borehole complete at 4.30m							

Type of Sample

ls	S.P.T.	■	Undisturbed
lc	C.P.T.	x	Vane
D	Jar	△	Water
●	Bulk	▮	Piezometer

Remarks (Observations of Ground Water etc.)

Inspection pit to 0.50m
Groundwater strike at 3.60 rising to 3.30 after 20 mins
Chiselling 2.80-3.25 1½ hr
4.00-4.30 1½ hr

Norwest Holst Soil Engineering Ltd.

Borehole No. **1A**

BOREHOLE LOG

Contract No. P8617
Location Penybryn Reservoir
Client Welsh Water Authority
Method of Boring Cable Percussion
Diameter of Borehole 150mm

SO00NE 327
0555 0769

Sheet 1 of 1
Chainage
Ground Level m.A.O.D.
Date 6-7/10/89

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
TOPSOIL gravelly		0.30					
Brown and grey silty sandy CLAY with gravel and cobbles							
Obstruction 6.10-6.35		6.35					

Type of Sample

Is	S.P.T.	■	Undisturbed
Ic	C.P.T.	x	Vane
0	Jar	△	Water
●	Bulk	▮	Piezometer

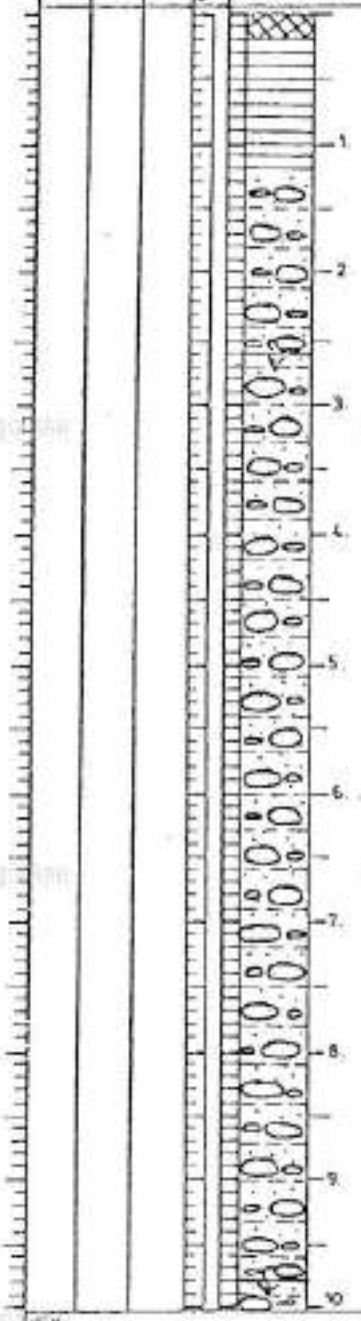
Remarks (Observations of Ground Water etc.)

Chiselling 3.30-3.70 1½ hr
4.90-6.35 1½ hr
6.10-6.35 2½ hr

LTD.	24-13+20/6/02	WITH AIR FLUSH	T.
GROUND LEVEL (Relative) 95 Om Appx	ORIENTATION VERTICAL	CO-ORDINATES —	SITE Proposed Psychological Centre MERTHYR TYDFIL.	PAGE 1 OF SO 00NE/64

0533 0706
1"N° 231

TOTAL CORE RECOVERY %	SOLID CORE RECOVERY %	R.Q.D. %	FRACTURE LOG	STRATA DESCRIPTION
				Tarmac surface over hardcore.
				Firm - stiff brown clay.
				Stiff brown boulder clay.
				Stiff - hard grey boulder clay.



KEY.

LOGGED BY Simon Hale + Paul Norman | SCALE 1/X = 1 Metre

REMARKS Openhole drilling from gr level to 9.5m. Core drilling fr 9.5m to 9.7m. Openhole drilling fr 9.7m to 11.1m, 12.7m to 13.1m and 2 to 27.6m - Drillers Descriptions onl

K. WARDELL & PTNRS.

CLIENT Mid Glamorgan County Council

JOB No 3761

Proposed Psychological Centre
MERTHYR TYDFIL.

PAGE 2 OF 3

4.

SO 00 NE/64

DRILL CORE RECOVERY %	FRAG. ZONE RECOV. %	RQD	STRATA DESCRIPTION
			Hard grey-brown, boulder clay
			RE-START OF CORE DRILLING @ 13.1m.
75	21	0	Siltstone, grey, strong, very broken + fragmented with approx. 60° joints, highly weathered with brown clay bands throughout + some silty mudstone fragments (Driller reports very broken strata throughout - Possible collapsed workings?)
95	44	0	Mudstone, grey - brown/grey, silty, strong, moderately - highly weathered with iron rich inclusions in top 30cms, becoming finely micaceous between 17.95m and 18.15m with small ironstone inclusions. Generally very broken and fragmented throughout.
100	38	0	Siltstone, grey, strong - very strong. Iron rich at top, very broken with sandy parting at 19.0m.
100	83	9	Sandstone, light grey, very strong, very fine grained + silty with micaceous partings + some scattered 'SPHEROSIDERITE'
			Siltstone, grey, sandy, very strong, thinly bedded becoming muddy at base.
97	52	0	Mudstone, grey, silty, strong, finely micaceous, dark grey in part with plant debris below 21.6m + some iron rich bands

K. WADDELL O. DTMDC

CLIENT MID GLAMORGAN County Council

JOB No. 57161/13

Proposed Psychological Centre, MERTHYR TYDFIL

PAGE 3 OF 3

4.

So 00NE/64

STRATA DESCRIPTION

As above.

Mudstone, grey, silty, smooth, strong with some iron rich bands and a very strong ironstone band at 23.10m, becoming broken with depth.

Siltstone, grey - dark grey, extremely strong, iron rich, slightly quartzitic with dark bands

END OF CORE DRILLING @ 24.6m

Openhole drilling from 24.6m to 27.6m - Drillers Description only. Very hard dark grey quartzitic fine grained sandstone.

END OF BOREHOLE @ 27.6m.

K. WARDELL & PTNRS.

CLIENT MID GLAMORGAN COUNTY COUNCIL

JOB No 3741/13

MOUNTED (WATER) LTD	29/6/82	WITH AIR FLUSH	3.
GROUND LEVEL (Relative) 94.5m (Approx)	ORIENTATION. VERTICAL	CO-ORDINATES. —	SITE. Proposed Psychological Centre METHYR TYDFIL. PAGE 1 OF 3 SO 00NE/63

0530 0705 1:N: 231

TOTAL CORE RECOVERY %	SOLID CORE RECOVERY %	R.Q.D.	FIELD TEST	LOG	STRATA DESCRIPTION	
					Fill - Brick Rubble.	
					Firm Brown Clay.	1
					Stiff Brown Boulder Clay.	2
						3
						4
						5
					Hard Grey + Brown Boulder Clay.	6
						7
						8
						9
						10

KEY

REMARKS.
Openhole drilling from ground leve to 8.5m - Core drilling from 8.5m to 10.1m Openhole drilling from 10.1m to 13.5m - Drillers Descripto only.

LOGGED BY. SIMON HAKE + PAUL NORMAN | SCALE 1/50 METRES

K. WARDELL & PTNRS.

CLIENT. MID GLAMORGAN COUNTY COUNCIL

JOB No. 3161/E

Site: Proposed Psychological Centre, Merthyr Tydfil

PAGE 2 OF 3

Borehole No. 3.

SO 00NE/63

Core Recovery %	Solid Core Recovery %	RQD	Strata Description
			Hard Grey + Brown Boulder Clay.
			RE-START OF CORE DRILLING @ 13.5m
84	61	0	Mudstone, brown/grey/green, moderately weak, completely weathered with a soft clay matrix.
63	35	35	
93	92	5	
			Mudstone, grey, very slightly silty, moderately strong-strong, fresh, with some rootlets, generally very broken, Iron rich nodules + partings throughout
100	84	38	Sandstone, light grey, silty, strong-very strong + ferrugenous, non laminated, slightly weathered below 19.45m with remnant 'SPHEROSIDERITE'. Generally very fine grained.
			Siltstone, light grey-grey, sandy, strong, thinly bedded becoming less sandy with depth
95	78	40	Mudstone, grey, silty, strong, iron rich, micaceous and thinly laminated becoming very strong and very silty at base with Ironstone band at 20.55m

Client: MID GLAMORGAN COUNTY COUNCIL

Job No. 5761/13

Centre, MERTHYR TYDFIL

PAGE 3 OF 3

3.

SO 00 NE/63

STRATA DESCRIPTION

22. As above.

Mudstone, grey, strong to very strong, slightly silty becoming silty + homogenous below 22.5m. Thinly bedded with bands of iron rich silty mudstone throughout.

Sandstone, silty, grey, extremely strong, heavily iron rich with carbonaceous listric surfaces at base, slightly quartzitic.

END OF BOREHOLE = 24.5metres.

K. WARDELL & PTNRS

CLIENT H.M. GLAMORGAN COUNTY COUNCIL

JOB No 7711/13

ASSOCIATES (WARDELL) LTD.	21-22/6/82	ROTARY DRILLING WITH AIR FLUSH	1.
GROUND LEVEL (Relative) 99m (Appox)	ORIENTATION VERTICAL	CO-ORDINATES –	SITE Proposed Psycho-logical Centre, MERTHYR TYDFIL.
			PAGE 1 OF 3 SO 00NE/62

0532 0709 1"N: 231

TOTAL CORE RECOVERY %	SOLID CORE RECOVERY %	R.Q.D.	FRACTURE LOG	STRATA DESCRIPTION
				Fill - Shale, Brick Rubble
				Firm - Stiff Brown Clay.
				Hard grey Boulder Clay with large Boulder obstructions.
				START OF CORE DRILLING @ 5.8 metres
50	20	0		Dark brown/grey clay, slightly silty with cobbles + boulders, occasional carbonaceous material.
				RE-START OF CORE DRILLING @ 7.5 metres
100	89	68		Mudstone, grey, slightly weathered, strong, with silty + sandy partings, listric surfaces and plant debris throughout + occasional iron staining. Generally very broken.
96	96	74		Sandstone, light grey - grey, strong - very strong, laminated @ 60° to vertical, Iron rich with Iron nodules + occasional carbonaceous matter
				Clay, soft - very soft with sandstone/siltst fragments, generally dark brown + grey

KEY

REMARKS
Openhole drilling from ground level to 7.3m - Drillers Description only.

LOGGED BY Mike Hassall. STAFF I/SE MINES

K. WARDELL & PTNRS.

CLIENT MID GLAMORGAN COUNTY COUNCIL

JOB No. 3761/13

Site Proposed Psychological Centre, MERTHYR TYDFIL.

PAGE 2 OF 3

BOREHOLE No. 1.

SO 00NE/62

TOTAL CORE RECOV. %	SOLID CORE RECOV. %	RQD	STRATA DESCRIPTION
95	38	15	As above. Siltstone, sandy, strong-very strong, dark grey-grey, Thinly Laminated, highly iron stained, breaks @ ≈ 70° to vertical.
89	22	0	Mudstone, silty, dark grey-grey, strong but broken with occasional listric surfaces, occasional plant debris and ironstone nodules and iron staining throughout.
100	47	32	Mudstone, brown/grey, highly weathered, weak, seatearth fabric, heavily iron-stained. Mudstone, dark grey, strong, silty, broken + occasional plant debris. Mudstone, shaley, dark grey, moderately weak. Heavy iron staining, broken.
98	65	29	Mudstone, silty, dark grey, strong with weak clay bands, heavy iron staining + iron rich with thin laminations and occasional plant debris. Siltstone/fine grained sandstone, very strong grey to dark grey, generally intact but becomes more broken with depth + slightly muddy, contains iron rich bands + some iron staining.
91	40	26	Mudstone, silty, grey to dark grey, sub vertical splitting, generally strong but with weak clay partings + iron stained sub-vertical joints, occasionally v. broken, with quartz veins + plant debris. Dark grey mudstone in clay matrix, weak-very weak, broken + becoming very iron rich in basal 30cms.
96	67	44	Dark grey mudstone, silty, strong to very strong with mudstone and slightly clay partings and ironstone bands, some quartz bands + plant debris becoming more abundant with depth.
97	92	77	Siltstone, grey-dark grey, fine sandy + muddy partings, heavily iron rich, strong-very strong + quartz rich throughout with numerous 'SAPEROSIDERITE' + some plant debris, generally sub-laminated.

K WARDELL & PTNRS.

CLIENT. MID GLAMORGAN COUNTY

JOB No 3761/13

Centre, MERTHYR TYDFIL.

PAGE 3 OF 3

1.

SO 00NE/62

DRILL CORE RECOVERY %	SOLID CORE RECOVERY %	RQD	STRATA DESCRIPTION
			As above.
100	to	58	Mudstone, strong to very strong, dark grey, silty with siltstone and mudstone partings throughout, Breaks with almost conchoidal fracture, some evidence of chemical weathering (very slight) - green tinge on partings.
			Mudstone, dark grey with iron pyrites, broken. Siltstone, with iron pyrites + blue/green staining, core breaks sub-vertical. Coal, very poor quality, shaley listric surface (Some seen)
			Siltstone / Sandstone - Strong Extremely strong, quartz rich with some iron + occasional plant debris.
			End of Borehole @ 26.5metres

K. WARDELL & PTNRS.

CLIENT: M.S GLAMORGAN COUNTY

JOB No. 3761/13

ASSOCIATES (WARWICK) LTD	23-24/6/82	WITH AIR FLUSH	2.
GROUND LEVEL (Relative) 99m Approx	ORIENTATION VERTICAL	CO-ORDINATES –	SITE Proposed Psychological Centre, MERTHYR TYDFIL — PAGE 1 OF 3 SO00NE/61

0530 0709
1" No. 231

TOTAL CORE RECOV. %	SOLID CORE RECOV. %	R.Q.D.	FRACTURE LOG	STRATA DESCRIPTION
				Fill - Brick rubble, Boulders.
				Firm - Stiff Brown Clay.
				Stiff - Hard grey Boulder Clay with large boulder obstructions?
100	87	0		START OF CORE DRILLING @ 8.0 metres. Clay, light brown/grey, soft-firm with numerous strong, angular Mudstone fragments, highly weathered.
94	16	0		Mudstone, slightly silty, moderately weak, moderately

KEY

REMARKS.
Opehole drilling from ground level to 8.0m - Drillers Description only.

LOGGED BY SIMON HACK + PAUL NORMAN — SCALE 1/50 METRES

K. WARDELL & PTNRS.

CLIENT MID GLAMORGAN COUNTY COUNCIL

JOB No 3761/13

Proposed Bychological Centre, MERTHYR TYDFIL

PAGE 2 OF 3

2.

SO00NE/61

TOTAL CORE RECOVERY %	SOLID CORE RECOVERY %	RQD	STRATA DESCRIPTION
			As above. Mudstone, light grey-grey, very silty, strong but broken by near vertical joints with some iron staining, becoming very fragmented below 10.35 with thin micaceous bands.
96	27	0	Iron rich, very muddy siltstone, very strong. Mudstone, grey, slightly silty, moderately weak with some moderately strong iron stained bands becoming broken and weak below 12.05m.
			Siltstone, grey, muddy, micaceous, Moderately strong, laminated with thin sandy bands, iron stained + very broken below 13.15m.
5	76	24	Becoming strong and sandy with laminations at 30° to the horizontal + generally containing plant debris. (Moderately weak, iron stained, clay filled 45° joint @ 14.0m).
			Mudstone, grey, silty, very fragmented with a clay matrix.
95	23	22	Mudstone, grey, slightly silty, moderately strong fragmented with some very iron rich bands + plant fragments generally becoming very broken with depth.
			Mudstone, grey, moderately strong, fragmented with some clay and dark grey mudstone fragments
41	14	10	Mudstone, grey, strong, very finely micaceous with plant and root fragments + occasional ironstone nodules, generally silty. (Extremely broken ground, loose - Possible collapsed workings)
86	44	23	Mudstone, grey - dark grey, strong but very fragmented with some clay + occasional iron rich bands, becoming silty, micaceous + containing numerous roots with depth.
			Mudstone, grey, very broken, moderately weak with some strong mudstone fragments in top 30cm.
			Mudstone, grey, silty, strong, broken by irregular near vertical joints with iron staining and occasional ferruginous bands.
			Siltstone, light grey, very sandy very strong, Thinly bedded, sub laminated with some near vertical jointing + 'SPHEROSIDERITE' from 21.9m to 22.5m.

V. WADDELL & PTNRS

CLIENT M.S GLAMORGAN COUNTY

JOB No 3761/13

MERTHYR TYDFIL

PAGE 3 OF 3

2.

SO 00NE/61

RQD %	CORE RECOVERY %	RQD	STRATA DESCRIPTION
98	95	43	22 As above.
			Mudstone, grey, strong - v. strong, becoming silty below 21.75 with carbonaceous plant partings.
			23 Mudstone, dark grey, slightly carbonaceous, very thinly laminated.
			Mudstone, dark grey, silty, strong micaceous, occasional plant fragments, iron rich band @ 22.6 with high angle irregular jointing.
			24 Mudstone, grey, very silty and iron rich, strong - very strong with near vertical joints becoming slightly silty below 23.8 with thin micaceous bands.
100	86	24	
			25 Sandstone band, grey, v. strong, silty. Mudstone, grey, smooth, strong (moderately) with strong iron bands, becoming slightly silty below 25.5m. Sandstone, gy, v. strong, silty.
97	89	67	26 Mudstone, gy, slightly silty, moderately strong with thin iron bands. Sandstone, gy, v. strong. Sandstone, silty, gy - dk gy, fine - medium grained. Extremely strong, slightly quartzitic.
			END OF BOREHOLE @ 26.8m.
			27
			28
			29
			30
			31
			32
			33
			34

K WARDELL & PTNRS | CLIENT MID GLAMORGAN COUNTY | JOB No 257m1/13

APPENDIX B

ENVIROCHECK REPORT

Intégral
Géotechnique

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
299500301_1_1

Customer Reference:
14075/LP

National Grid Reference:
305350, 207380

Slice:
A

Site Area (Ha):
6.79

Search Buffer (m):
1000

Site Details:

Bishop Hedley School
Merthyr Tydfil
CF47 9AP

Client Details:

MR H Pritchard
Integral Geotechnique
Integral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX

Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	42
Hazardous Substances	-
Geological	48
Industrial Land Use	57
Sensitive Land Use	72
Data Currency	73
Data Suppliers	79
Useful Contacts	80

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v53.0

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 5		12	3	36
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control	pg 17				1
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 17		2		7
Local Authority Pollution Prevention and Control Enforcements	pg 19				2
Nearest Surface Water Feature	pg 19	Yes			
Pollution Incidents to Controlled Waters	pg 19		1	1	19
Prosecutions Relating to Authorised Processes	pg 23				1
Registered Radioactive Substances	pg 23				2
River Quality	pg 23			2	1
River Quality Biology Sampling Points	pg 24			1	
River Quality Chemistry Sampling Points	pg 25				2
Substantiated Pollution Incident Register	pg 26		1		
Water Abstractions	pg 27				(*2)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 27	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 27	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 27	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 27	3	22	32	69

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 42		1		1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 42				4
Local Authority Landfill Coverage	pg 43	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites	pg 43		1		1
Potentially Infilled Land (Non-Water)	pg 43		4	1	7
Potentially Infilled Land (Water)	pg 44	1	8	6	27
Registered Landfill Sites					
Registered Waste Transfer Sites	pg 46				2
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Intégral Géotechnique

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 48	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 48	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 51			6	12
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 54	Yes	n/a	n/a	n/a
Mining Instability	pg 54	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities	pg 54				1
Non Coal Mining Areas of Great Britain	pg 54	Yes	Yes	n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 54	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 54		Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 55	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 55	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 55	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 57		3	16	70
Fuel Station Entries	pg 64		1		2
Points of Interest - Commercial Services	pg 65			3	23
Points of Interest - Education and Health	pg 67				4
Points of Interest - Manufacturing and Production	pg 67				8
Points of Interest - Public Infrastructure	pg 68			2	11
Points of Interest - Recreational and Environmental	pg 69		6	6	18
Gas Pipelines					
Underground Electrical Cables					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland	pg 72				2
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (S)	0	1	305346 207350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (W)	0	1	305346 207381
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (SE)	0	1	305400 207250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (SW)	0	1	305200 207300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (S)	0	1	305300 207200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (S)	0	1	305346 207300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (S)	5	1	305346 207150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NW (S)	20	1	305350 207150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (W)	30	1	305200 207381
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (W)	32	1	305200 207400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (S)	105	1	305346 207050
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (N)	114	1	305300 207750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NE (SE)	115	1	305550 207150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SE (S)	131	1	305400 207050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NW (SW)	132	1	305100 207150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (NW)	134	1	305150 207500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (N)	141	1	305250 207750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (NW)	155	1	305200 207700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8SW (S)	155	1	305346 207000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8NE (SE)	174	1	305650 207250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	175	1	305650 207350
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (N)	179	1	305200 207750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NW (N)	182	1	305250 207800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (E)	187	1	305650 207381
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (E)	189	1	305650 207400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8SE (S)	193	1	305450 207000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (NW)	202	1	305150 207700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (W)	211	1	305050 207500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8SE (S)	226	1	305400 206950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (SE)	227	1	305650 207100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A7NE (W)	228	1	305000 207381
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A7NE (W)	230	1	305000 207250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A9NW (SE)	230	1	305700 207200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (E)	239	1	305700 207400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A9NW (SE)	245	1	305700 207150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NW (NW)	249	1	305150 207800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8SE (SE)	252	1	305650 207050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (W)	255	1	305000 207500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (N)	259	1	305300 207900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NW (NW)	266	1	305100 207750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SW (NW)	272	1	305050 207600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (NW)	280	1	305000 207550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (NW)	283	1	305050 207700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (E)	297	1	305750 207450

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12SE (W)	301	1	304950 207500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (NW)	311	1	305000 207600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A9NW (SE)	312	1	305750 207100
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (N)	321	1	305150 207900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SE (SE)	321	1	305650 206950
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (NW)	322	1	304950 207550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SE (S)	323	1	305400 206850
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A9NW (E)	328	1	305800 207200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SE (S)	336	1	305450 206850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A9SW (SE)	338	1	305750 207050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (SW)	342	1	305050 206900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SE (S)	350	1	305500 206850
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (N)	358	1	305300 208000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14NW (NE)	361	1	305700 207750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (E)	361	1	305800 207500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A9NW (E)	374	1	305850 207250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SE (SW)	377	1	305000 206900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (S)	380	1	305150 206800
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (NW)	391	1	305100 207950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SE (S)	399	1	305500 206800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (S)	405	1	305300 206750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (S)	405	1	305346 206750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A9SW (SE)	406	1	305800 207000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (S)	407	1	305250 206750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (N)	408	1	305300 208050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (N)	416	1	305250 208050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SW (S)	428	1	305150 206750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A8SE (S)	432	1	305450 206750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8SW (S)	445	1	305100 206750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SE (S)	446	1	305500 206750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A9SW (SE)	449	1	305850 207000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SE (SW)	452	1	305000 206800
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3NW (S)	455	1	305300 206700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A3NW (S)	455	1	305346 206700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SW (N)	457	1	305300 208100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	459	1	305350 206700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	464	1	305200 206700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SW (N)	465	1	305250 208100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8SE (S)	472	1	305600 206750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A9NW (E)	475	1	305950 207300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A3NW (S)	476	1	305150 206700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A3NW (S)	491	1	305100 206700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A7SE (SW)	492	1	305000 206750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7SE (SW)	494	1	304850 206900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Not Supplied Location: Penybryn Depot Merthyr Tydfil, Merthyr Tydfil Ua, Wales Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: AN0216701 Permit Version: 1 Effective Date: 30th April 1990 Issued Date: 30th April 1990 Revocation Date: Not Supplied Discharge Type: Trade And Other Matter Discharge Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of Nanr Morlais **Status: Effective** Positional Accuracy: Located by supplier to within 100m	A13SW (N)	6	2	305300 207500
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Not Supplied Location: Penybryn Depot Merthyr Tydfil, Merthyr Tydfil Ua, Wales Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: An0216701 Permit Version: 1 Effective Date: 30th April 1990 Issued Date: 30th April 1990 Revocation Date: Not Supplied Discharge Type: Trade And Other Matter Discharge Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Of Nanr Morlais **Status: Effective** Positional Accuracy: Located by supplier to within 100m	A13SW (N)	6	2	305300 207500
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Water Supply Grid Location: Penybryn Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: Am0008401 Permit Version: 1 Effective Date: 2nd October 1989 Issued Date: 2nd October 1989 Revocation Date: 14th March 1994 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Soakaway **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A13NW (N)	212	2	305200 207800
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Goitre Lane Cso, Gurnos, Merthyr Tydfil, Cf47 9ty Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025303 Permit Version: 4 Effective Date: 21st August 2019 Issued Date: 21st August 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Goitre Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A13NW (N)	227	2	305200 207820

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Goitre Lane Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025303 Permit Version: 2 Effective Date: 11th December 2001 Issued Date: 10th December 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Goitre Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A13NW (N)	227	2	305200 207820
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Goitre Lane Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025303 Permit Version: 2 Effective Date: 11th December 2001 Issued Date: 10th December 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Goitre Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A13NW (N)	227	2	305200 207820
3	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Waterloo House Merthyr Tydfil, Merthyr Tidfil Authority: Natural Resources Wales Catchment Area: River Taff Reference: Ae2025305 Permit Version: 2 Effective Date: 31st March 2002 Issued Date: 21st December 2001 Revocation Date: 16th July 2002 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	220	2	305600 207040
3	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Waterloo House Authority: Natural Resources Wales Catchment Area: River Taff Reference: AE2025305 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: 30th March 2002 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Morlais Brook **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A8SE (SE)	221	2	305590 207030

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: A Cso At Waterloo House Merthyr, Waterloo House, Penydarren, Merthyr Tydfil, Cf47 9ha Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025305 Permit Version: 4 Effective Date: 7th October 2019 Issued Date: 7th October 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	223	2	305598 207034
3	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: A Cso At Waterloo House Merthyr, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025305 Permit Version: 3 Effective Date: 17th July 2002 Issued Date: 16th July 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	224	2	305570 207010
3	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: A Cso At Waterloo House Merthyr, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025305 Permit Version: 3 Effective Date: 17th July 2002 Issued Date: 16th July 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	224	2	305570 207010
4	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Rear Of Gwaelodygart Authority: Natural Resources Wales Catchment Area: River Taff Reference: Ae2025306 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: 6th May 1998 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Goitre Stream **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	239	2	305000 207200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: British Coal Opencast Property Type: Undefined Or Other Location: Merthyr Tydfil - Incline Top O Authority: Natural Resources Wales Catchment Area: River Taff Reference: An0138201 Permit Version: 1 Effective Date: 15th June 1989 Issued Date: 15th June 1989 Revocation Date: 14th April 1994 Discharge Type: Trade Effluent Discharge Environment: Not Supplied Receiving Water: Nant Morlais **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	269	2	305700 207100
6	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Goitre Lane Authority: Natural Resources Wales Catchment Area: River Taff Reference: AE2025303 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: 10th December 2001 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Goitre Stream **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A13NW (N)	405	2	305150 208000
7	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr Tydfil-Trevethick Monu Peny, Penyard Road Authority: Natural Resources Wales Catchment Area: River Taff Reference: AE2025307 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: 7th December 2001 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A3NW (S)	482	2	305130 206700
7	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Trevithick Monument Merthyr, 1 Gwalia Place, Thomas Town, Merthyr Tydfil, Cf47 0aj Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025307 Permit Version: 3 Effective Date: 11th October 2019 Issued Date: 11th October 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A3NW (S)	523	2	305120 206660

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Trevithick Monument Merthyr, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025307 Permit Version: 2 Effective Date: 8th December 2001 Issued Date: 7th December 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A3NW (S)	523	2	305120 206660
7	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Trevithick Monument Merthyr, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025307 Permit Version: 2 Effective Date: 8th December 2001 Issued Date: 7th December 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A3NW (S)	523	2	305120 206660
8	**Discharge Consents** Operator: Celtic Energy Ltd Property Type: Coal Extraction, Surface Location: Great White Tip Site Authority: Natural Resources Wales Catchment Area: River Taff Reference: An0238601 Permit Version: 1 Effective Date: 10th November 1992 Issued Date: 10th November 1992 Revocation Date: 1st November 1996 Discharge Type: Trade Effluent Discharge Environment: Not Supplied Receiving Water: Culvert And Hence To River Taf **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	635	2	306076 207040
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Bont (Rear Horse And Authority: Natural Resources Wales Catchment Area: River Taff Reference: AE2025302 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: 8th March 2002 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Morlais Brook **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A14SE (E)	676	2	306070 207670

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso At The Bont, Merthyr Tydfil, Horse & Groom Car Park, Penydarren, Merthyr Tydfil, Cf47 9hh Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025302 Permit Version: 3 Effective Date: 21st August 2020 Issued Date: 21st August 2020 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	689	2	306085 207667
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Dowlais Market St & High St Junction, 34 Market St, Dowlais, Merthyr Tydfil, Cf48 3hl Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Bb3396cg Permit Version: 1 Effective Date: 14th August 2019 Issued Date: 14th August 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Tributary Leading To Nant Morlais **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	689	2	306085 207667
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: The Bont Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025302 Permit Version: 2 Effective Date: 9th March 2002 Issued Date: 8th March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	713	2	306110 207670
9	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: The Bont Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025302 Permit Version: 2 Effective Date: 9th March 2002 Issued Date: 8th March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	713	2	306110 207670

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Discharge Consents** Operator: Croda Ltd Property Type: Undefined Or Other Location: Merthyr Tydfil - Croda Ltd Authority: Natural Resources Wales Catchment Area: River Taff Reference: Af4024301 Permit Version: 1 Effective Date: 1st September 1977 Issued Date: 1st September 1977 Revocation Date: 26th January 1994 Discharge Type: Trade Effluent Discharge Environment: Not Supplied Receiving Water: Nant Morlais Brook **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A9NE (E)	685	2	306160 207260
11	**Discharge Consents** Operator: Celtic Energy Ltd Property Type: Coal Extraction, Surface Location: Great White Tip Site Authority: Natural Resources Wales Catchment Area: River Taff Reference: An0238602 Permit Version: 1 Effective Date: 10th November 1992 Issued Date: 10th November 1992 Revocation Date: 1st November 1996 Discharge Type: Trade Effluent Discharge Environment: Not Supplied Receiving Water: Culvert And Hence To River Taf **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A9NE (E)	702	2	306171 207149
12	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Brewers Arms Cso, Balaclava Rd, Dowlais, Brewers Arms, Brewery Road, Merthyr Tydfil, Cf48 3bu Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: An0230601 Permit Version: 3 Effective Date: 29th August 2019 Issued Date: 29th August 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14NE (NE)	763	2	306103 207806
12	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Brewers Arms Sso Dowlais Merthyr T, Dowlais Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: An0230601 Permit Version: 2 Effective Date: 31st March 2002 Issued Date: 15th March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14NE (NE)	779	2	306110 207830

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Brewers Arms Sso Dowlais Merthyr T, Dowlais Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: An0230601 Permit Version: 2 Effective Date: 31st March 2002 Issued Date: 15th March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14NE (NE)	779	2	306110 207830
12	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Brewers Arms Sso Dowlais Merthyr T, Dowlais Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: Not Given Reference: AN0230601 Permit Version: 1 Effective Date: 28th November 1991 Issued Date: 28th November 1991 Revocation Date: 30th March 2002 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Not Supplied Receiving Water: Morlais Brook **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A14NE (NE)	779	2	306110 207830
13	**Discharge Consents** Operator: Bailey Homes Ltd Property Type: Undefined Or Other Location: Chapel Bethleham Site Merthyr Tydfi, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: River Taff Reference: An0080902 Permit Version: 1 Effective Date: 15th August 1988 Issued Date: 15th August 1988 Revocation Date: 31st March 1995 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Taff **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A7SW (SW)	846	2	304500 206800
14	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Gellifaelog School Rocky, Rocky Road Authority: Natural Resources Wales Catchment Area: River Taff Reference: AE1006601 Permit Version: 1 Effective Date: 28th October 1955 Issued Date: 28th October 1955 Revocation Date: 7th December 2001 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Morlais Brook **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A19SE (NE)	865	2	306080 208100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Gellifaelog School Rocky, Rocky Road Authority: Natural Resources Wales Catchment Area: River Taff Reference: AE1006602 Permit Version: 1 Effective Date: 28th October 1955 Issued Date: 28th October 1955 Revocation Date: 2nd February 1999 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Morlais Brook **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	865	2	306080 208100
14	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Rocky Rd Cso Merthyr Tydfil, 6, Cwm Graig Bungalows, Rocky Road, Merthyr Tydfil, Cf47 9jw Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae1006601 Permit Version: 3 Effective Date: 24th September 2019 Issued Date: 24th September 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Nant Morlais **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	888	2	306100 208110
14	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso At Dowlais Balaclava Road, Uplands, Balaclava Road, Dowlais, Merthyr Tydfil, Cf48 3bs Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025301 Permit Version: 2 Effective Date: 18th September 2019 Issued Date: 18th September 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	888	2	306097 208116
14	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Gellifaelog School Rocky Road, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae1006601 Permit Version: 2 Effective Date: 8th December 2001 Issued Date: 7th December 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	888	2	306100 208110

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Gellifaelog School Rocky Road, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae1006601 Permit Version: 2 Effective Date: 8th December 2001 Issued Date: 7th December 2001 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	888	2	306100 208110
15	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Jacksons Bridge/Beth Authority: Natural Resources Wales Catchment Area: River Taff Reference: AE1001303 Permit Version: 1 Effective Date: 28th September 1952 Issued Date: 28th September 1952 Revocation Date: 30th March 2002 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Taff **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	879	2	304660 206530
16	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr- Quarry Row Authority: Natural Resources Wales Catchment Area: River Taff Reference: AE1001304 Permit Version: 1 Effective Date: 28th September 1952 Issued Date: 28th September 1952 Revocation Date: 28th March 2002 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Taff **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	883	2	304530 206680
17	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Balaclava Rd Cso, Dowlais, Opp 45, Balaclava Road, Merthyr Tydfil, Cf48 3bs Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025304 Permit Version: 2 Effective Date: 21st August 2019 Issued Date: 21st August 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14NE (NE)	884	2	306190 207910

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
17	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Dowlais - Junction New Road/Ba Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: AE2025304 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 100m	A14NE (NE)	884	2	306190 207910
17	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Dowlais - Junction New Road/Ba Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025304 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A14NE (NE)	884	2	306190 207910
18	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Cwm Rhyd-Y-Bedd Balaclava, Balaclava Road Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: AE2025301 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	895	2	306067 208173
18	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Merthyr - Cwm Rhyd-Y-Bedd Balaclava, Balaclava Road Authority: Natural Resources Wales Catchment Area: NANT MORLAIS - SOURCE TO CONF R TAFF Reference: Ae2025301 Permit Version: 1 Effective Date: 15th April 1964 Issued Date: 15th April 1964 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Morlais Brook **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	895	2	306067 208173

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**Discharge Consents** Operator: Bailey Homes Ltd Property Type: Undefined Or Other Location: Chapel Bethleham Site Merthyr Tydfi, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: River Taff Reference: An0080901 Permit Version: 1 Effective Date: 15th August 1988 Issued Date: 15th August 1988 Revocation Date: 31st March 1995 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Taff **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A7SW (SW)	936	2	304400 206800
20	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: A Cso At Jacksons Bridge, Nr Riverside House, Quarry Row, Merthyr Tydfil, Cf47 8ps Authority: Natural Resources Wales Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON Reference: Ae1001303 Permit Version: 3 Effective Date: 7th October 2019 Issued Date: 7th October 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A2NW (SW)	959	2	304550 206530
20	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: A Cso At Jacksons Bridge, Jacksons Brisge, Bethes Street, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON Reference: Ae1001303 Permit Version: 2 Effective Date: 31st March 2002 Issued Date: 6th March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A2NW (SW)	959	2	304550 206530
20	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: A Cso At Jacksons Bridge, Jacksons Brisge, Bethes Street, Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON Reference: Ae1001303 Permit Version: 2 Effective Date: 31st March 2002 Issued Date: 6th March 2002 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A2NW (SW)	959	2	304550 206530

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Pandy Farm Development Brecon Road, Brecon Road Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON Reference: Ae1011601 Permit Version: 1 Effective Date: 4th November 1959 Issued Date: 4th November 1959 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: Surrendered** Positional Accuracy: Located by supplier to within 10m	A7SW (SW)	973	2	304350 206820
21	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Pandy Farm Development Brecon Road, Brecon Road Merthyr Tydfil Authority: Natural Resources Wales Catchment Area: TAFF - CONF TAF FECHAN TO CONF R CYNON Reference: Ae1011601 Permit Version: 1 Effective Date: 4th November 1959 Issued Date: 4th November 1959 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: Surrendered** Positional Accuracy: Located by supplier to within 10m	A7SW (SW)	973	2	304350 206820
21	**Discharge Consents** Operator: Merthyr Tydfil Borough Council Property Type: Undefined Or Other Location: Merthyr Bus Depot Authority: Natural Resources Wales Catchment Area: River Taff Reference: Ae2022101 Permit Version: 1 Effective Date: 2nd March 1964 Issued Date: 2nd March 1964 Revocation Date: 29th October 1985 Discharge Type: Trade Effluent Discharge Environment: Not Supplied Receiving Water: Taff River **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A7SW (SW)	989	2	304350 206780
22	**Integrated Pollution Prevention And Control** Name: Indigo Waste Solutions Location: Merthyr Tydfil Clinical Waste Treatment Facility, Mill Court,Unit 1, Goat Mill Road,,, MERTHYR TYDFIL, Mid Glamorgan, CF47 0AH Authority: Environment Agency, Welsh Region Permit Reference: Xp3937st Original Permit Ref: Xp3937st Effective Date: Not Supplied **Status: Valid** Application Type: Application App. Sub Type: New Positional Accuracy: Manually positioned to the address or location Activity Code: 5.3 A(1) (A) Activity Description: Other Waste Disposal; Hazardous Waste Greater Than 10T/D Primary Activity: Y	A9NE (E)	703	3	306178 207274
23	**Local Authority Pollution Prevention and Controls** Name: Texaco LtdStar Location: High Street, Penydarren, Merthyr Tydfil, Mid Glamorgan, CF47 9HA Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: PG 1/14(96)-4 Dated: 1st March 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Authorisation revoked** Positional Accuracy: Automatically positioned to the address	A8SE (SE)	192	4	305574 207054

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**Local Authority Pollution Prevention and Controls** Name: Shell Service Stations Location: High Street, Penydaren, MERTHYR TYDFIL, Mid Glamorgan, CF47 9HA Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: Pg 1/14[96]-5 Dated: 1st March 1999 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A8SE (SE)	192	4	305574 207054
24	**Local Authority Pollution Prevention and Controls** Name: Triumph Furniture Ltd Location: Tbs (South Wales) Ltd, Unit 3, Goat Mill Road Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: PPC/PG6.5/15 Dated: 9th February 2015 Process Type: Local Authority Pollution Prevention and Control Description: PG6/2 Manufacture of timber and wood-based products **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A9NE (E)	604	4	306076 207184
25	**Local Authority Pollution Prevention and Controls** Name: Dowlais Service Station Location: New Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3DA Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: PPC/PG1.14/02/10 Dated: 1st March 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Automatically positioned to the address	A14SE (E)	690	4	306134 207534
26	**Local Authority Pollution Prevention and Controls** Name: British Coal Opencast Location: Incline Top Opencast Site, Goatmill Road, MERTHYR TYDFIL, Mid Glamorgan, CF48 3TD Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: PG (3)/5(91)-1 Dated: 26th February 1993 Process Type: Local Authority Pollution Prevention and Control Description: PG3/5 Coal, coke and coal product processes **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	762	4	305920 206601
27	**Local Authority Pollution Prevention and Controls** Name: Stephens & George Ltd Location: Goat Mill Road, Dowlais, CF48 3TD Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: PPC/PG6.4/10/10 Dated: 8th December 2010 Process Type: Local Authority Pollution Prevention and Control Description: PG6/16 Printworks **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A9NE (E)	789	4	306256 207367
28	**Local Authority Pollution Prevention and Controls** Name: Merthyr Dry Cleaners Location: 16 Brecon Road, Merthyr Tydfil Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: DryC/RJD/1/07 Dated: 30th November 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A7SW (SW)	833	4	304489 206853
29	**Local Authority Pollution Prevention and Controls** Name: Celtic Energy Ltd Location: Great White Tip Opencast Site, Goatmill Road Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: PG (3)/5(91)-5 Dated: 26th February 1993 Process Type: Local Authority Pollution Prevention and Control Description: PG3/5 Coal, coke and coal product processes **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A9SE (SE)	854	4	306259 206909

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	**Local Authority Pollution Prevention and Controls** Name: Prince Charles Hospital Location: Gurnos Road, Gurnos Estate, MERTHYR TYDFIL, Mid Glamorgan, CF47 9DT Authority: Merthyr Tydfil County Borough Council, Environmental Health Department Permit Reference: PG5/1/A Dated: 30th October 1992 Process Type: Local Authority Pollution Prevention and Control Description: PG5/1Clinical waste incineration processes under 1 tonne an hour **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	993	4	304496 208161
31	**Local Authority Pollution Prevention and Control Enforcements** Location: Prince Charles Hospital Type: Air Pollution Control Enforcement Notice Reference: PG/1/A//Enf2 Date Issued: Not Supplied Enforcement Date: 28th July 1993 Details: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	993	4	304496 208161
31	**Local Authority Pollution Prevention and Control Enforcements** Location: Prince Charles Hospital Type: Air Pollution Control Enforcement Notice Reference: PG/1/A/Enf1 Date Issued: Not Supplied Enforcement Date: 28th July 1993 Details: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	993	4	304496 208161
	Nearest Surface Water Feature	A13SE (E)	0	-	305443 207401
32	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: The Avenue, MERTHYR Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Not Supplied Incident Date: 9th April 1992 Incident Reference: 3630 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A8SE (S)	204	3	305500 207000
33	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Theatre Royal Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Not Supplied Incident Date: 1st December 1994 Incident Reference: 22063 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NW (S)	464	3	305200 206700
34	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Quarry Row Cso, MERTHYR Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blocked Sewer Incident Date: 17th January 1996 Incident Reference: 27163 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SW (SW)	844	3	304505 206795

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: Quarry Row Cso, MERTHYR Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blocked Sewer Incident Date: 17th January 1996 Incident Reference: 27163 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SW (SW)	846	3	304500 206800
34	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: In The Back Garden, Of 7 Riversdale Road Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Neglect Incident Date: 18th July 1996 Incident Reference: 29587 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A7SW (SW)	849	3	304500 206795
35	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Colledge Car, Park At Merthyr, Fire Station Authority: Environment Agency, Welsh Region Pollutant: Oils - Diesel (Including Agricultural) Note: Not Supplied Incident Date: 8th November 1995 Incident Reference: 26630 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (SW)	874	3	304700 206500
35	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Morlais Brook Authority: Environment Agency, Welsh Region Pollutant: Sewage - Treated Effluent Note: Not Supplied Incident Date: 13th January 1995 Incident Reference: 22266 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (SW)	874	3	304705 206495
35	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Culvert O/S M, Tydfil Fire Station Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Not Supplied Incident Date: 13th January 1995 Incident Reference: 22266 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (SW)	877	3	304700 206495
36	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: At Rear Of Caslte Cinema Car Park Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blockage Incident Date: 11th April 1997 Incident Reference: 32011 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (SW)	895	3	304800 206400

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
37	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: 200 Meters From, Jacksons Bridge, MERTHYR Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Blocked Sewer Incident Date: 24th July 1994 Incident Reference: 20848 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	896	3	304500 206700
37	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Quarry Row, GEORGETOWN Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blockage Incident Date: 15th May 1997 Incident Reference: 32513 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	899	3	304500 206695
38	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: Merthyr Town Centre Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Tip Leachate Note: Poor Operational Practise Incident Date: 9th January 1995 Incident Reference: 22287 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	942	3	304600 206500
38	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: Back Yard Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Tip Leachate Note: Poor Operational Practise Incident Date: 9th January 1995 Incident Reference: 22287 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	942	3	304605 206495
38	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: Morlais Brk Opp, Merthyr Fire Station Authority: Environment Agency, Welsh Region Pollutant: Oils - Diesel (Including Agricultural) Note: Poor Operational Practise Incident Date: 9th January 1995 Incident Reference: 22287 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	946	3	304600 206495
38	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Jacksons Bridge At, Rear Of Wellington Pub Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blockage Incident Date: 1st May 1997 Incident Reference: 32511 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	979	3	304550 206500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Opposite Fire Station Authority: Environment Agency, Welsh Region Pollutant: Mud/Clay/Soil Note: Natural Occurrence Incident Date: 13th May 1997 Incident Reference: 32501 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (SW)	952	3	304700 206400
40	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Up Stream Of Jacksons Bridge , Adjacent Quarry Row Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blockage; River Taff Incident Date: 24th August 1998 Incident Reference: 36517 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Unknown	A2NW (SW)	953	3	304505 206595
40	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Storm Overflow Location: 200 Yards Up Stream Of, Jacksons Bridge, MERTHYR Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blocked Sewer Incident Date: 8th April 1993 Incident Reference: 22206 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	954	3	304500 206600
40	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Jacksons Bridge , MERTHYR TYDFIL Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blockage; River Taff Incident Date: 7th October 1998 Incident Reference: 36962 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	957	3	304500 206595
41	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Quarry Road, Vincent Place Cso Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blockage Incident Date: 15th January 1997 Incident Reference: 31545 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	988	3	304520 206520
41	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Up Stream, Jacksons Bridge Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Blockage Incident Date: 15th January 1997 Incident Reference: 31545 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	991	3	304520 206515

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	**Prosecutions Relating to Authorised Processes** Location: Goat Mill Road, Dowlais, Cf48 Prosecution Text: Failure to comply with packaging waste regulations Prosecution Act: Pro97 Hearing Date: 27th November 2006 Verdict: Guilty Fine: 4200 Costs: 1356 Positional Accuracy: Manually positioned to the road within the address or location	A9NE (E)	815	3	306283 207356
43	**Registered Radioactive Substances** Name: North Glamorgan Nhs Trust Location: Prince Charles Hospital, MERTHYR TYDFIL, Mid Glamorgan, CF47 9DT Authority: Natural Resources Wales Permit Reference: AX8608 Dated: 11th February 1997 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variation** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	992	2	304491 208151
43	**Registered Radioactive Substances** Name: North Glamorgan Nhs Trust Location: Prince Charles Hospital, MERTHYR TYDFIL, Mid Glamorgan, CF47 9DT Authority: Natural Resources Wales Permit Reference: AV5136 Dated: 6th June 1996 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Initial variation to an authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variation** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	994	2	304491 208156
	River Quality Name: Nant Morlais GQA Grade: River Quality C Reach: Conf.Goitre Bk.-Headwaters Estimated Distance (km): 2.4 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A8SE (SE)	259	3	305616 207001
	River Quality Name: Nant Morlais GQA Grade: River Quality C Reach: Conf.Taff - Conf.Goitre Bk Estimated Distance (km): 1 Flow Rate: Flow less than 0.62 cumecs Flow Type: River Year: 2000	A8SE (S)	342	3	305365 206821
	River Quality Name: Taff GQA Grade: River Quality A Reach: Conf.Nant Morlais-Conf.Taff Fechan Estimated Distance (km): 1.4 Flow Rate: Flow less than 5 cumecs Flow Type: River Year: 2000	A2NW (SW)	841	3	304574 206689

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
44	**River Quality Biology Sampling Points** Name: Morlais Reach: Confluence River Taff To Confluence Goitre Brook Estimated Distance: 1.00 Positional Accuracy: Located by supplier to within 100m Year: 1990 GQA Grade: River Quality Biology GQA Grade E - Poor Year: 1995 GQA Grade: River Quality Biology GQA Grade E - Poor Year: 2000 GQA Grade: River Quality Biology GQA Grade D - Fair Year: 2002 GQA Grade: River Quality Biology GQA Grade Not Supplied Year: 2003 GQA Grade: River Quality Biology GQA Grade Not Supplied Year: 2004 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2005 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2006 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2007 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2008 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2009 GQA Grade: River Quality Biology GQA Grade C - Fairly Good	A8SW (S)	355	3	305300 206800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
45	**River Quality Chemistry Sampling Points** Name: Nant Morlais Reach: Confluence River Taff To Confluence Goitre Brook Estimated Distance: 1.00 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied Year: 2009 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied	A2NE (SW)	790	3	304909 206459

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
45	**River Quality Chemistry Sampling Points** Name: Nant Morlais Reach: Confluence Goitre Brook To Headwaters Estimated Distance: 2.40 Objective: Not Supplied Positional Accuracy: Located by supplier to within 10m Year: 1990 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 1993 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 1994 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied Year: 1995 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied Year: 1996 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied Year: 1997 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 1998 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 1999 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2000 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2001 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2002 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2003 GQA Grade: River Quality Chemistry GQA Grade B - Good Compliance: Not Supplied Year: 2004 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2005 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2006 GQA Grade: River Quality Chemistry GQA Grade C - Fairly Good Compliance: Not Supplied Year: 2007 GQA Grade: River Quality Chemistry GQA Grade D - Fair Compliance: Not Supplied Year: 2008 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied Year: 2009 GQA Grade: River Quality Chemistry GQA Grade E - Poor Compliance: Not Supplied	A2NE (SW)	790	3	304909 206459
46	**Substantiated Pollution Incident Register** Authority: Natural Resources Wales Incident Date: 5th August 2021 Incident Reference: 2106721 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Inert Materials And Wastes: Soils And Clay	A8SE (SE)	223	2	305615 207053

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: P Forker Contractors Limited Licence Number: 21/57/22/0037 Permit Version: Not Supplied Location: Location Description Not Available Authority: Environment Agency, Welsh Region Abstraction: General Industrial Abstraction Type: Not Supplied Source: River Daily Rate (m3): 300 Yearly Rate (m3): 15000 Details: River Taff Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A2SE (SW)	1249	3	304700 206050
	Water Abstractions Operator: Balfour Beatty Civil Engineering Limited Licence Number: Wa/057/0021/002 Permit Version: 1 Location: Point A On Taf Fechan Alongside Cyfarthfa Leat Authority: Environment Agency, Welsh Region Abstraction: Industrial/Commercial/Energy/Public Services: Transfer between sources Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 06 June Authorised End: 31 October Permit Start Date: 6th June 2012 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11SW (W)	1550	3	303704 207663
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: >90% Superficial Thickness: 3-10m Superficial Recharge: Low	A8NW (W)	0	2	305346 207381
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A8NW (W)	0	2	305346 207381
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A8NW (W)	0	2	305346 207381
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
47	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (NE)	0	5	305417 207465

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
48	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 105.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (NE)	0	5	305430 207420
49	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 333.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (E)	0	5	305462 207371
50	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 196.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (NE)	1	5	305418 207463
51	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SE (NE)	1	5	305418 207463
52	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 853.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (N)	2	5	305346 207644
53	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (NW)	132	5	305138 207486
54	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 43.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (NW)	135	5	305132 207484
55	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 164.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (W)	146	5	305090 207434
56	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 25.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (W)	150	5	305093 207451

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
57	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 191.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (W)	164	5	305089 207476
58	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 245.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NW (W)	169	5	305060 207291
59	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 346.4 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SW (SW)	188	5	305113 207060
60	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 111.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	207	5	305654 207134
61	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	216	5	305628 207082
62	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 107.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	218	5	305629 207080
63	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	218	5	305629 207080
64	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	218	5	305629 207081
65	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 371.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	219	5	305682 207174

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
66	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 70.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	221	5	305683 207173
67	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.8 Watercourse Level: Underground Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	221	5	305628 207074
68	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 515.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	221	5	305612 207047
69	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 24.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	225	5	305629 207068
70	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 356.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (NW)	228	5	305066 207663
71	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 62.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8NE (SE)	245	5	305683 207118
72	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 83.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	270	5	305607 206980
73	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13SW (NW)	272	5	305065 207653
74	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 37.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NW (SE)	297	5	305731 207097

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
75	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 329.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	323	5	305708 207009
76	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	323	5	305708 207009
77	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 29.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	326	5	305710 207006
78	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 200.9 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A13NW (N)	346	5	305161 207938
79	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	349	5	305630 206901
80	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	349	5	305630 206901
81	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 49.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	354	5	305727 206983
82	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 31.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	354	5	305727 206983
83	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 1.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	356	5	305632 206893

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
84	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 226.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NE (W)	357	5	304867 207276
85	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 405.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NE (W)	361	5	304866 207287
86	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 105.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	373	5	305718 206942
87	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	373	5	305728 206954
88	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7SE (SW)	375	5	304901 207052
89	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7SE (SW)	385	5	304898 207034
90	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.1 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7SE (SW)	385	5	304898 207035
91	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 481.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7SE (SW)	392	5	304896 207023
92	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	401	5	305758 206946

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
93	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 93.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	408	5	305762 206940
94	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	418	5	305680 206851
95	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	419	5	305681 206849
96	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 303.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	431	5	305686 206840
97	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 308.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SE (SE)	431	5	305686 206840
98	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 49.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A8SW (S)	434	5	305212 206728
99	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A3NW (S)	469	5	305172 206702
100	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A3NW (S)	471	5	305173 206699
101	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	496	5	305810 206861

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
102	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.0 Watercourse Level: Underground Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A3NW (S)	498	5	305158 206675
103	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 148.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	500	5	305811 206856
104	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A3NW (S)	518	5	305135 206661
105	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 74.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A3NW (S)	525	5	305123 206657
106	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A3NW (S)	525	5	305123 206657
107	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 74.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18SW (N)	547	5	305066 208116
108	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 63.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SW (SE)	573	5	306018 207062
109	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 84.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A14NW (NE)	588	5	305829 207978
110	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 65.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A3NW (S)	592	5	305087 206598

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
111	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 165.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18SW (NW)	610	5	305021 208162
112	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SW (W)	630	5	304628 207577
113	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 381.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9SE (SE)	636	5	306076 207038
114	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 55.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SW (W)	645	5	304622 207603
115	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 309.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A3NW (S)	645	5	305032 206561
116	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 160.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12SW (W)	689	5	304592 207650
117	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 285.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (W)	712	5	304521 207201
118	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A4NW (SE)	714	5	305776 206563
119	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 438.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7NW (W)	717	5	304517 207190

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
120	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 196.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A4NW (SE)	724	5	305782 206556
121	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 137.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18SW (N)	726	5	305075 208319
122	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A4NW (SE)	732	5	305881 206607
123	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 263.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A4NW (SE)	747	5	305895 206600
124	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12NW (NW)	782	5	304556 207787
125	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A12NW (NW)	782	5	304556 207787
126	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 143.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	813	5	305853 208284
127	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 65.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	827	5	305777 208350
128	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 74.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	831	5	305900 208262

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
129	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 135.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NE (E)	849	5	306324 207207
130	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 46.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A9NE (E)	849	5	306324 207207
131	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 55.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A19SW (NE)	854	5	306010 208196
132	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 29.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	854	5	305966 208230
133	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 56.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SE (NE)	866	5	306037 208170
134	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 47.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	882	5	305988 208251
135	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	883	5	305953 208284
136	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	883	5	305953 208284
137	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 37.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A19SW (NE)	884	5	306016 208226

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
138	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 628.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	884	5	305988 208251
139	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 56.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	885	5	305947 208293
140	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	885	5	305948 208292
141	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A19SW (NE)	888	5	306017 208225
142	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A19SW (NE)	888	5	306021 208222
143	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	889	5	306021 208222
144	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 82.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SE (NE)	889	5	306076 208161
145	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	901	5	306025 208236
146	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 121.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	903	5	306026 208237

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
147	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 681.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Taf Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A7SW (SW)	907	5	304457 206752
148	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A4NW (SE)	907	5	305894 206408
149	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 179.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Morlais Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A2SE (SW)	911	5	304821 206369
150	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 65.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A4NW (SE)	912	5	305898 206404
151	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 294.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A19SW (NE)	938	5	305958 208353
152	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 21.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	938	5	304305 207547
153	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 16.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	949	5	304292 207533
154	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	949	5	304292 207533
155	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 26.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	952	5	304289 207537

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
156	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	960	5	304280 207523
157	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	960	5	304280 207523
158	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 81.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	962	5	304278 207526
159	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	966	5	305107 208581
160	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	968	5	305114 208585
161	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	970	5	304268 207510
162	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 177.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	970	5	304268 207510
163	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 28.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	974	5	304264 207514
164	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 34.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	975	5	305106 208590

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
165	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A4SW (SE)	977	5	305939 206354
166	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 210.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A4SW (SE)	978	5	305940 206353
167	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 100.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A10NW (E)	980	5	306455 207202
168	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 194.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A10NW (E)	980	5	306455 207202
169	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A18NW (N)	988	5	305127 208608
170	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	997	5	304260 207619
171	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 29.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 1	A11SE (W)	998	5	304273 207670
172	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Cynon, Ely and Rhondda Primacy: 2	A11SE (W)	999	5	304264 207643

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
173	**Historical Landfill Sites** Licence Holder: Merthyr Tydfil Borough Council Location: Galon Uchaf Name: Greenie Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD14083 First Input Date: 31st December 1960 Last Input Date: 31st December 1975 Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial, Household and Special Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6925/0014 BGS Ref: Not Supplied Other Ref: Not Supplied	A13SW (N)	46	2	305303 207675
174	**Historical Landfill Sites** Licence Holder: British Steel Corporation Location: Goat Mill Road, Dowlais, Merthy Tydfil Name: BSC Dowlais Tips Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD14973 First Input Date: 31st December 1978 Last Input Date: 31st December 1998 Specified Waste Type: Deposited Waste included Inert, Industrial and Commercial Waste, and Liquid Sludge EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6925/0005 BGS Ref: Not Supplied Other Ref: 3	A9NE (E)	762	2	306238 207241
175	**Licensed Waste Management Facilities (Locations)** Licence Number: 30341 Location: Mill Court, Goat Mill Road, Merthyr Tydfil, Glamorgan, CF47 0AH Operator Name: Indigo Equity Holdings Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Special Waste Transfer Stations **Licence Status: Surrendered** Issued: 28th January 2005 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 5th June 2007 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9NE (E)	650	2	306125 207275
176	**Licensed Waste Management Facilities (Locations)** Licence Number: ZB3797TH Location: Dowlais Household Waste and Recycling Centre, The Bont, Gellifaelog Old Road, Dowlais, Merthyr Tydfil, CF48 3DA Operator Name: Merthyr Tydfil County Borough Council Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Other Landfill Sites Taking Special Waste **Licence Status: Effective** Issued: 6th March 2019 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	752	2	306154 207669

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
176	**Licensed Waste Management Facilities (Locations)** Licence Number: ZB3797TH Location: Dowlais C/a Site, Dowlais, Merthyr Tydfil, Glamorgan, Merthyr Tydfil, CF48 3BT Operator Name: Merthyr Tydfil County Borough Council Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Not Supplied **Licence Status: Effective** Issued: 3rd September 2018 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	752	2	306154 207669
176	**Licensed Waste Management Facilities (Locations)** Licence Number: TP3699FD Location: Dowlais Civic Amenity Site, Dowlais, Merthyr Tydfil, Glamorgan, Merthyr Tydfil, CF48 3BT Operator Name: Environmental Waste Controls Ltd Operator Location: Not Supplied Authority: Natural Resources Wales Site Category: Household Waste Amenity Sites **Licence Status: Revoked** Issued: 24th June 1992 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: 31st January 2014 Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14SE (E)	752	2	306153 207670
	Local Authority Landfill Coverage Name: Merthyr Tydfil County Borough Council - Has supplied landfill data		0	4	305346 207381
177	**Local Authority Recorded Landfill Sites** Location: Galon Uchaf Reference: 120 Authority: Merthyr Tydfil County Borough Council, Environmental Health Department **Last Reported Status: Closed** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A13SW (NW)	77	4	305241 207611
178	**Local Authority Recorded Landfill Sites** Location: B.S.C Dowlais Tips Reference: 102 Authority: Merthyr Tydfil County Borough Council, Environmental Health Department **Last Reported Status: Closed** Types of Waste: Not Supplied Date of Closure: 31/12/1979 Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A9NE (E)	654	4	306109 207078
179	**Potentially Infilled Land (Non-Water)** Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A8NE (E)	45	-	305501 207395
180	**Potentially Infilled Land (Non-Water)** Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A13SE (N)	74	-	305366 207715
181	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A8NE (SE)	232	-	305664 207101
182	**Potentially Infilled Land (Non-Water)** Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A13NW (N)	244	-	305223 207857

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
183	**Potentially Infilled Land (Non-Water)** Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A13NE (NE)	328	-	305576 207876
184	**Potentially Infilled Land (Non-Water)** Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A7SE (SW)	502	-	304879 206849
185	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	646	-	306092 207050
186	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	804	-	306154 206817
187	**Potentially Infilled Land (Non-Water)** Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A3SE (S)	810	-	305371 206349
188	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	876	-	306184 206727
189	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	901	-	306288 206859
190	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	931	-	306286 206789
191	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A8NW (S)	0	-	305330 207171
192	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A8NW (W)	17	-	305226 207368
193	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A13SW (W)	137	-	305094 207401
194	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13SW (W)	149	-	305085 207423
195	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A13SW (W)	158	-	305083 207448
196	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13SW (NW)	184	-	305078 207493
197	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A8SW (SW)	186	-	305117 207058
198	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A8SW (SW)	207	-	305161 206986
199	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A8NW (SW)	238	-	305036 207086
200	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A13SW (NW)	257	-	305077 207644
201	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A7NE (W)	292	-	304942 207221

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
202	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A7SE (SW)	326	-	305004 206975
203	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A7NE (SW)	348	-	304893 207179
204	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1951	A13NW (N)	356	-	305150 207943
205	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A7NE (SW)	376	-	304885 207093
206	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A18SW (N)	578	-	305084 208165
207	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A12SW (W)	621	-	304632 207558
208	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A14SE (E)	659	-	306090 207575
209	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A2NE (SW)	672	-	304809 206668
210	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A9NE (E)	675	-	306128 207074
211	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A3NW (S)	678	-	305189 206485
212	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A18SW (N)	696	-	305240 208333
213	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1905	A14NE (NE)	738	-	306100 207747
214	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A9SE (SE)	755	-	306192 207010
215	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A17SE (N)	757	-	305001 208319
216	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A12SW (NW)	764	-	304542 207723
217	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A2NE (SW)	772	-	304724 206617
218	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A12NW (NW)	774	-	304659 208005
219	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A9SE (SE)	780	-	306209 206981
220	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A17SE (NW)	802	-	304832 208261
221	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A19SW (NE)	804	-	305889 208236
222	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1951	A14NE (NE)	836	-	306140 207905

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
223	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A12NW (NW)	838	-	304572 207968
224	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A19SW (NE)	877	-	306008 208217
225	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A19SE (NE)	882	-	306110 208082
226	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A2SE (SW)	906	-	304820 206375
227	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A17NE (N)	927	-	304991 208502
228	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A9SE (SE)	938	-	306334 206869
229	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A10NW (E)	940	-	306402 207091
230	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1951	A17SW (NW)	973	-	304606 208278
231	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A2NW (SW)	973	-	304425 206674
232	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A19NW (NE)	987	-	305955 208420
233	**Registered Waste Transfer Sites** Licence Holder: Silent Valley Waste Services Ltd Licence Reference: 910125 Site Location: Dowlais C.A.Site rear of Horse & Groom, Rocky Road, MERTHYR TYDFIL, Mid Glamorgan, CF48 2YE Operator Location: Beechwood House, Cwm, EBBW VALE, Gwent, NP23 6PZ Authority: Environment Agency Wales, South East Area Site Category: Civic Amenity Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 26th May 2000 Preceded By Licence: 910125 Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Bonded Asbestos Maximum Waste Permitted By Licence Ukw 22.00.00 General & Biodegradable Waste Ukw 29.10.00 Organic Chemicals - Mineral/Synthetic Oil Waste Prohibited Waste: Other Waste/Waste Not Otherwise Specified Ukw 23.00.00 Metals & Discarded/Scrap Composite Equipment Waste Solely/Mainly Finely Divided Metals Or Dusts/Powder/Fibres	A14SE (E)	753	3	306170 207630

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
233	**Registered Waste Transfer Sites** Licence Holder: Silent Valley Waste Services Ltd Licence Reference: 910125 Site Location: Dowlais C.A.Site rear of Horse & Groom, Rocky Road, MERTHYR TYDFIL, Mid Glamorgan, CF48 2YE Operator Location: Beechwood House, Cwm, EBBW VALE, Gwent, NP23 6PZ Authority: Environment Agency Wales, South East Area Site Category: Civic Amenity Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Record supersededSuperseded Dated: 24th June 1992 Preceded By Licence: Not Given Superseded By Licence: 910125 Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Gen.Household/Non-Toxic Dom.Waste Max.Storage In Licence Waste Oil Prohibited Waste: Flammable Liquids Percussive/Explosive/Similar Waste Special Wastes N.O.S. Sub'S Control. Radioactive Subs Act'60 Waste N.O.S.	A14SE (E)	753	3	306170 207630

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Pennine Lower Coal Measures Formation And South Wales Lower Coal Measures Formation (Undifferentiated)	A8NW (W)	0	1	305346 207381
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (W)	0	1	305346 207381
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (W)	127	1	305103 207397
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (SW)	146	1	305109 207106
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NE (SE)	215	1	305644 207098
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (S)	217	1	305346 206942
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (N)	218	1	305384 207859

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (S)	376	1	305330 206781
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NE)	380	1	305772 207711
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	572	1	304654 207610
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 45 - 60 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (NE)	729	1	306079 207777
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	733	1	305271 208374
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	770	1	304874 208254

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (SW)	827	1	304500 206839
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (NE)	853	1	306133 207969
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (NE)	898	1	306162 208015
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (SW)	899	1	304400 206891
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 45 - 60 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A2NW (SW)	906	1	304477 206718
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A2NW (SW)	969	1	304572 206490

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (W)	986	1	304242 207303
234	**BGS Recorded Mineral Sites** Site Name: Bradley Row Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125682 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	346	1	305797 207121
235	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Level Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125673 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	387	1	305665 206878
236	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Pit Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125678 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	409	1	305696 206874
236	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Level Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125679 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	423	1	305700 206859
237	**BGS Recorded Mineral Sites** Site Name: Pen-Y-Bryn Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125675 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	467	1	305679 207971

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
238	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Level Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125676 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	478	1	305683 206782
239	**BGS Recorded Mineral Sites** Site Name: Tydfil'S Well Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125653 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	503	1	304876 206850
240	**BGS Recorded Mineral Sites** Site Name: Penydarren Level Location: Incline Top, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 235654 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	521	1	305668 206725
241	**BGS Recorded Mineral Sites** Site Name: Incline Top Occs Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 2889 Type: Opencast **Status: Ceased** Operator: Wimpey Construction (Uk) Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Opencast Positional Accuracy: Approximate location provided by supplier	A9SW (SE)	580	1	306000 207000
242	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Ironstone Workings Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90898 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	690	1	305885 206665
243	**BGS Recorded Mineral Sites** Site Name: Lodge Pit Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90897 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	735	1	305805 206555

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
244	**BGS Recorded Mineral Sites** Site Name: Tan-Y-Ffold Level Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90900 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A9SE (SE)	756	1	306130 206870
245	**BGS Recorded Mineral Sites** Site Name: Thomas Town Location: Thomas Town, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 9029 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A3SE (S)	894	1	305375 206265
246	**BGS Recorded Mineral Sites** Site Name: Garw Pit Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90896 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	911	1	305779 206349
247	**BGS Recorded Mineral Sites** Site Name: Great White Tip Occs Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 2888 Type: Tip **Status: Ceased** Operator: Celtic Energy Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Coal Measures Group Commodity: Coal - Opencast Positional Accuracy: Located by supplier to within 100m	A10NW (E)	936	1	306400 207100
248	**BGS Recorded Mineral Sites** Site Name: Dowlais Iron Workings Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90901 Type: Opencast **Status: Ceased** Operator: Dowlais Iron Co., Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A10NW (E)	974	1	306445 207155
249	**BGS Recorded Mineral Sites** Site Name: Pantyffyn Level Location: Thomas Town, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 235645 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A4SW (S)	979	1	305751 206266

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
250	**BGS Recorded Mineral Sites** Site Name: Pant-Y-Ffyn Coal Level Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90899 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	981	1	305839 206298
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A8NW (W)	0	6	305346 207381
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A8NW (W)	0	-	305346 207381
	Natural Cavities Easting: 304829 Northing: 208414 Distance: 919 Quadrant Reference: A17 Quadrant Reference: NE Bearing Ref: NW Cavity Type: Phreatic Cave, Sinkhole, Solution Pipe, Solution Widened Joint or Fissure, Swallow Hole Solid Geology Detail: Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Millstone Grit Group, Upper Carboniferous Limestone Superficial Geology Detail: Glacial sand	A17NE (NW)	919	7	304829 208414
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	43	1	305233 207465
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NE (SE)	248	1	305666 207080
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NW (N)	0	1	305347 207385
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A8NW (S)	0	1	305310 207157
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	87	1	305166 207454
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A8SE (S)	202	1	305434 206986
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8SE (SE)	211	1	305601 207055
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	218	1	305202 207810
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A9NW (SE)	229	1	305702 207211
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A8NE (SE)	231	1	305647 207084
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A8NE (SE)	231	1	305677 207134
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	127	1	305103 207397
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NE (SE)	215	1	305644 207098
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	218	1	305384 207859
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	148	1	305100 207462
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8SW (S)	217	1	305346 206942
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
251	**Contemporary Trade Directory Entries** Name: Steve'S Domestics Location: 5, Talbot Square, Penydarren, MERTHYR TYDFIL, Mid Glamorgan, CF47 9LP Classification: Domestic Appliances - Servicing, Repairs & Parts **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NE (SE)	126	-	305601 207256
252	**Contemporary Trade Directory Entries** Name: Supakleen Location: 10, Royal Crescent, Penydarren, Merthyr Tydfil, Mid Glamorgan, CF47 9LA Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (E)	130	-	305563 207454
253	**Contemporary Trade Directory Entries** Name: Shell (Uk) Ltd Location: High Street, Penydarren, Merthyr Tydfil, Mid Glamorgan, CF47 9HA Classification: Petrol Filling Stations - 24 Hour **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (SE)	192	-	305574 207054
254	**Contemporary Trade Directory Entries** Name: Merthr Tack Location: 6, Garth Villas, Merthyr Tydfil, Mid Glamorgan, CF47 0RX Classification: Pet Foods & Animal Feeds **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	254	-	305247 206905
255	**Contemporary Trade Directory Entries** Name: Celtic Cleaning Ltd Location: Waterloo House, Penydarren, Merthyr Tydfil, Mid Glamorgan, CF47 0SX Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (SE)	260	-	305624 207008
255	**Contemporary Trade Directory Entries** Name: In-Stitches Embroidery Location: Waterloo House, Penydarren, Merthyr Tydfil, Mid Glamorgan, CF47 0SX Classification: T-Shirts **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (SE)	260	-	305624 207008
256	**Contemporary Trade Directory Entries** Name: Bio Quest Ltd Location: 93, Trevethick Street, Merthyr Tydfil, Mid Glamorgan, CF47 0RJ Classification: Chemical Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	276	-	305474 206919
257	**Contemporary Trade Directory Entries** Name: Williams Country Supplies Ltd Location: Unit 3 Trevithick Industrial Estate, Merthyr Tydfil, Mid Glamorgan, CF47 0HX Classification: Pet Foods & Animal Feeds **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A8SE (S)	307	-	305400 206866
257	**Contemporary Trade Directory Entries** Name: Ambassador Horse & Country Supplies Location: Unit 3 Trevithick Industrial Estate, Merthyr Tydfil, Mid Glamorgan, CF47 0HX Classification: Pet Foods & Animal Feeds **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A8SE (S)	307	-	305400 206866
258	**Contemporary Trade Directory Entries** Name: Classic Blinds Location: Redlands, Brooklands Close, Merthyr Tydfil, Mid Glamorgan, CF47 8EJ Classification: Blinds, Awnings & Canopies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	312	-	304929 207181
259	**Contemporary Trade Directory Entries** Name: Eddie Thomas Location: Prospect House, Prospect Place, Merthyr Tydfil, Mid Glamorgan, CF47 0DX Classification: Coal & Smokeless Fuel Merchants & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	317	-	305247 206842
260	**Contemporary Trade Directory Entries** Name: Mobile Total Tune Location: 30, Trevethick Street, Merthyr Tydfil, Mid Glamorgan, CF47 0HX Classification: Car Engine Tuning & Diagnostic Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	319	-	305336 206840

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
261	**Contemporary Trade Directory Entries** Name: Bil-D-Aid Location: 45, Sycamore Road, Merthyr Tydfil, Mid Glamorgan, CF47 9RU Classification: Damp & Dry Rot Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	366	-	305051 207863
262	**Contemporary Trade Directory Entries** Name: Blade Environmental Location: 59, Brynhyfryd Street, Merthyr Tydfil, Mid Glamorgan, CF47 9YW Classification: Recycling Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (NE)	378	-	305779 207579
263	**Contemporary Trade Directory Entries** Name: Seams Sew Right Location: Unit 1,Trevethick St, Merthyr Tydfil, Mid Glamorgan, CF47 0HX Classification: Clothing & Fabrics - Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A8SW (S)	385	-	305254 206772
264	**Contemporary Trade Directory Entries** Name: G-Tech Location: 56, CHURCH STREET, PENYDARREN, MERTHYR TYDFIL, CF47 9HR Classification: Vacuum Cleaners - Sales & Service **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (E)	423	-	305884 207416
265	**Contemporary Trade Directory Entries** Name: Welsh Country Foods Location: 14, Tanybryn Place, Merthyr Tydfil, Mid Glamorgan, CF47 9EJ Classification: Meat - Wholesale **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (NE)	449	-	305822 207662
266	**Contemporary Trade Directory Entries** Name: Shabby Chic Antiques Location: 6, Park Place, Merthyr Tydfil, Mid Glamorgan, CF47 0LJ Classification: Antiques - Repairing & Restoring **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A3NW (S)	451	-	305163 206723
267	**Contemporary Trade Directory Entries** Name: Oriel Blinds & Son Ltd Location: 1, Corporation Street, Merthyr Tydfil, Mid Glamorgan, CF47 0HP Classification: Blinds, Awnings & Canopies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	474	-	305549 206733
268	**Contemporary Trade Directory Entries** Name: Dip & Strip Location: Dan-y-Parc, Merthyr Tydfil, Mid Glamorgan, CF47 0AX Classification: Paint & Varnish Stripping **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A3NW (S)	531	-	305164 206640
269	**Contemporary Trade Directory Entries** Name: E Williams Car Sales Location: High Street, Penydarren, MERTHYR TYDFIL, Mid Glamorgan, CF47 9HE Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NW (E)	533	-	305996 207399
270	**Contemporary Trade Directory Entries** Name: Martha'S Professional Ironing Services Location: 37, Pontmorlais, Merthyr Tydfil, Mid Glamorgan, CF47 8UN Classification: Ironing & Home Laundry Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A3NW (S)	552	-	305084 206641
271	**Contemporary Trade Directory Entries** Name: Greers Gas Location: 3, Hodges Street, Merthyr Tydfil, Mid Glamorgan, CF47 9NX Classification: Gas Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (NE)	553	-	305910 207722
272	**Contemporary Trade Directory Entries** Name: M & B Tarmac Location: Incline Top, Merthyr Tydfil, Mid Glamorgan, CF47 0TJ Classification: Asphalt & Coated Macadam Laying Contractors **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9SW (SE)	595	-	305945 206875

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
273	**Contemporary Trade Directory Entries** Name: Home & Dry Damp Proofing M T Ltd Location: 22, Harrison Street, Merthyr Tydfil, Mid Glamorgan, CF47 9SJ Classification: Damp & Dry Rot Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	615	-	305943 207801
274	**Contemporary Trade Directory Entries** Name: W R Jones Location: 18, Park Row Gardens, Merthyr Tydfil, Mid Glamorgan, CF47 8TG Classification: Coal & Smokeless Fuel Merchants & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NW (W)	632	-	304617 207108
275	**Contemporary Trade Directory Entries** Name: Waste Solutions Ltd Location: Unit 2, Mill Court, Goat Mill Road, Merthyr Tydfil, Mid Glamorgan, CF47 0AH Classification: Waste Disposal Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	651	-	306123 207309
276	**Contemporary Trade Directory Entries** Name: Planet Kitsch Location: 12, HANOVER STREET, MERTHYR TYDFIL, CF47 8SW Classification: Jewellery Manufacturers & Repairers **Status: Active** Positional Accuracy: Automatically positioned to the address	A7SW (SW)	661	-	304665 206884
277	**Contemporary Trade Directory Entries** Name: Esso Location: New Road, Dowlais, Merthyr Tydfil, CF48 3DA Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SE (E)	689	-	306133 207534
277	**Contemporary Trade Directory Entries** Name: Esso Location: New Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3DA Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	690	-	306134 207534
277	**Contemporary Trade Directory Entries** Name: Dowlais Service Station Location: New Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3DA Classification: Petrol Filling Stations - 24 Hour **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	690	-	306134 207534
278	**Contemporary Trade Directory Entries** Name: Dais Location: Flat 2, Pontmorlais, High Street, Merthyr Tydfil, CF47 8UB Classification: Domestic Appliances - Servicing, Repairs & Parts **Status: Active** Positional Accuracy: Automatically positioned to the address	A3NW (S)	694	-	305031 206510
278	**Contemporary Trade Directory Entries** Name: Dot Cotton'S Location: 4 Morlais Buildings, Merthyr Tydfil, CF47 8UL Classification: Laundries & Launderettes **Status: Active** Positional Accuracy: Automatically positioned to the address	A3NW (S)	713	-	305044 206485
278	**Contemporary Trade Directory Entries** Name: Pontmorlais Old Circus Location: 13 Pontmorlais, Merthyr Tydfil, Mid Glamorgan, CF47 8UB Classification: Antiques - Repairing & Restoring **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A2NE (S)	729	-	305010 206480
279	**Contemporary Trade Directory Entries** Name: Merthyr Patio Centre Location: Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Concrete Products **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A14SE (E)	726	-	306182 207476
280	**Contemporary Trade Directory Entries** Name: Forget Me Not Furniture Location: 110, Brecon Road, Merthyr Tydfil, Mid Glamorgan, CF47 8NG Classification: Furniture - Reproduction **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NE (SW)	729	-	304831 206580

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
281	**Contemporary Trade Directory Entries** Name: Motofix Location: OLD DRILL HALL, PONTMORLAIS WEST, MERTHYR TYDFIL, CF47 8UT Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A2NE (SW)	738	-	304946 206498
281	**Contemporary Trade Directory Entries** Name: D H M Services Location: Old Drill Hall, Pontmorlais West, Merthyr Tydfil, Mid Glamorgan, CF47 8UT Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NE (S)	767	-	304963 206459
282	**Contemporary Trade Directory Entries** Name: Quantum E S Gas Engines Location: Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TF Classification: Electricity Generating & Distributing Equipment **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A14SE (E)	746	-	306207 207428
282	**Contemporary Trade Directory Entries** Name: Coventry Parts Location: Goat Mill Road, Dowlais, MERTHYR TYDFIL, Mid Glamorgan, CF48 3TF Classification: Engine Manufacturers & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SE (E)	746	-	306207 207428
283	**Contemporary Trade Directory Entries** Name: Brecon Road Tyres & Exhaust Location: 18-20, Brecon Road, Merthyr Tydfil, Mid Glamorgan, CF47 8NL Classification: Mot Testing Centres **Status: Active** Positional Accuracy: Automatically positioned to the address	A2NE (SW)	752	-	304768 206603
284	**Contemporary Trade Directory Entries** Name: Merthyr Dry Cleaners Location: 15, Brecon Road, Merthyr Tydfil, CF47 8LS Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NE (SW)	763	-	304704 206651
285	**Contemporary Trade Directory Entries** Name: A J Print Uk Ltd Location: Unit 9, Silverline Buildings, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	777	-	306244 207368
285	**Contemporary Trade Directory Entries** Name: Cords Duaflex Ltd Location: Goat Mill Rd, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TF Classification: Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NE (E)	784	-	306256 207322
285	**Contemporary Trade Directory Entries** Name: S G C Printing Location: Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NE (E)	789	-	306256 207367
285	**Contemporary Trade Directory Entries** Name: David Cooper Location: Unit 2, Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Wrought Ironwork **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	789	-	306256 207367
285	**Contemporary Trade Directory Entries** Name: Stephens & George Print Group Location: Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	789	-	306256 207367

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
285	**Contemporary Trade Directory Entries** Name: S & G Magazines Location: Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	789	-	306256 207367
285	**Contemporary Trade Directory Entries** Name: S G C Printing Ltd Location: Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	789	-	306256 207367
285	**Contemporary Trade Directory Entries** Name: Tyreman Location: Unit 1, Silverline Buildings, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	789	-	306256 207367
285	**Contemporary Trade Directory Entries** Name: H P E Rail Ltd Location: Goat Mill Rd, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Railway Equipment Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NE (E)	794	-	306265 207333
285	**Contemporary Trade Directory Entries** Name: Allbelt South Wales Ltd Location: Unit 4, Silverline Buildings, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Conveyors & Conveyor Belts **Status: Active** Positional Accuracy: Automatically positioned to the address	A9NE (E)	799	-	306265 207376
285	**Contemporary Trade Directory Entries** Name: Beaver Power Ltd Location: Goat Mill Rd, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TF Classification: Generators - Sales & Service **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NE (E)	803	-	306273 207344
285	**Contemporary Trade Directory Entries** Name: Creative Crystal Location: Unit 2&6,Goat Mill Rd, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Glass Engravers & Decorators **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NE (E)	809	-	306278 207350
286	**Contemporary Trade Directory Entries** Name: 22 Seven Location: 94, Pontmorlais, Merthyr Tydfil, Mid Glamorgan, CF47 8UH Classification: Printers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A2NE (S)	779	-	305003 206429
286	**Contemporary Trade Directory Entries** Name: Coolio Location: 45, Tramroad Terrace, Merthyr Tydfil, Mid Glamorgan, CF47 0BG Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A3SW (S)	815	-	305017 206386
287	**Contemporary Trade Directory Entries** Name: J C Plant Services Location: 30, Llwyn yr Eos Grove, Merthyr Tydfil, Mid Glamorgan, CF47 0GD Classification: Plant & Machinery Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A4NW (SE)	779	-	305814 206510
288	**Contemporary Trade Directory Entries** Name: Alan Evans Motors Location: 28-33, Brecon Road, Merthyr Tydfil, CF47 8NL Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A2NW (SW)	779	-	304641 206703

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
289	**Contemporary Trade Directory Entries** Name: Gilgen Door Systems Location: 1b, Twelfth Avenue, Merthyr Tydfil, Mid Glamorgan, CF47 9TA Classification: Door Manufacturers - Industrial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	787	-	305601 208388
289	**Contemporary Trade Directory Entries** Name: First Choice Blinds Location: Creative House, Rocky Road, Merthyr Tydfil, Mid Glamorgan, CF47 9JL Classification: Blinds, Awnings & Canopies **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	827	-	305608 208429
289	**Contemporary Trade Directory Entries** Name: Divine Window Manufacturers Location: Creative House, Rocky Road, Merthyr Tydfil, Mid Glamorgan, CF47 9JL Classification: Window Frame Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	827	-	305608 208429
290	**Contemporary Trade Directory Entries** Name: Dumelow International Ltd Location: Mayphil Industrial Estate,Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TF Classification: Agricultural Vehicles **Status: Active** Positional Accuracy: Manually positioned to the address or location	A14SE (E)	814	-	306272 207463
291	**Contemporary Trade Directory Entries** Name: Component Engineering Location: Unit 1, Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Engineers - General **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	827	-	306301 207308
291	**Contemporary Trade Directory Entries** Name: B G Technology Location: Unit 1, Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Electrical Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	827	-	306301 207308
291	**Contemporary Trade Directory Entries** Name: Mitre Furnishing Group Location: Unit 1, Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Soft Furnishings - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	827	-	306301 207308
292	**Contemporary Trade Directory Entries** Name: R J Sheet Metal Location: Goat Mill Rd, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Sheet Metal Work **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NE (E)	841	-	306306 207384
293	**Contemporary Trade Directory Entries** Name: Hillarys Blinds Ltd Location: Castle Yard, Merthyr Tydfil, Mid Glamorgan, CF47 8JD Classification: Blinds, Awnings & Canopies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A2NE (SW)	850	-	304903 206394
294	**Contemporary Trade Directory Entries** Name: The Handwork Finishing Company Location: Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Printers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A9NE (E)	881	-	306351 207346
294	**Contemporary Trade Directory Entries** Name: Arrow Polybags Ltd Location: Unit 5-8, Phoenix Industrial Estate, Goat Mill Road, Dowlais, MERTHYR TYDFIL, Mid Glamorgan, CF48 3TD Classification: Paper & Cardboard Products & Packaging - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	881	-	306351 207346

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
294	**Contemporary Trade Directory Entries** Name: Keiths Motor Repairs Location: Unit 9, Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TD Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	881	-	306351 207346
294	**Contemporary Trade Directory Entries** Name: Pro-Office Ltd Location: Unit 6-7, Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Office Equipment Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	881	-	306351 207346
294	**Contemporary Trade Directory Entries** Name: Metal Magic Location: Unit 3, Mill Court, Goat Mill Road, Merthyr Tydfil, Mid Glamorgan, CF47 0AH Classification: Door Manufacturers - Industrial **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A9NE (E)	881	-	306351 207346
294	**Contemporary Trade Directory Entries** Name: Phoenix Animal Feed & Cornmillers Location: Unit 6-7, Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Pet Foods & Animal Feeds **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NE (E)	881	-	306351 207346
294	**Contemporary Trade Directory Entries** Name: Tyre Man Location: Goat Mill Rd, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A9NE (E)	881	-	306351 207346
295	**Contemporary Trade Directory Entries** Name: Castle Auto Repairs Location: Pontsarn Road, Merthyr Tydfil, Mid Glamorgan, CF48 2TN Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	907	-	305415 208549
296	**Contemporary Trade Directory Entries** Name: Dependable Packaging Location: UNIT 33, PANT INDUSTRIAL ESTATE, DOWLAIS, PANT, MERTHYR TYDFIL, CF48 2SR Classification: Packaging Materials Manufacturers & Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	937	-	305625 208539
296	**Contemporary Trade Directory Entries** Name: Dependable Packs Ltd Location: Unit 33, Pant Industrial Estate, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 2SR Classification: Packaging & Wrapping Equipment & Supplies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	983	-	305654 208578
296	**Contemporary Trade Directory Entries** Name: Dependable Packs Location: Unit 33, Pant Industrial Estate, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 2SR Classification: Paper & Cardboard Products & Packaging - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	983	-	305654 208578
296	**Contemporary Trade Directory Entries** Name: Lewis Motors Merthyr Ltd Location: Unit 8, Old Rediffusion Buildings, Pant Industrial Estate, Dowlais, Merthyr Tydfil, CF48 2SR Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	998	-	305616 208605
296	**Contemporary Trade Directory Entries** Name: Beypro Fabrication Location: Unit 4, Pant Industrial Estate, Dowlais, Merthyr Tydfil, CF48 2SR Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	999	-	305632 208601

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
296	**Contemporary Trade Directory Entries** Name: Sellitasitis Location: Unit 3, Hubert Johns Buildings, Pant Industrial Estate, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 2SR Classification: Boilers - Servicing, Replacements & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	999	-	305625 208603
296	**Contemporary Trade Directory Entries** Name: M & M Auto Repairs Location: Unit 4d, Pant Industrial Estate, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 2SR Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	999	-	305632 208601
297	**Contemporary Trade Directory Entries** Name: Mitre Furnishing Group Location: Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD Classification: Soft Furnishings - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (E)	953	-	306410 207482
297	**Contemporary Trade Directory Entries** Name: Mitre Location: Unit 1, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TD Classification: Clothing & Fabrics - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (E)	955	-	306410 207494
297	**Contemporary Trade Directory Entries** Name: Mitre Furnishing Group Location: Unit 1, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TD Classification: Clothing & Fabrics - Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A15SW (E)	955	-	306410 207494
297	**Contemporary Trade Directory Entries** Name: Mitre Furnishing Group Location: Unit 1, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TD Classification: Soft Furnishings - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (E)	955	-	306410 207494
298	**Contemporary Trade Directory Entries** Name: D M Motors Location: Pontsarn Rd, Merthyr Tydfil, Mid Glamorgan, CF48 2TN Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18NE (N)	993	-	305403 208636
299	**Contemporary Trade Directory Entries** Name: Welsh Country Foods Location: 50, Glebeland Street, Merthyr Tydfil, Mid Glamorgan, CF47 8AT Classification: Meat - Wholesale **Status: Active** Positional Accuracy: Automatically positioned to the address	A2SE (S)	998	-	304892 206238
300	**Contemporary Trade Directory Entries** Name: Spartan Tools Ltd Location: 23, Lower Thomas Street, Merthyr Tydfil, Mid Glamorgan, CF47 0BY Classification: Agricultural Machinery - Sales & Service **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A3SW (S)	1000	-	305117 206170
301	**Fuel Station Entries** Name: Star Penydarren Location: High Street , Penydarren , Merthyr Tydfil, Merthyr Tydfil, CF47 9HA Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Automatically positioned to the address	A8SE (SE)	192	-	305574 207054
302	**Fuel Station Entries** Name: Rss Dowlais Location: New Road , Dowlais , Merthyr Tydfil, Merthyr Tydfil, CF48 3DA Brand: ESSO Premises Type: Petrol Station **Status: Open** Positional Accuracy: Automatically positioned to the address	A14SE (E)	690	-	306134 207534

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
303	**Fuel Station Entries** Name: Jack Matthews And Son Location: Merthyr Tydfil Industrial Estate , Dowlais , Merthyr Tydfil, Merthyr Tydfil, CF48 2SR Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	912	-	305638 208508
304	**Points of Interest - Commercial Services** Name: Blade Environmental Location: 59 Brynhyfryd Street, Merthyr Tydfil, CF47 9YW Category: Recycling Services Class Code: Recycling, Reclamation and Disposal Positional Accuracy: Positioned to address or location	A14SW (NE)	378	8	305779 207579
305	**Points of Interest - Commercial Services** Name: S & P Mason Location: 52 Tenth Avenue, Merthyr Tydfil, CF47 9TE Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13NE (N)	391	8	305529 207989
306	**Points of Interest - Commercial Services** Name: Haydn Lewis & Sons Location: 38 Galon Uchaf Road, Merthyr Tydfil, CF47 9TP Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A18SE (N)	460	8	305404 208101
307	**Points of Interest - Commercial Services** Name: Mason Soft Drinks Location: Dan-y-Parc, Merthyr Tydfil, CF47 0AX Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A3NW (S)	531	8	305164 206640
307	**Points of Interest - Commercial Services** Name: S & P Mason Ltd Location: Old Radio Rentals Building, Dan-y-Parc, Merthyr Tydfil, CF47 0AX Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A3NW (S)	531	8	305164 206640
308	**Points of Interest - Commercial Services** Name: Marsh M X Location: 20 Pontmorlais, Merthyr Tydfil, CF47 8UB Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A3NW (S)	661	8	305039 206542
309	**Points of Interest - Commercial Services** Name: Forget Me Not Location: 110 Brecon Road, Merthyr Tydfil, CF47 8NG Category: Recycling Services Class Code: Recycling, Reclamation and Disposal Positional Accuracy: Positioned to address or location	A2NE (SW)	729	8	304831 206580
309	**Points of Interest - Commercial Services** Name: Brecon Road Tyres of Merthyr Location: 18-20 Brecon Road, Merthyr Tydfil, CF47 8NL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (SW)	752	8	304768 206603
310	**Points of Interest - Commercial Services** Name: Motofix Location: Old Drill Hall, Pontmorlais West, Merthyr Tydfil, CF47 8UT Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (SW)	738	8	304946 206498
310	**Points of Interest - Commercial Services** Name: D H M Services Location: Old Drill Hall, Pontmorlais West, Merthyr Tydfil, CF47 8UT Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (S)	767	8	304963 206459

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
310	**Points of Interest - Commercial Services** Name: D H M Services Location: Old Drill Hall, Pontmorlais West, Merthyr Tydfil, CF47 8UT Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (S)	768	8	304962 206458
311	**Points of Interest - Commercial Services** Name: Coventry Parts Location: Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	746	8	306207 207428
311	**Points of Interest - Commercial Services** Name: Cords Duaflex Ltd Location: Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14SE (E)	746	8	306207 207428
311	**Points of Interest - Commercial Services** Name: Malaysian Cars Merthyr Location: 2 Harlan Business Park, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TE Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A9NE (E)	775	8	306244 207354
311	**Points of Interest - Commercial Services** Name: David Cooper Wrought Ironwork Location: Unit 2 Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TD Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A9NE (E)	789	8	306256 207367
311	**Points of Interest - Commercial Services** Name: David Cooper Location: Unit 2 Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TD Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A9NE (E)	789	8	306256 207367
311	**Points of Interest - Commercial Services** Name: Dealer Care Location: Unit 3 Silverline Buildings, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TD Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A9NE (E)	795	8	306261 207372
312	**Points of Interest - Commercial Services** Name: Brecon Road Tyres & Exhaust Location: 17-19 Brecon Road, Merthyr Tydfil, CF47 8NL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NE (SW)	760	8	304693 206668
312	**Points of Interest - Commercial Services** Name: Alan Evans Motors Location: 28-33 Brecon Road, Merthyr Tydfil, CF47 8NL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NW (SW)	779	8	304641 206703
312	**Points of Interest - Commercial Services** Name: Alan Evans Location: 29 Brecon Road, Merthyr Tydfil, CF47 8NL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NW (SW)	779	8	304641 206704
312	**Points of Interest - Commercial Services** Name: Alan Evans Motors Ltd Location: 28-33 Brecon Road, Merthyr Tydfil, CF47 8NL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A2NW (SW)	779	8	304641 206704

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
313	**Points of Interest - Commercial Services** Name: Keiths Motor Repairs Location: Unit 9 Phoenix Industrial Estate, Goat Mill Road, Dowlais, Merthyr Tydfil, CF48 3TD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A9NE (E)	881	8	306351 207346
314	**Points of Interest - Commercial Services** Name: Castle Auto Repairs Location: Pontsarn Road, Merthyr Tydfil, CF48 2TN Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	907	8	305415 208549
315	**Points of Interest - Commercial Services** Name: Dragon Engines & Engineering Location: Unit 33, Pant Industrial Estate, Dowlais, Merthyr Tydfil, CF48 2SR Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	983	8	305654 208578
315	**Points of Interest - Commercial Services** Name: Davis & Sons Motorbike Breakers Location: Unit 33, Pant Industrial Estate, Dowlais, Merthyr Tydfil, CF48 2SR Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A18NE (N)	983	8	305654 208578
315	**Points of Interest - Commercial Services** Name: M & M Auto Repairs Location: Unit 4d, Pant Industrial Estate, Dowlais, Merthyr Tydfil, CF48 2SR Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	999	8	305632 208601
316	**Points of Interest - Education and Health** Name: Mardy Hospital Location: St. Tydfils Hospital, Merthyr Tydfil, CF47 0SJ Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A3SW (S)	822	8	305168 206342
316	**Points of Interest - Education and Health** Name: St Tydfils Hospital Location: St. Tydfils Hospital, Merthyr Tydfil, CF47 0SJ Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A3SW (S)	822	8	305168 206342
316	**Points of Interest - Education and Health** Name: St Tydfils Hospital Location: St. Tydfils Hospital, Merthyr Tydfil, CF47 0SJ Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A3SW (S)	822	8	305168 206342
316	**Points of Interest - Education and Health** Name: St. Tydfils General Hospital Location: St. Tydfils Hospital, Merthyr Tydfil, CF47 0SJ Category: Health Practitioners and Establishments Class Code: Hospitals Positional Accuracy: Positioned to address or location	A3SW (S)	822	8	305168 206342
317	**Points of Interest - Manufacturing and Production** Name: Tank Location: CF47 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A3NW (S)	696	8	305225 206462
318	**Points of Interest - Manufacturing and Production** Name: Harlan Business Park Location: CF48 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A9NE (E)	724	8	306196 207323
319	**Points of Interest - Manufacturing and Production** Name: Factory Location: CF48 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to address or location	A14SE (E)	831	8	306288 207474

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
320	**Points of Interest - Manufacturing and Production** Name: Shaft (Disused) Location: CF47 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A9SE (SE)	862	8	306224 206820
320	**Points of Interest - Manufacturing and Production** Name: Shaft (Disused) Location: CF47 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A9SE (SE)	866	8	306225 206815
321	**Points of Interest - Manufacturing and Production** Name: Shaft (Disused) Location: CF47 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to address or location	A4SW (SE)	909	8	305783 206352
321	**Points of Interest - Manufacturing and Production** Name: Shaft (Disused) Location: CF47 Category: Extractive Industries Class Code: Unspecified Quarries Or Mines Positional Accuracy: Positioned to an adjacent address or location	A4SW (SE)	917	8	305782 206343
322	**Points of Interest - Manufacturing and Production** Name: Tydfil Training Location: William Smith Building 106-109, High Street, Merthyr Tydfil, CF47 8AP Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to address or location	A2SE (S)	940	8	304937 206283
323	**Points of Interest - Public Infrastructure** Name: Weir Location: CF47 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SW (NW)	268	8	305071 207663
323	**Points of Interest - Public Infrastructure** Name: Weir Location: CF47 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13SW (NW)	271	8	305068 207662
324	**Points of Interest - Public Infrastructure** Name: Esso Location: New Road, Dowlais, Merthyr Tydfil, CF48 3DA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	689	8	306133 207534
324	**Points of Interest - Public Infrastructure** Name: Rss Dowlais Location: New Road, Dowlais, Merthyr Tydfil, CF48 3DA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	689	8	306133 207534
324	**Points of Interest - Public Infrastructure** Name: Dowlais Service Station Location: New Road, Dowlais, Merthyr Tydfil, CF48 3DA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	690	8	306134 207534
324	**Points of Interest - Public Infrastructure** Name: Esso Location: New Road, Dowlais, Merthyr Tydfil, CF48 3DA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	690	8	306134 207534
324	**Points of Interest - Public Infrastructure** Name: Dowlais Service Station Location: New Road, Dowlais, Merthyr Tydfil, CF48 3DA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14SE (E)	690	8	306134 207534

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
324	**Points of Interest - Public Infrastructure** Name: Public Recycling Facility Location: CF48 Category: Infrastructure and Facilities Class Code: Recycling Centres Positional Accuracy: Positioned to an adjacent address or location	A14SE (E)	728	8	306157 207592
325	**Points of Interest - Public Infrastructure** Name: Forget Me Not Location: 110 Brecon Road, Merthyr Tydfil, CF47 8NG Category: Infrastructure and Facilities Class Code: Recycling Centres Positional Accuracy: Positioned to address or location	A2NE (SW)	729	8	304831 206580
326	**Points of Interest - Public Infrastructure** Name: Old Cemetery Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A3NW (S)	745	8	305086 206439
326	**Points of Interest - Public Infrastructure** Name: Old Cemetery Location: CF47 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A3NW (S)	748	8	305077 206438
327	**Points of Interest - Public Infrastructure** Name: Weir Location: CF47 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A2NE (SW)	816	8	304877 206446
327	**Points of Interest - Public Infrastructure** Name: Weir Location: CF47 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A2NE (SW)	817	8	304875 206446
328	**Points of Interest - Recreational and Environmental** Name: Playground Location: Tramroad Lane, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A8NE (S)	87	8	305394 207096
329	**Points of Interest - Recreational and Environmental** Name: Playground Location: Tyllwyd Street, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8NE (E)	113	8	305583 207291
329	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8NE (E)	121	8	305591 207292
330	**Points of Interest - Recreational and Environmental** Name: Playground Location: Gwaunfarren Close, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A13SE (NE)	166	8	305566 207540
330	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13SE (NE)	169	8	305569 207541
331	**Points of Interest - Recreational and Environmental** Name: Playground Location: Galon Uchaf Road, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A13NE (N)	174	8	305382 207815

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
332	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	261	8	305331 206897
332	**Points of Interest - Recreational and Environmental** Name: Playground Location: High Street, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	263	8	305326 206894
333	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NW (NW)	291	8	305110 207817
333	**Points of Interest - Recreational and Environmental** Name: Playground Location: Cherry Grove, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A13NW (NW)	307	8	305097 207827
334	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	304	8	305321 207948
334	**Points of Interest - Recreational and Environmental** Name: Playground Location: Second Avenue, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NW (N)	304	8	305312 207947
335	**Points of Interest - Recreational and Environmental** Name: Play Area Location: CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	557	8	305048 208116
336	**Points of Interest - Recreational and Environmental** Name: Play Area Location: CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A3NE (S)	579	8	305610 206641
336	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A3NE (S)	598	8	305594 206617
337	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A12SW (W)	606	8	304637 207515
337	**Points of Interest - Recreational and Environmental** Name: Playground Location: Cedar Way, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A12SW (W)	607	8	304636 207516
338	**Points of Interest - Recreational and Environmental** Name: Playground Location: Nr Haydn Terrace, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A14NW (NE)	677	8	305933 207979

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
338	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14NW (NE)	684	8	305935 207989
339	**Points of Interest - Recreational and Environmental** Name: Playground Location: Gellifaelog Old Road, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14SE (E)	682	8	306101 207613
339	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14SE (E)	688	8	306107 207614
340	**Points of Interest - Recreational and Environmental** Name: Playground Location: CF48 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14NE (NE)	877	8	306148 207995
340	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14NE (NE)	884	8	306155 207996
340	**Points of Interest - Recreational and Environmental** Name: Playground Location: Balaclava Road, CF48 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14NE (NE)	888	8	306145 208029
340	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14NE (NE)	896	8	306153 208029
341	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A7NW (W)	879	8	304362 207129
341	**Points of Interest - Recreational and Environmental** Name: Playground Location: Nr Gwaelodygarth Road, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A7NW (W)	880	8	304361 207130
342	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A3SE (S)	897	8	305424 206268
342	**Points of Interest - Recreational and Environmental** Name: Playground Location: Summerhill Place, CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A3SE (S)	897	8	305416 206267
343	**Points of Interest - Recreational and Environmental** Name: Play Area Location: CF47 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A6NE (W)	962	8	304268 207342

Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
344	**Ancient Woodland** Name: Not Supplied Reference: 21419 Area(m²): 137845.16 Type: Restored Ancient Woodland Site	A7NW (W)	712	2	304521 207201
345	**Ancient Woodland** Name: Not Supplied Reference: 12365 Area(m²): 8854.39 Type: Ancient and Semi-Natural Woodland	A12SW (W)	727	2	304562 207678

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Natural Resources Wales	June 2020	Annually
Powys County Council - Public Protection Department	October 2017	Annual Rolling Update
Rhondda Cynon Taff County Borough Council - Environmental Services	October 2017	Annual Rolling Update
Caerphilly County Borough Council - Environmental Health Department	September 2017	Annual Rolling Update
Merthyr Tydfil County Borough Council - Environmental Health Department	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - Welsh Region	August 2014	Quarterly
Natural Resources Wales	May 2022	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Welsh Region	March 2013	
Integrated Pollution Controls		
Environment Agency - Welsh Region	January 2009	
Integrated Pollution Prevention And Control		
Natural Resources Wales	April 2022	Quarterly
Environment Agency - Welsh Region	January 2021	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Powys County Council - Public Protection Department	May 2014	Variable
Caerphilly County Borough Council - Environmental Health Department	September 2014	Variable
Rhondda Cynon Taff County Borough Council - Public Health and Protection Division	September 2014	Variable
Merthyr Tydfil County Borough Council - Environmental Health Department	September 2016	Variable
Local Authority Pollution Prevention and Controls		
Powys County Council - Public Protection Department	May 2014	Annual Rolling Update
Rhondda Cynon Taff County Borough Council - Public Health and Protection Division	September 2014	Annual Rolling Update
Caerphilly County Borough Council - Environmental Health Department	September 2014	Not Applicable
Merthyr Tydfil County Borough Council - Environmental Health Department	September 2016	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Powys County Council - Public Protection Department	May 2014	Variable
Caerphilly County Borough Council - Environmental Health Department	September 2014	Variable
Rhondda Cynon Taff County Borough Council - Public Health and Protection Division	September 2014	Variable
Merthyr Tydfil County Borough Council - Environmental Health Department	September 2016	Variable
Nearest Surface Water Feature		
Ordnance Survey	June 2022	
Pollution Incidents to Controlled Waters		
Environment Agency - Welsh Region	December 1998	
Prosecutions Relating to Authorised Processes		
Environment Agency - Welsh Region	July 2015	
Natural Resources Wales	July 2015	
Prosecutions Relating to Controlled Waters		
Environment Agency - Welsh Region	March 2013	
Natural Resources Wales	March 2013	
Registered Radioactive Substances		
Natural Resources Wales	January 2015	
Environment Agency - Welsh Region	June 2016	As notified
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	April 2012	
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	April 2012	
Substantiated Pollution Incident Register		
Environment Agency Wales - South East Area	January 2021	Quarterly
Natural Resources Wales	May 2022	Quarterly

Data Currency

Agency & Hydrological	Version	Update Cycle
Water Abstractions Environment Agency - Welsh Region Natural Resources Wales	 July 2022 May 2022	 Quarterly Quarterly
Water Industry Act Referrals Natural Resources Wales Environment Agency - Welsh Region	 May 2022 October 2017	 Quarterly
Groundwater Vulnerability Map Natural Resources Wales	 June 2018	 As notified
Bedrock Aquifer Designations Natural Resources Wales	 January 2018	 Annually
Superficial Aquifer Designations Natural Resources Wales	 January 2018	 Annually
Source Protection Zones Natural Resources Wales	 July 2022	 Annual Rolling Update
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	 September 2020	
Flooding from Rivers or Sea without Defences Natural Resources Wales	 September 2020	
Areas Benefiting from Flood Defences Natural Resources Wales	 November 2019	 Quarterly
Flood Water Storage Areas Natural Resources Wales	 August 2019	 Quarterly
Flood Defences Natural Resources Wales	 November 2019	 Quarterly
OS Water Network Lines Ordnance Survey	 July 2022	 Quarterly
Surface Water 1 in 30 year Flood Extent Natural Resources Wales	 May 2018	 Annually
Surface Water 1 in 100 year Flood Extent Natural Resources Wales	 May 2018	 Annually
Surface Water 1 in 1000 year Flood Extent Natural Resources Wales	 May 2018	 Annually
Surface Water Suitability Natural Resources Wales	 February 2016	 Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	 May 2013	 As notified

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites		
Natural Resources Wales	July 2019	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Welsh Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency Wales - South East Area	October 2021	Quarterly
Natural Resources Wales	October 2021	Quarterly
Licensed Waste Management Facilities (Locations)		
Natural Resources Wales	April 2022	Quarterly
Environment Agency Wales - South East Area	July 2021	Quarterly
Local Authority Landfill Coverage		
Caerphilly County Borough Council - Environmental Health Department	February 2003	Not Applicable
Merthyr Tydfil County Borough Council - Environmental Health Department	February 2003	Not Applicable
Powys County Council	February 2003	Not Applicable
Rhondda Cynon Taff County Borough Council	February 2003	Not Applicable
Local Authority Recorded Landfill Sites		
Caerphilly County Borough Council - Environmental Health Department	October 2018	
Merthyr Tydfil County Borough Council - Environmental Health Department	October 2018	
Powys County Council	October 2018	
Rhondda Cynon Taff County Borough Council	October 2018	
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	
Registered Landfill Sites		
Environment Agency Wales - South East Area	March 2006	Not Applicable
Registered Waste Transfer Sites		
Environment Agency Wales - South East Area	April 2018	
Registered Waste Treatment or Disposal Sites		
Environment Agency Wales - South East Area	June 2015	

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	January 2022	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
Brecon Beacons National Park	August 2008	Annual Rolling Update
Caerphilly County Borough Council - Planning Department	February 2016	Variable
Powys County Council - Planning Department	February 2016	Variable
Rhondda Cynon Taff County Borough Council - Planning Department	February 2016	Variable
Merthyr Tydfil County Borough Council - Planning Department	September 2007	Variable
Planning Hazardous Substance Consents		
Brecon Beacons National Park	August 2008	Annual Rolling Update
Caerphilly County Borough Council - Planning Department	February 2016	Variable
Powys County Council - Planning Department	February 2016	Variable
Rhondda Cynon Taff County Borough Council - Planning Department	February 2016	Variable
Merthyr Tydfil County Borough Council - Planning Department	September 2007	Variable

Data Currency

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2022	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	Annually

Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	July 2022	Quarterly
Fuel Station Entries Catalist Ltd - Experian	June 2022	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Points of Interest - Commercial Services PointX	June 2022	Quarterly
Points of Interest - Education and Health PointX	June 2022	Quarterly
Points of Interest - Manufacturing and Production PointX	June 2022	Quarterly
Points of Interest - Public Infrastructure PointX	June 2022	Quarterly
Points of Interest - Recreational and Environmental PointX	June 2022	Quarterly
Underground Electrical Cables National Grid	May 2021	Bi-Annually

Data Currency

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural Resources Wales	September 2018	Bi-Annually
Areas of Adopted Green Belt		
Brecon Beacons National Park	October 2020	Quarterly
Caerphilly County Borough Council	October 2020	Quarterly
Merthyr Tydfil County Borough Council	October 2020	Quarterly
Powys County Council	October 2020	Quarterly
Rhondda Cynon Taff County Borough Council	October 2020	Quarterly
Areas of Unadopted Green Belt		
Brecon Beacons National Park	October 2020	Quarterly
Caerphilly County Borough Council	October 2020	Quarterly
Merthyr Tydfil County Borough Council	October 2020	Quarterly
Powys County Council	October 2020	Quarterly
Rhondda Cynon Taff County Borough Council	October 2020	Quarterly
Areas of Outstanding Natural Beauty		
Natural Resources Wales	June 2019	Bi-Annually
Environmentally Sensitive Areas		
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	January 2017	
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Caerphilly County Borough Council	August 2018	Bi-Annually
Merthyr Tydfil County Borough Council	August 2018	Bi-Annually
Powys County Council	August 2018	Bi-Annually
Rhondda Cynon Taff County Borough Council	August 2018	Bi-Annually
Marine Nature Reserves		
Natural Resources Wales	August 2018	Bi-Annually
National Nature Reserves		
Natural Resources Wales	February 2022	Bi-Annually
National Parks		
Natural Resources Wales	February 2018	Annually
Nitrate Vulnerable Zones		
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	April 2016	
Natural Resources Wales	July 2019	Bi-Annually
Ramsar Sites		
Natural Resources Wales	July 2019	Bi-Annually
Sites of Special Scientific Interest		
Natural Resources Wales	March 2020	Bi-Annually
Special Areas of Conservation		
Natural Resources Wales	August 2020	Bi-Annually
Special Protection Areas		
Natural Resources Wales	August 2018	Bi-Annually

Data Suppliers

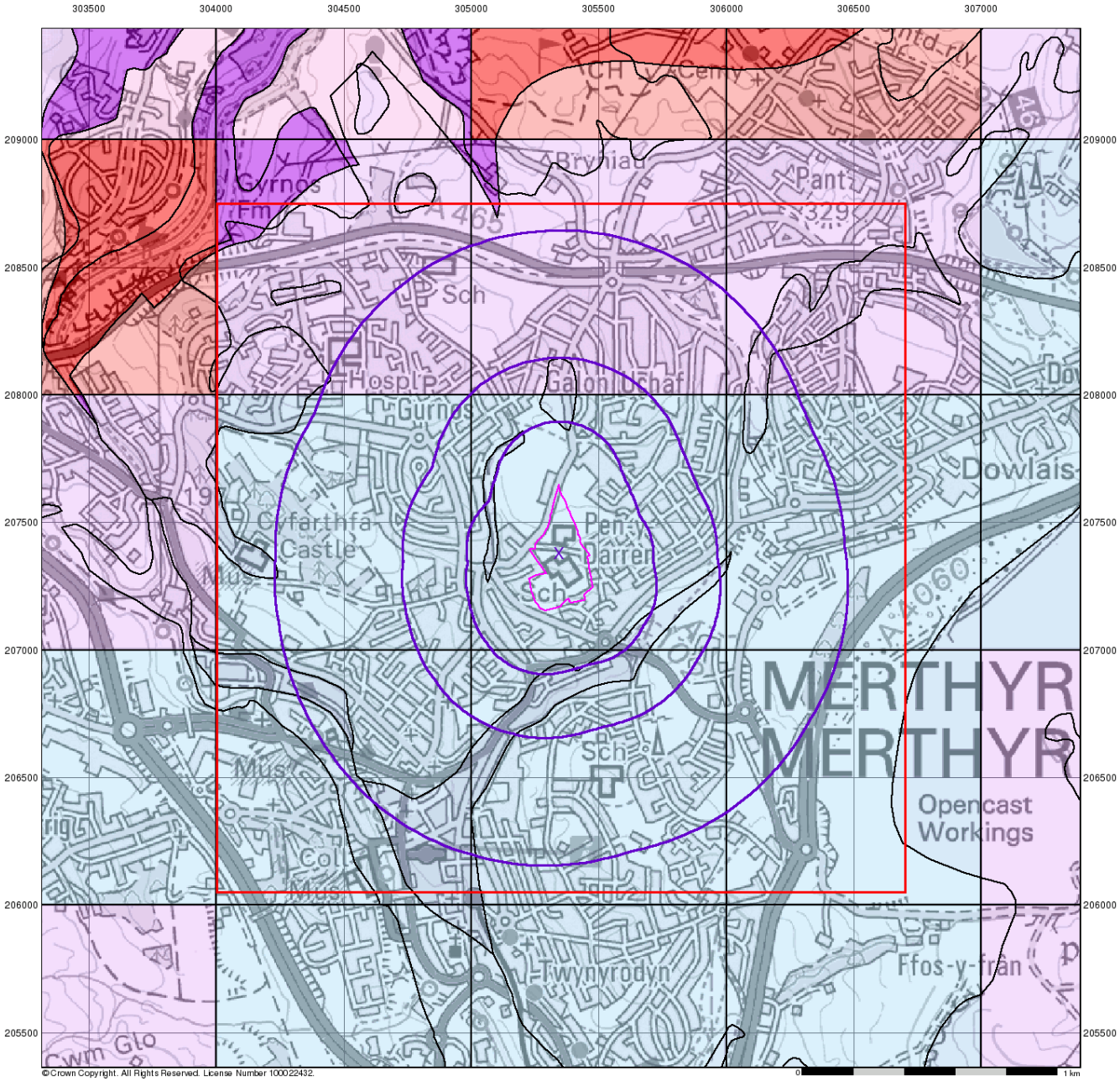
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Stantec UK Ltd	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Natural Resources Wales** Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
3	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
4	**Merthyr Tydfil County Borough Council - Environmental Health Department** Civic Centre, Castle Street, Merthyr Tydfil, Mid Glamorgan, CF47 8AN	Telephone: 01685 725000 Fax: 01685 725024 Website: www.merthyr.gov.uk
5	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	**The Coal Authority - Property Searches** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
7	**Stantec UK Ltd** Caversham Bridge House, Waterman Place, Reading, RG1 8DN	Telephone: 0118 950 0761 Email: pba.reading@stantec.com Website: www.stantec.com
8	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
9	**Merthyr Tydfil County Borough Council** Civic Centre, Castle Street, Merthyr Tydfil, Mid Glamorgan, CF47 8AN	Telephone: 01685 725000 Fax: 01685 722146 Website: www.merthyr.gov.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



Intégral Géotechnique

Groundwater Vulnerability

General

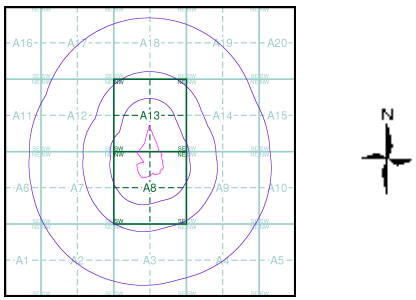
Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
High Vulnerability, Principal Aquifer	High Vulnerability, Principal Aquifer
High Vulnerability, Secondary Aquifer	High Vulnerability, Secondary Aquifer
Medium Vulnerability, Principal Aquifer	Medium Vulnerability, Principal Aquifer
Medium Vulnerability, Secondary Aquifer	Medium Vulnerability, Secondary Aquifer
Low Vulnerability, Principal Aquifer	Low Vulnerability, Principal Aquifer
Low Vulnerability, Secondary Aquifer	Low Vulnerability, Secondary Aquifer

Unproductive Aquifer
Soluble Rock

Site Sensitivity Context Map - Slice A



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
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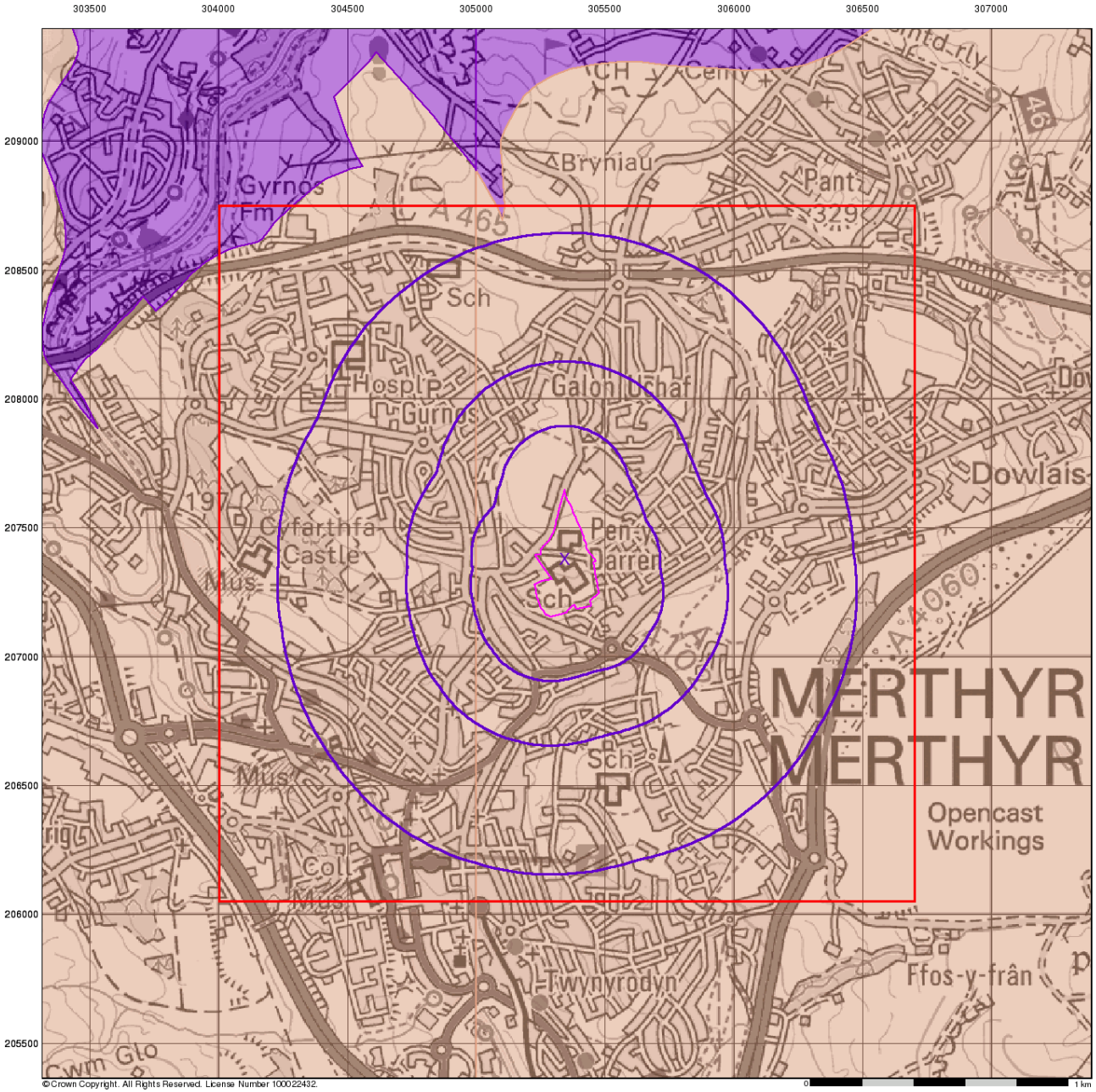


Intégral Géotechnique

Bedrock Aquifer Designation

General

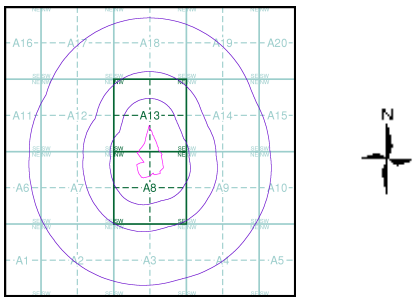
Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



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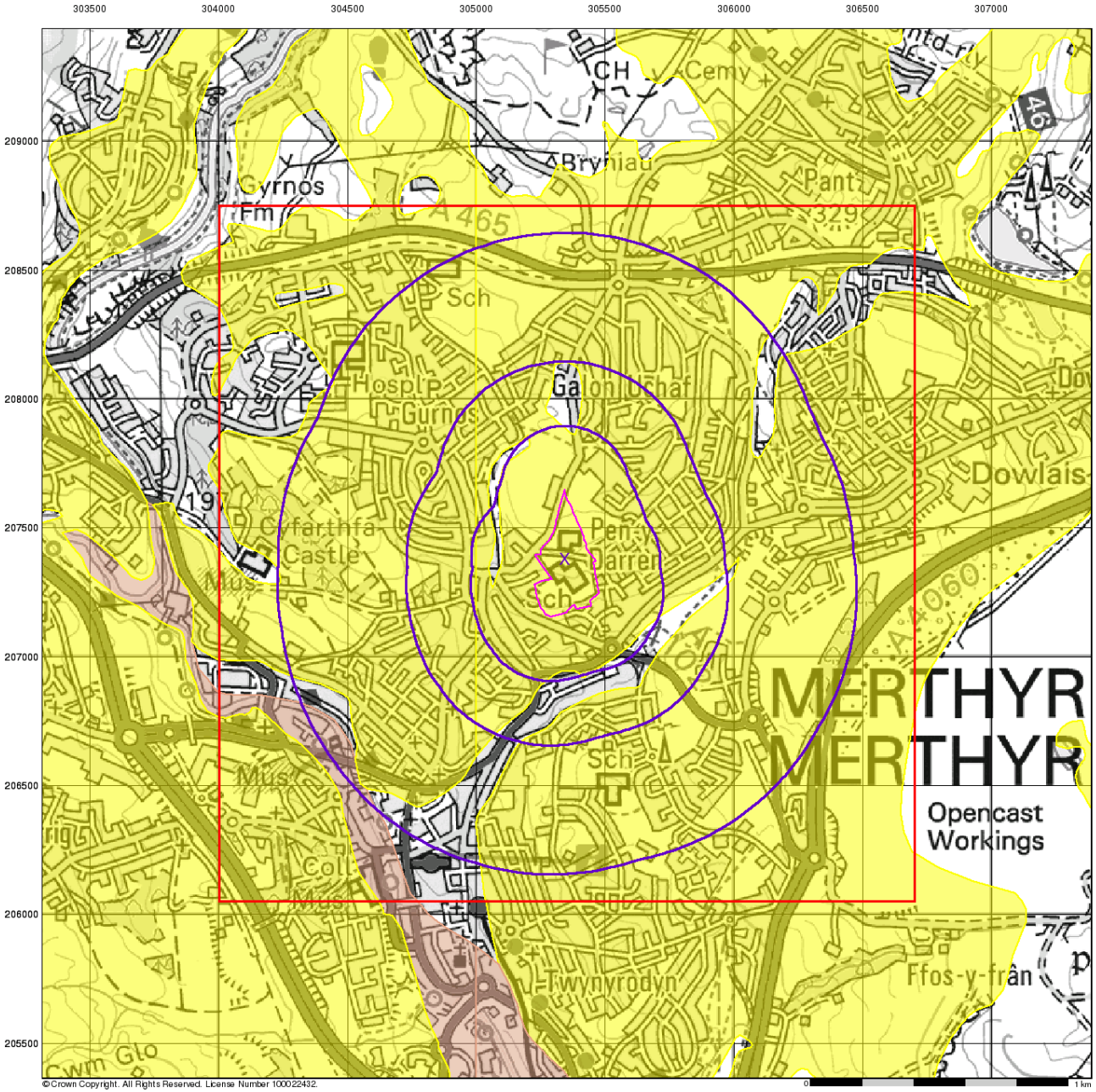


Intégral Géotechnique

Superficial Aquifer Designation

General

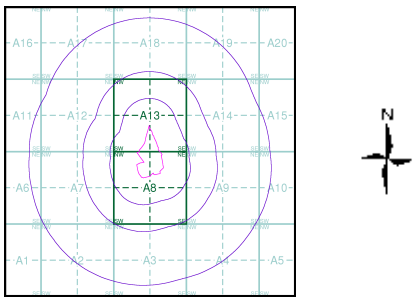
Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



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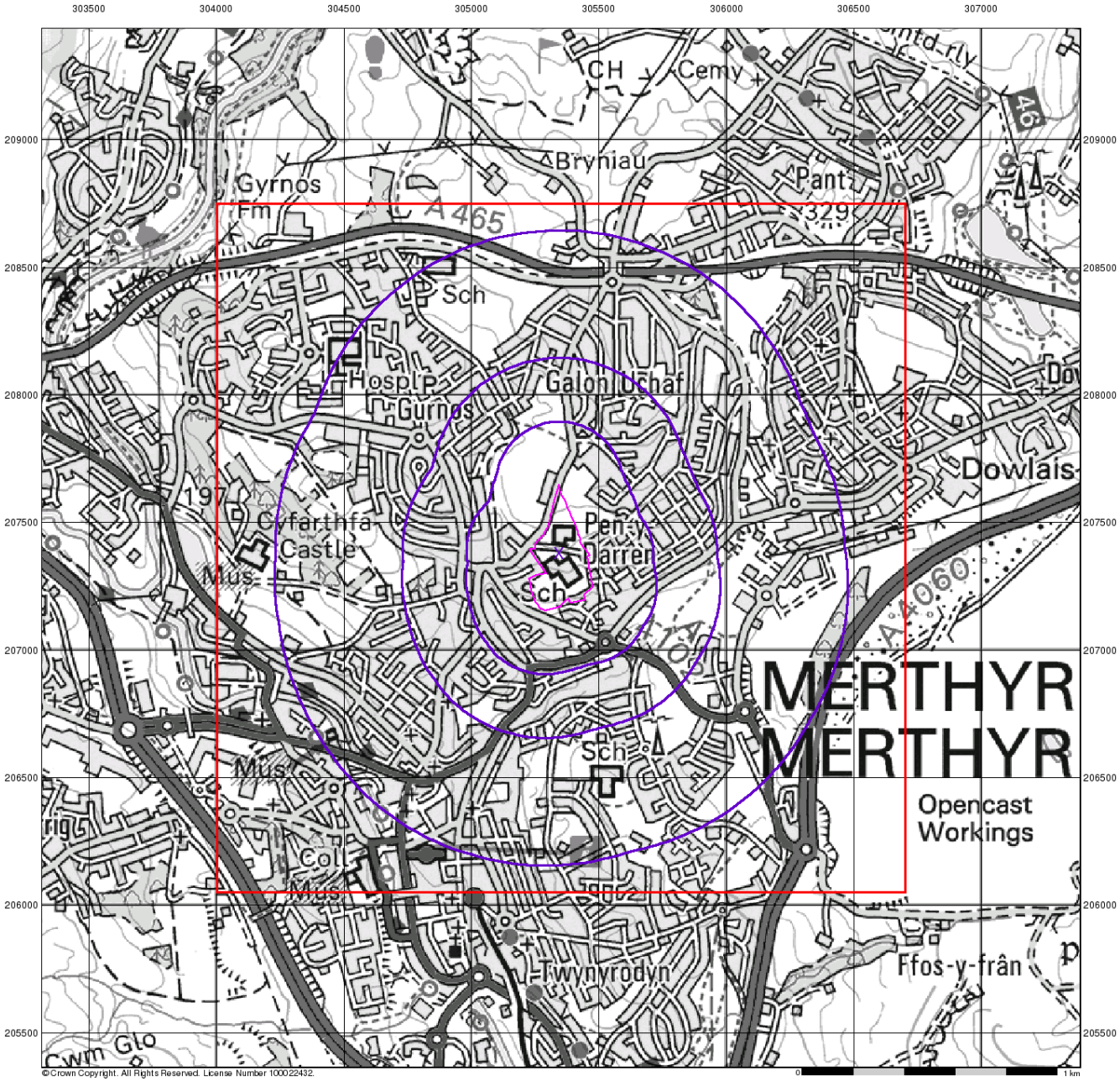


Intégral
Géotechnique

Source Protection Zones

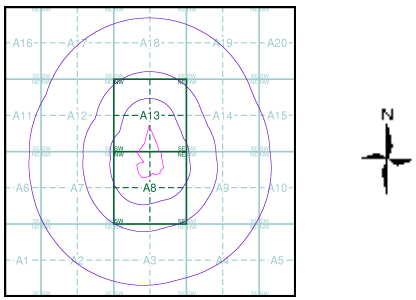
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice A



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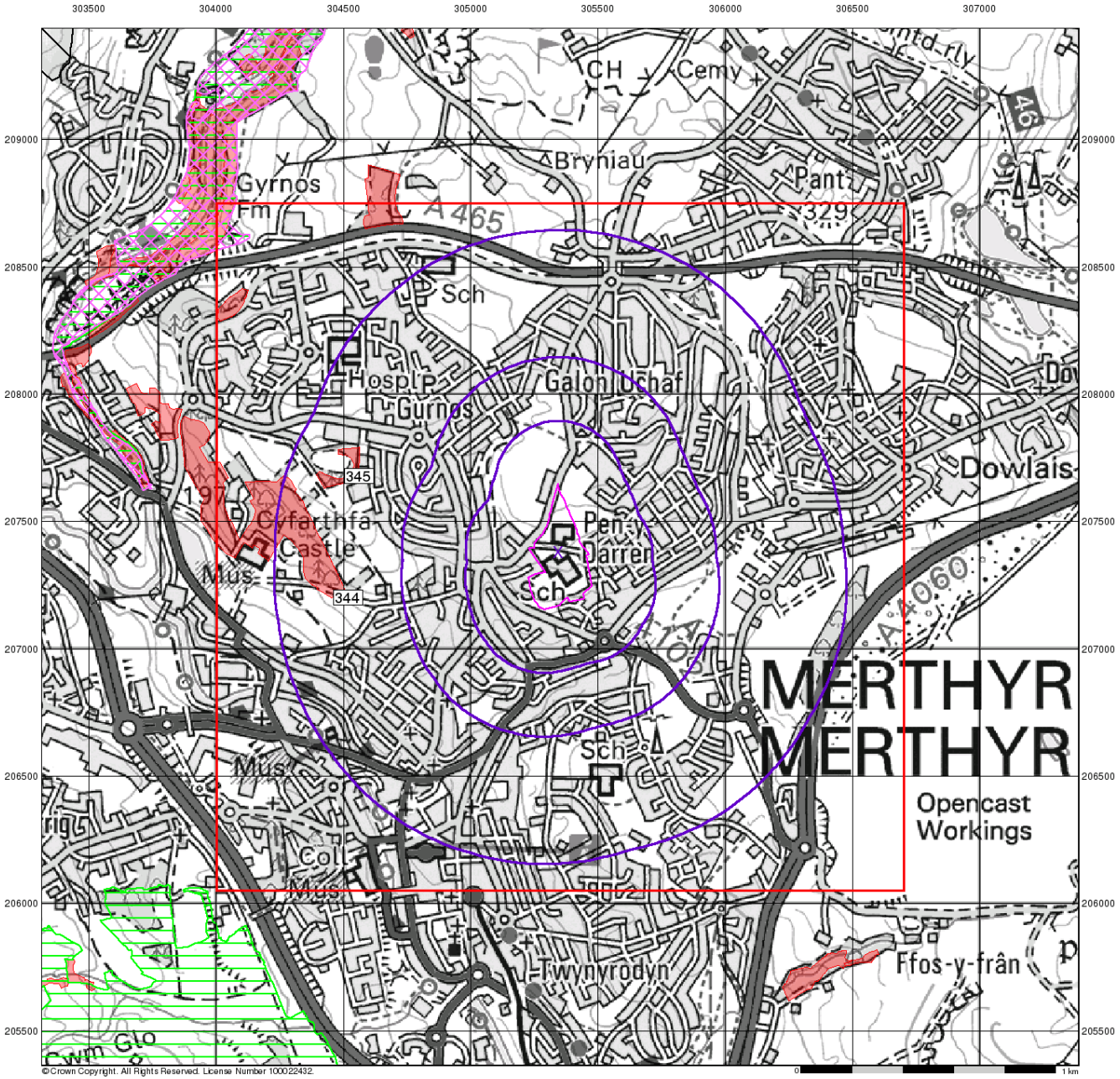


Intégral Géotechnique

Sensitive Land Uses

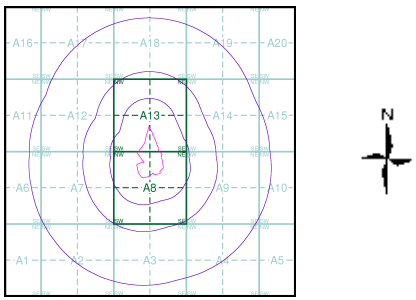
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice A



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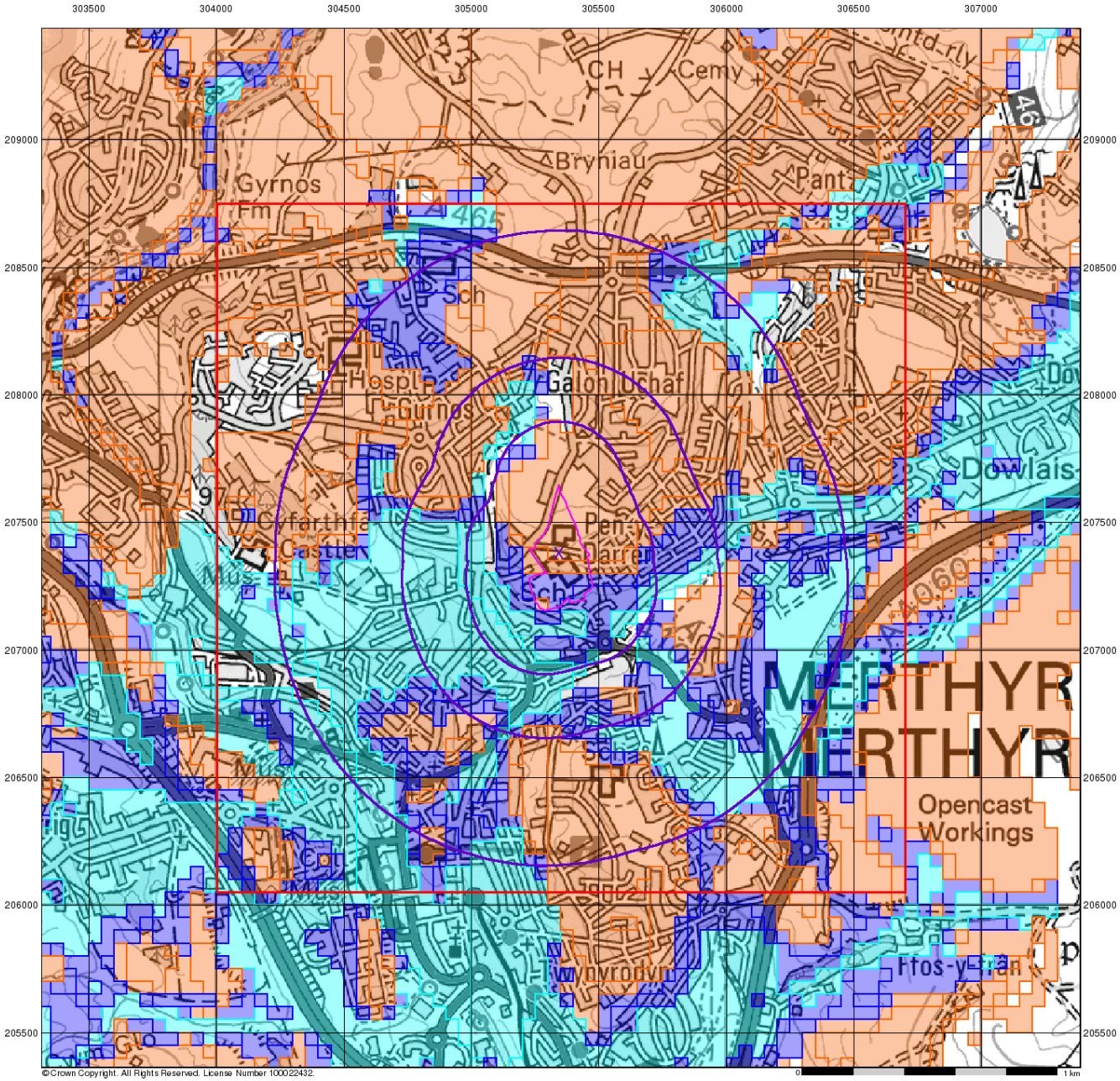


Intégral Géotechnique

BGS Flood GFS Data

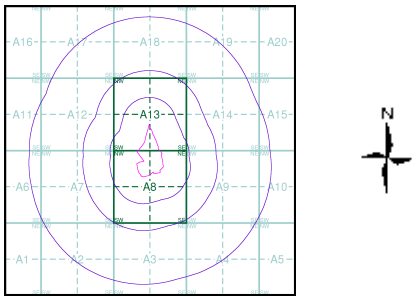
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice

Agency and Hydrological (Flood)

Limited Potential for Groundwater Flooding to Occur
Potential for Groundwater Flooding of Property Situated Below Ground Level
Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



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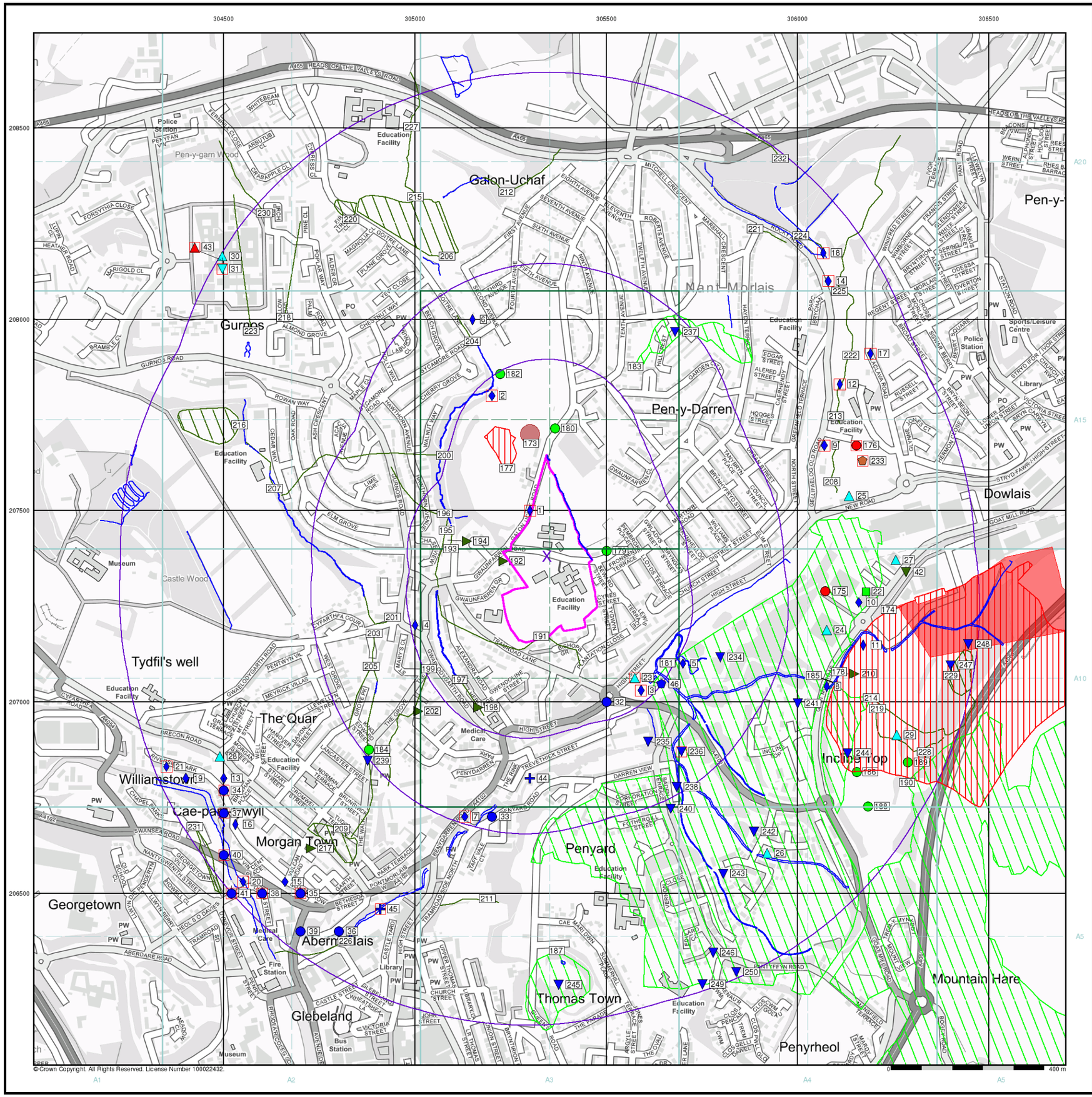


Intégral Géotechnique

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

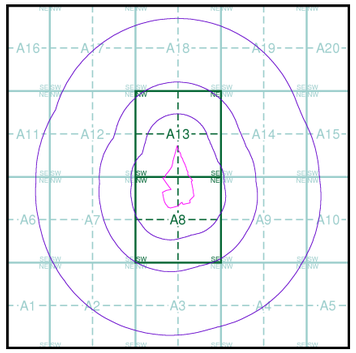
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A



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Search Buffer (m):	1000

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP

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Intégral Géotechnique

Industrial Land Use Map

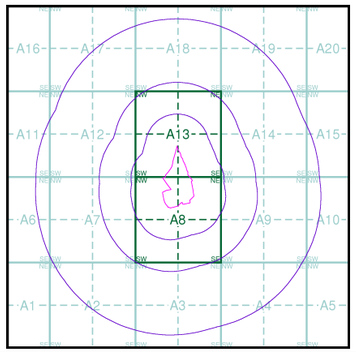
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



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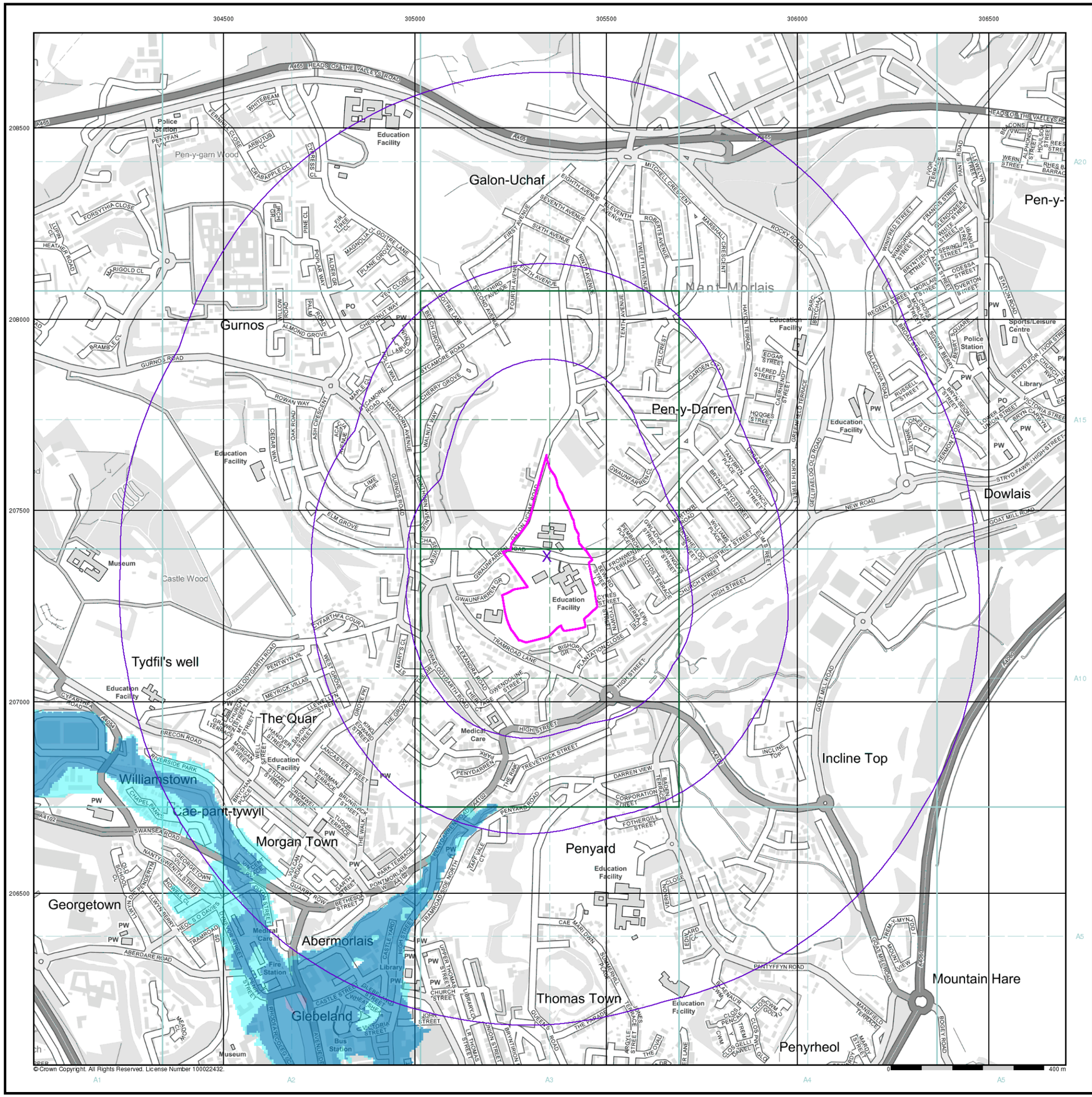


Intégral Géotechnique

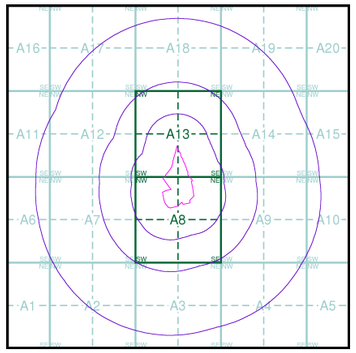
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



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Order Details

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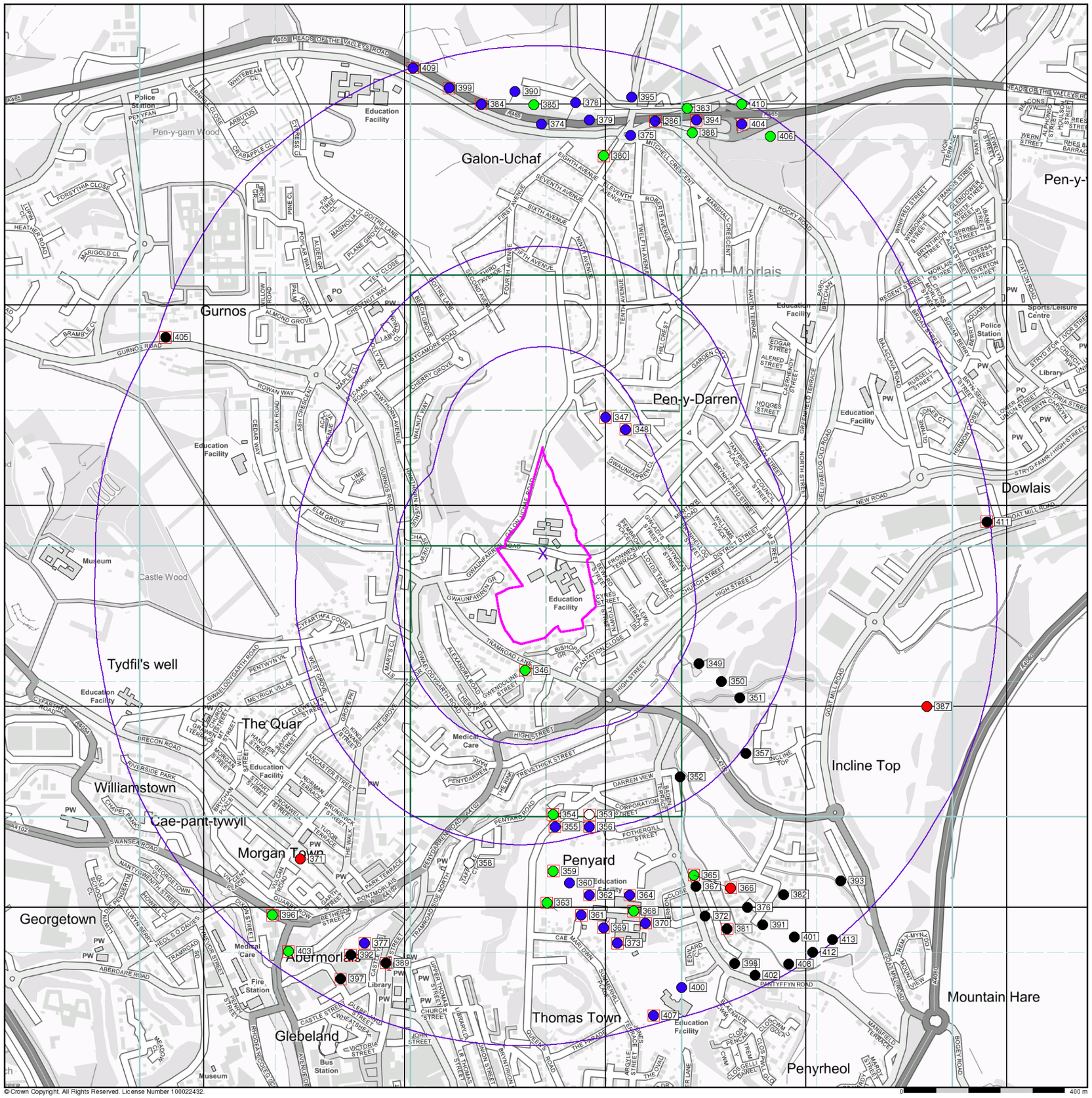


Intégral Géotechnique

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

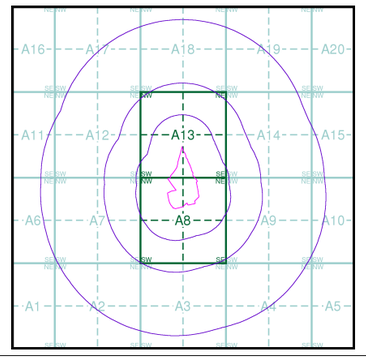
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



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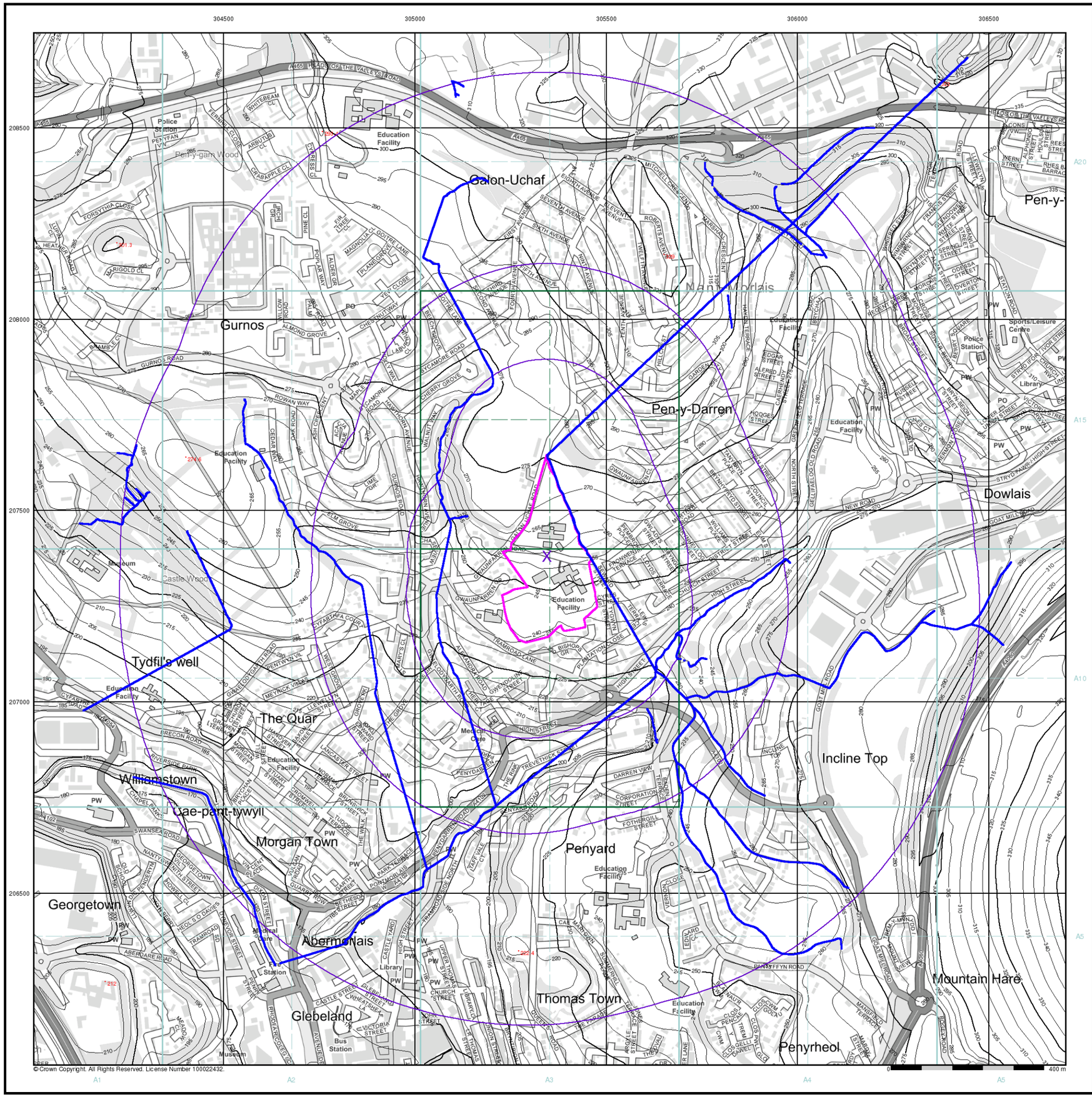


Intégral Géotechnique

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

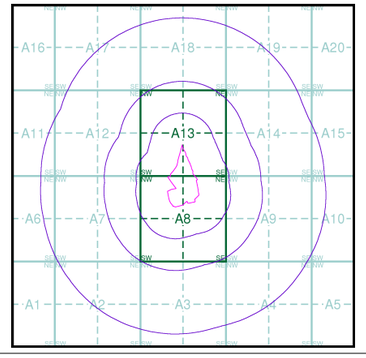
OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

- Standard Contour — 105, 100, 95
- Master Contour
- Spot Height — 167.3
- MLW — Mean Low Water
- MHW — Mean High Water

OS Water Network Map - Slice A



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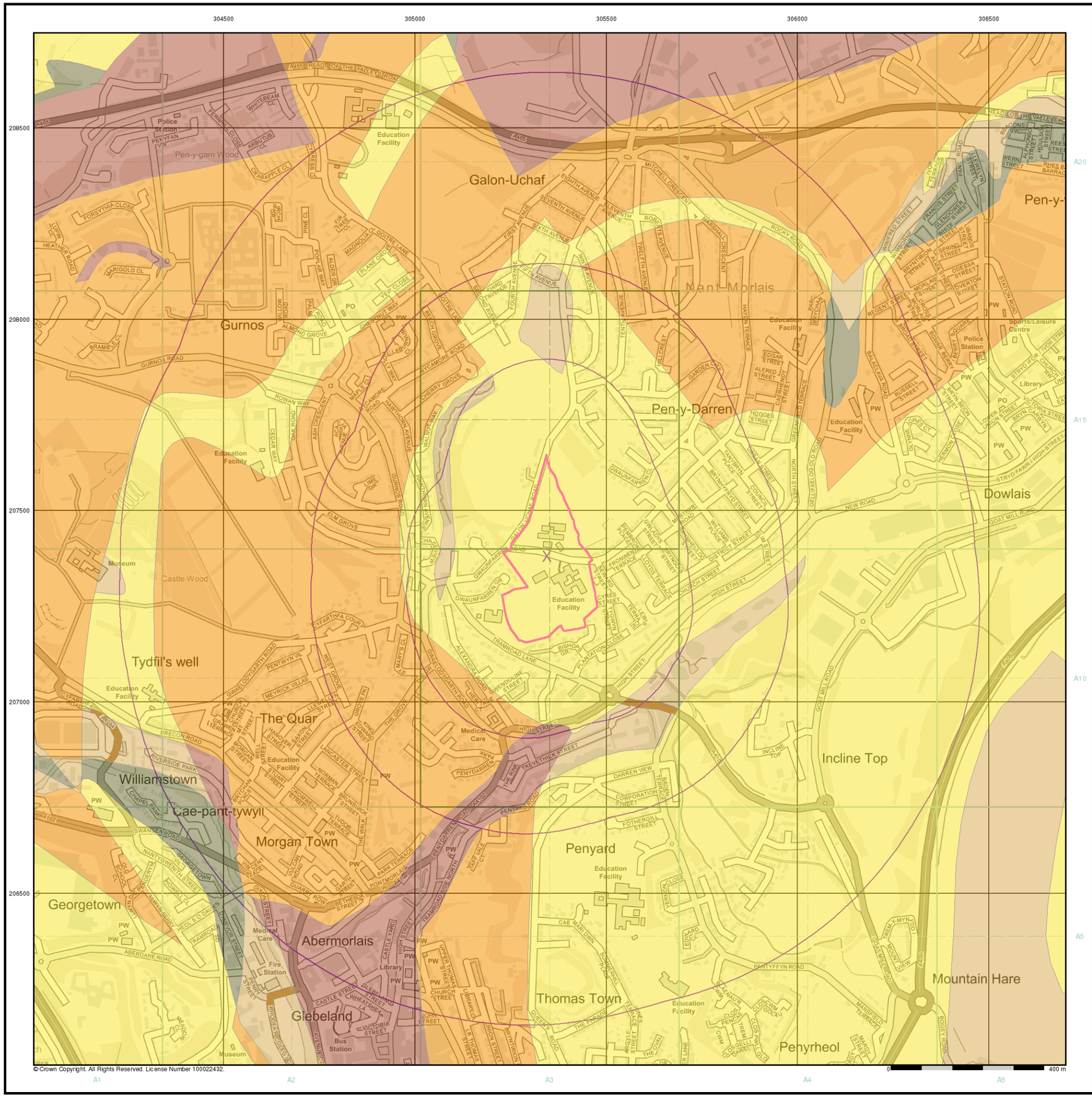

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Intégral Géotechnique

General

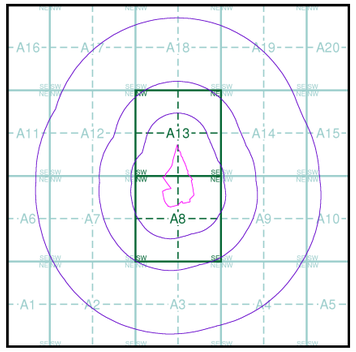
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice A



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Intégral Géotechnique

General

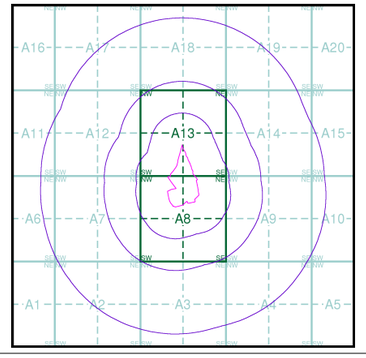
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice A



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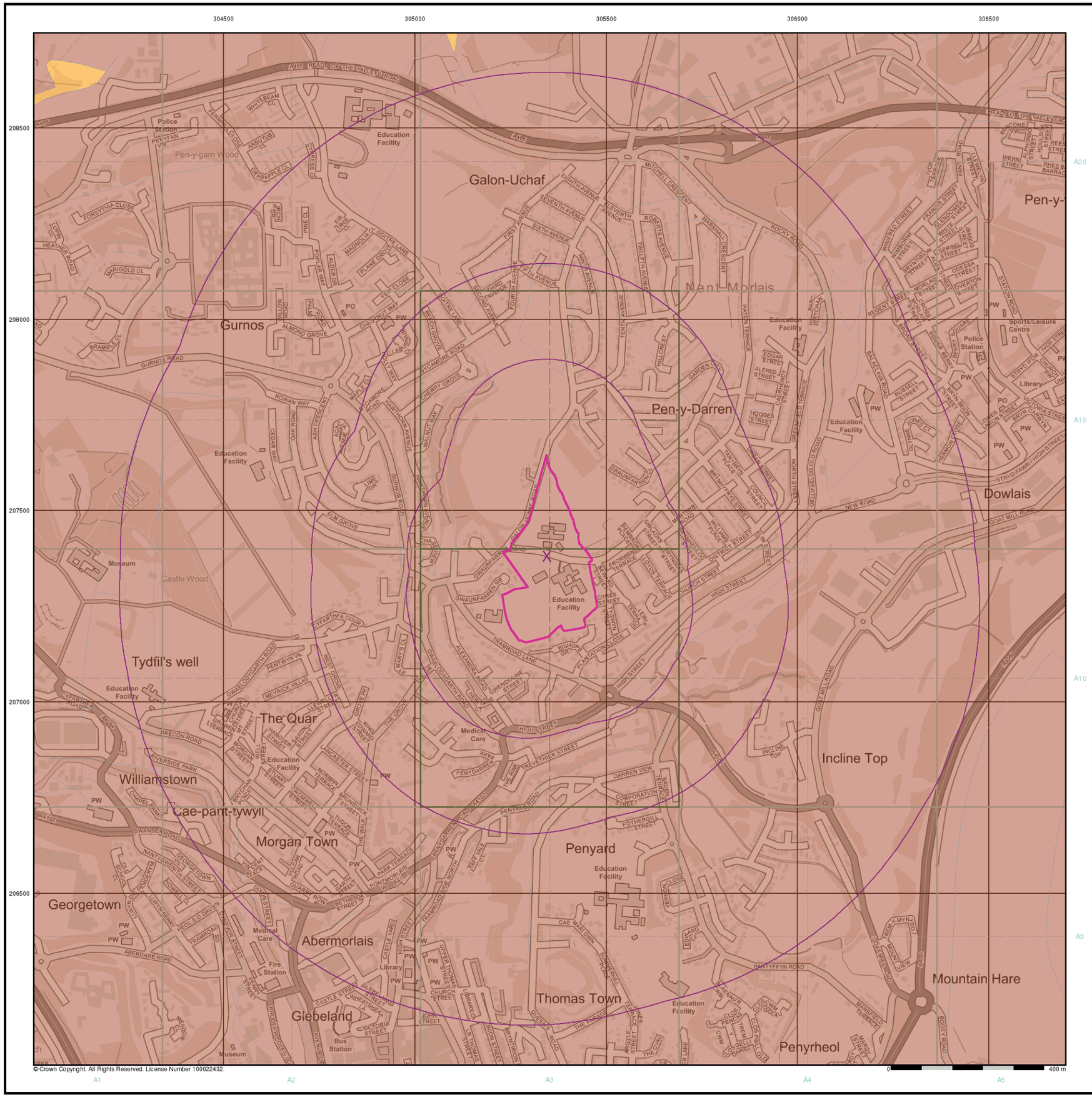


Intégral Géotechnique

General

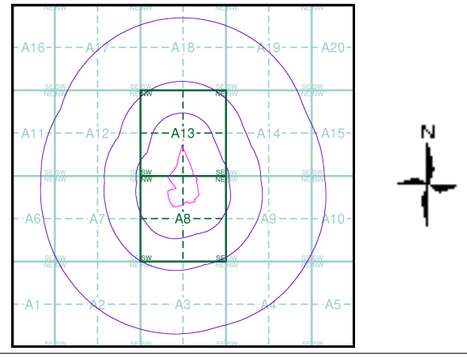
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice A



Order Details

Order Details:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Intégral Géotechnique

General

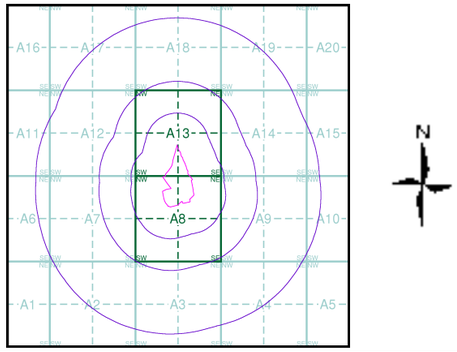
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice A



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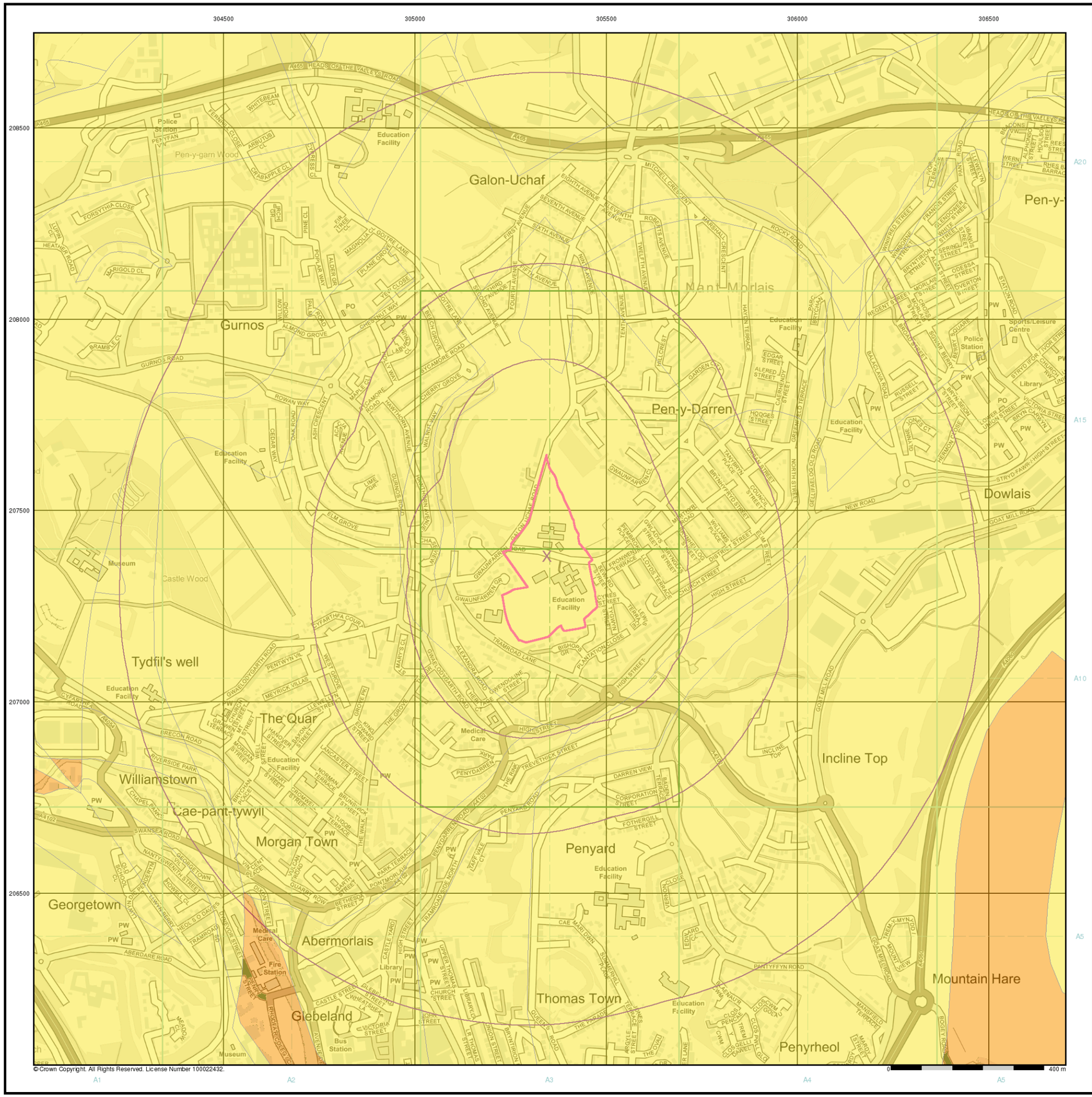


Intégral Géotechnique

General

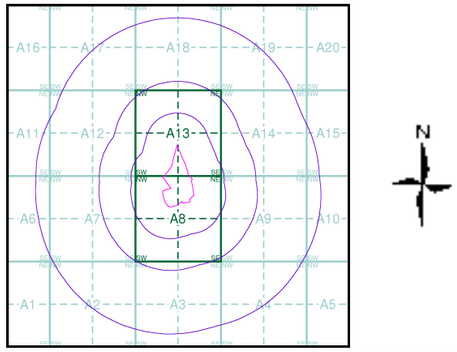
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice A



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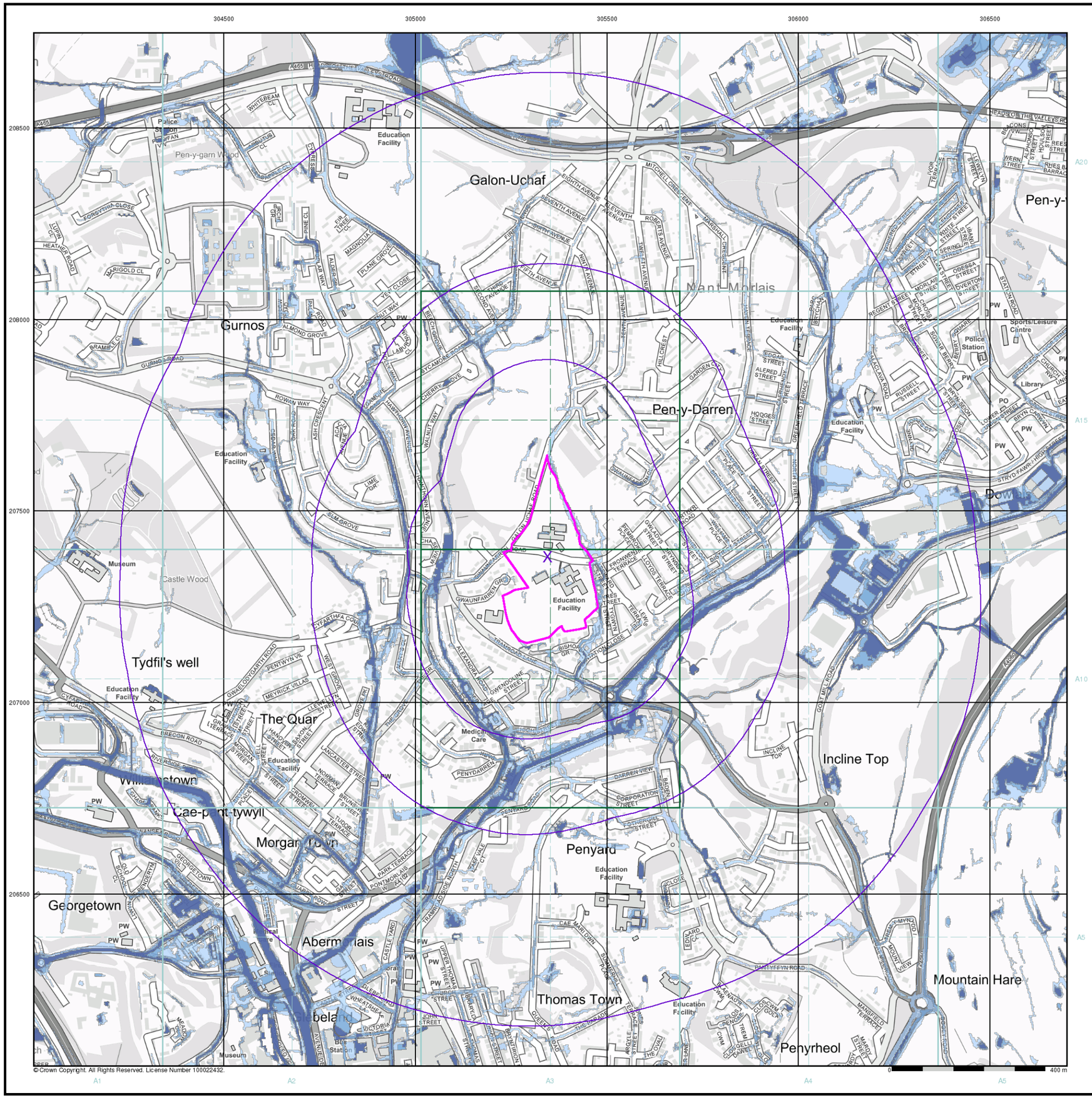


Intégral Géotechnique

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Risk of Flooding from Surface Water

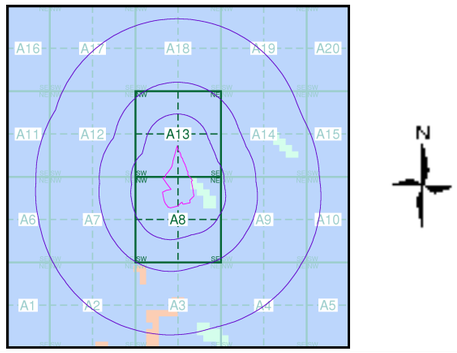
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



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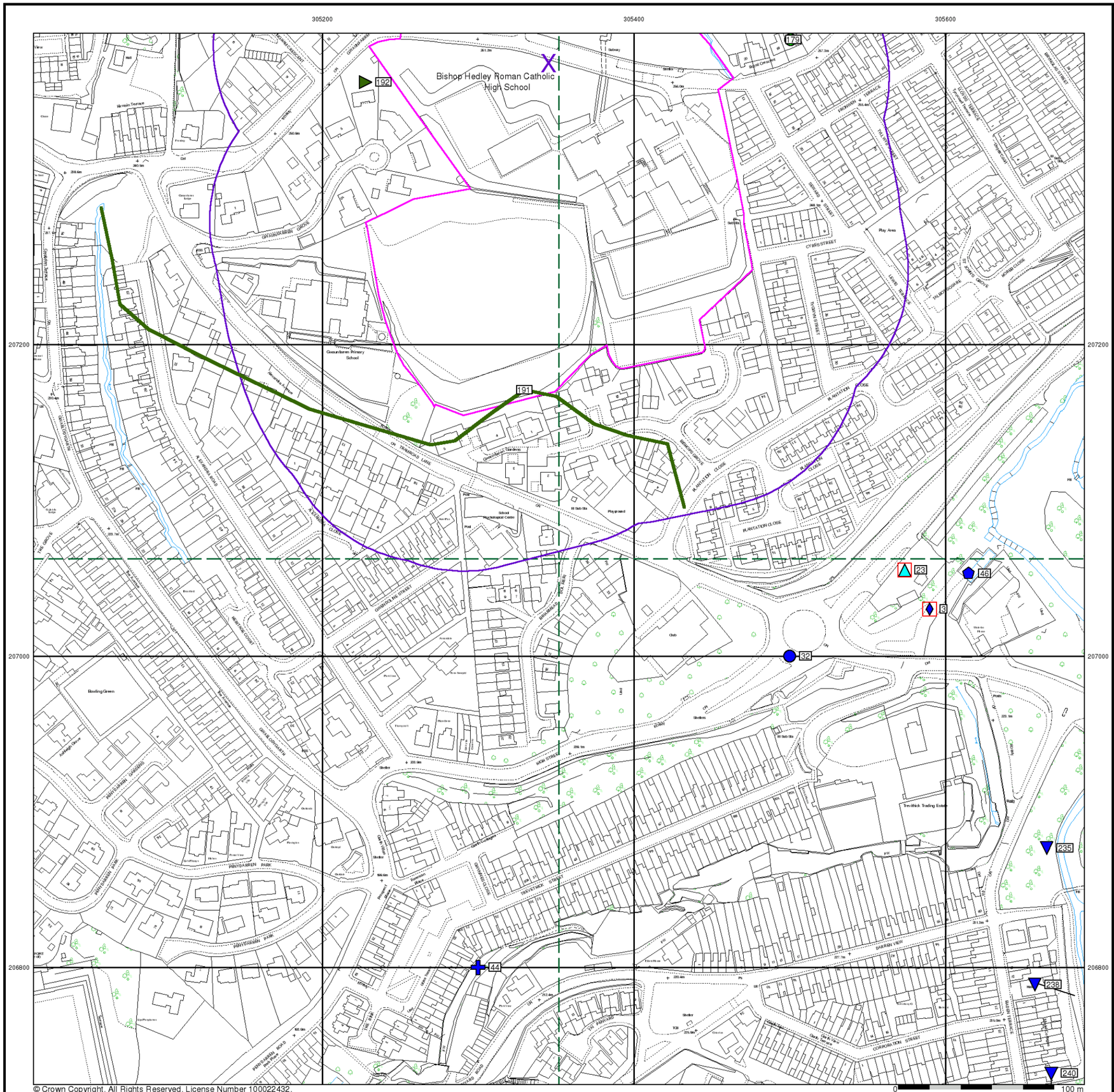

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Intégral Géotechnique

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

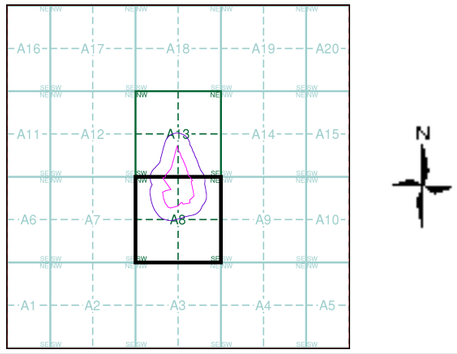
Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A8



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Plot Buffer (m):	100

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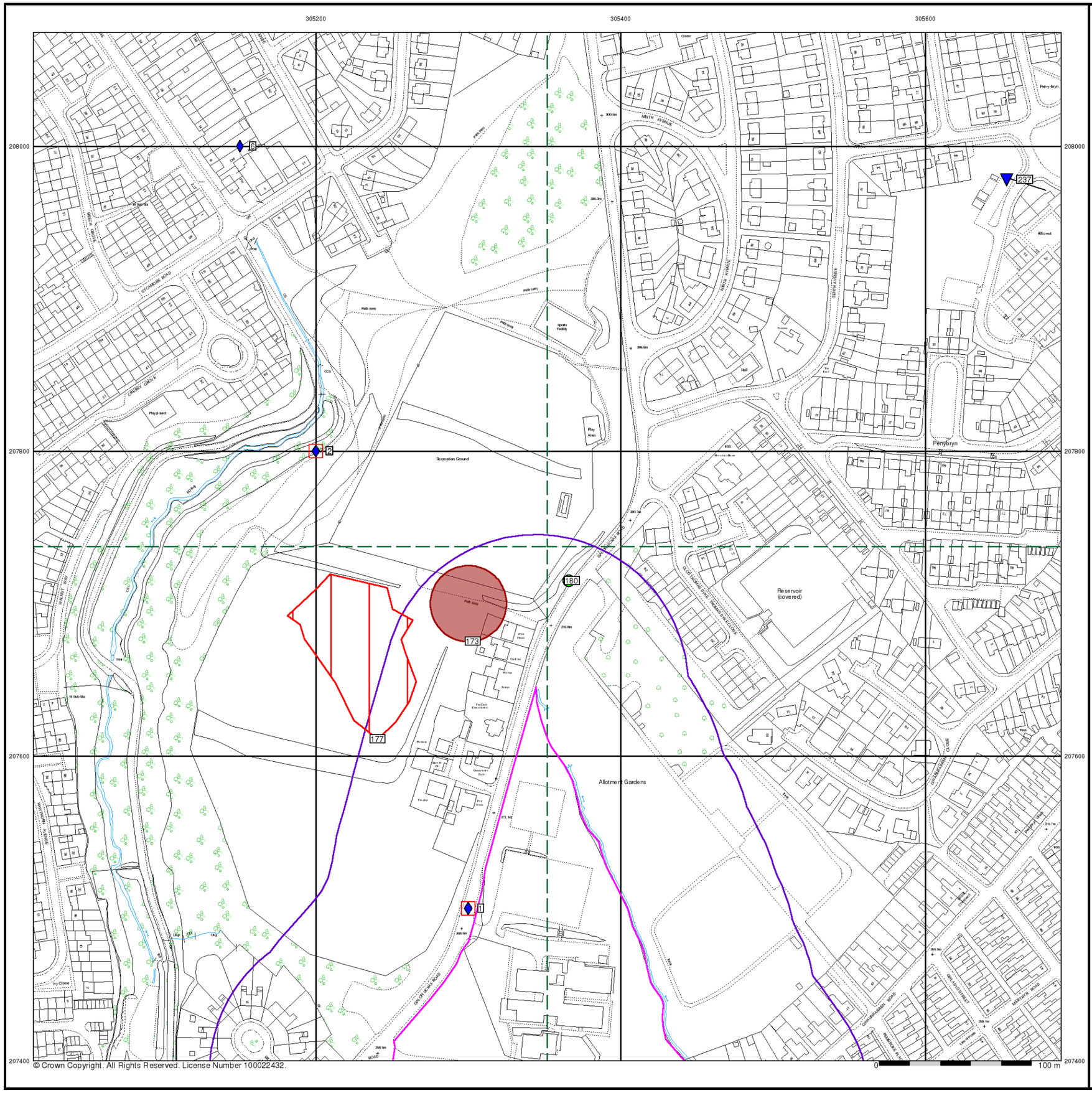

305200
305400
305600
208000
207800
207600
207400
6
2
237
180
173
177
1
Recreation Ground
Sports Facility
Play Area
Reservoir (covered)
Allotment Gardens
Penybryn
Hillcrest
Hall
Playground
Pond
Path (bend)
Path (steps)
Path (step)
Path (footbridge)
Path (line)
Path (bend)
Path (footbridge)
Path (step)
Path (footbridge)
Path (step)
Path (line)
Path (bend)
Path (footbridge)
Path (step)
Path (line)
Path (bend)
Path (footbridge)
Path (step)
Path (line)
Path (bend

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	WGR	Worked Ground (Undivided)	Void	Not Supplied - Holocene

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	TILLD	Till, Devensian	Diamicton	Not Supplied - Devensian

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	SWMCM	South Wales Middle Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	SWMCM	South Wales Middle Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	SWLCM	South Wales Lower Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	SWLCM	South Wales Lower Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	BISHM	Bishopston Mudstone Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Namurian
	TWR	Twrch Sandstone Formation	Sandstone and Conglomerate, Interbedded	Not Supplied - Namurian
	BISHM	Bishopston Mudstone Formation	Sandstone	Not Supplied - Namurian
	OHL	Oxwich Head Limestone Formation	Limestone	Not Supplied - Visean
	PDO	Penderyn Oolite Member	Limestone, Ooidal	Not Supplied - Visean
	DWL	Dowlais Limestone Formation	Limestone	Not Supplied - Visean
		Faults		
		Rock Segments		

Intégral Géotechnique

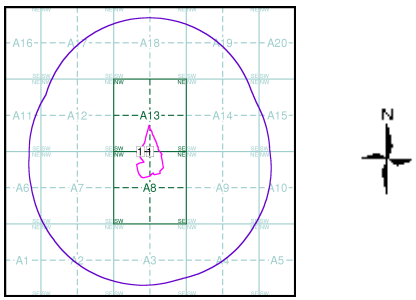
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**1**
Map Sheet No:	**231**
Map Name:	**Merthyr Tydfil**
Map Date:	**1979**
Bedrock Geology:	**Available**
Superficial Geology:	**Available**
Artificial Geology:	**Available**
Faults:	**Not Supplied**
Landslip:	**Available**
Rock Segments:	**Not Supplied**

Geology 1:50,000 Maps - Slice A



Order Details:

Order Number:	299500301_1_1
Customer Reference:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details:

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
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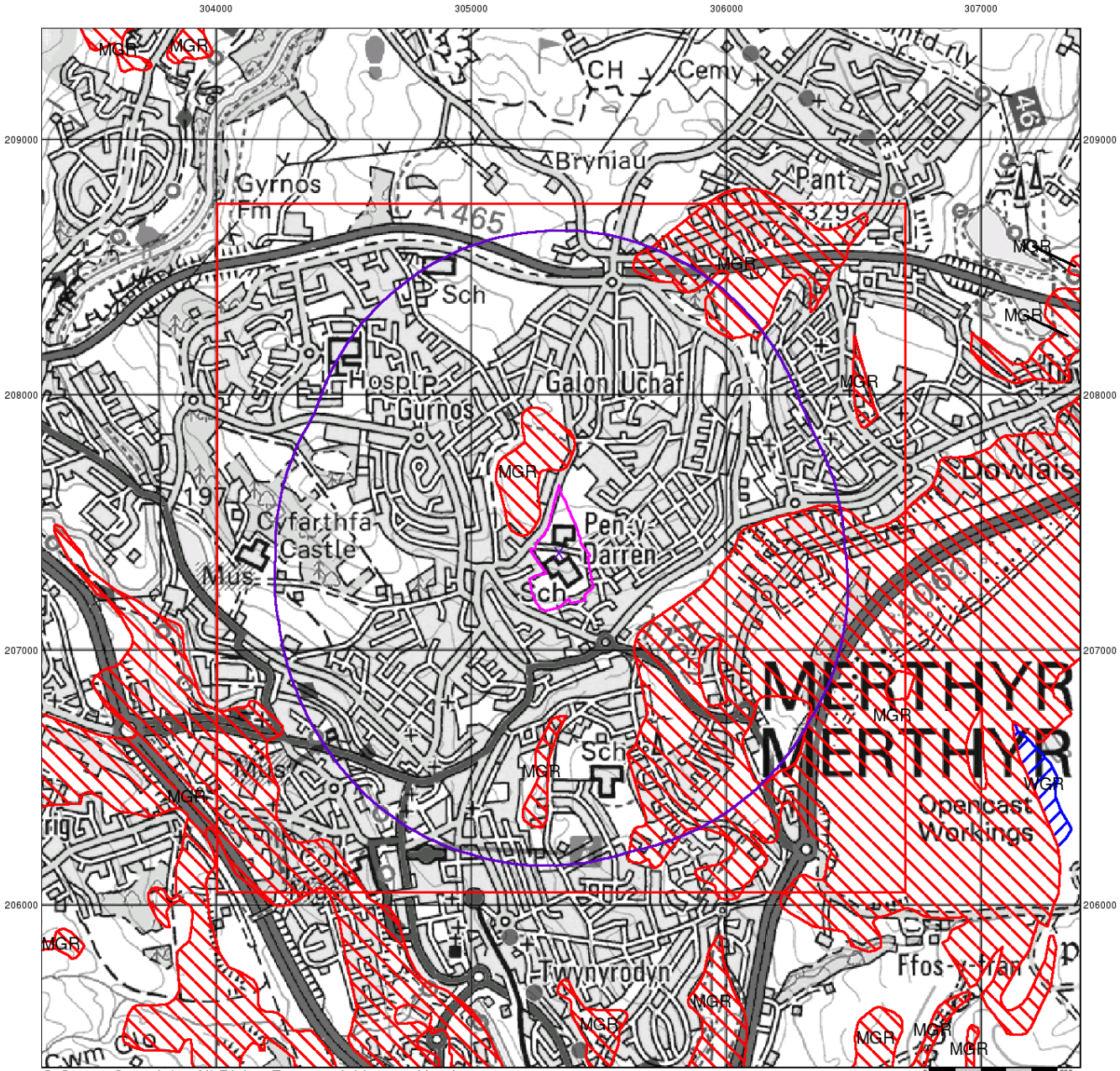

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Intégral Géotechnique

Artificial Ground and Landslip

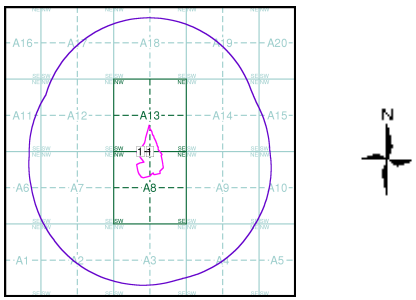
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



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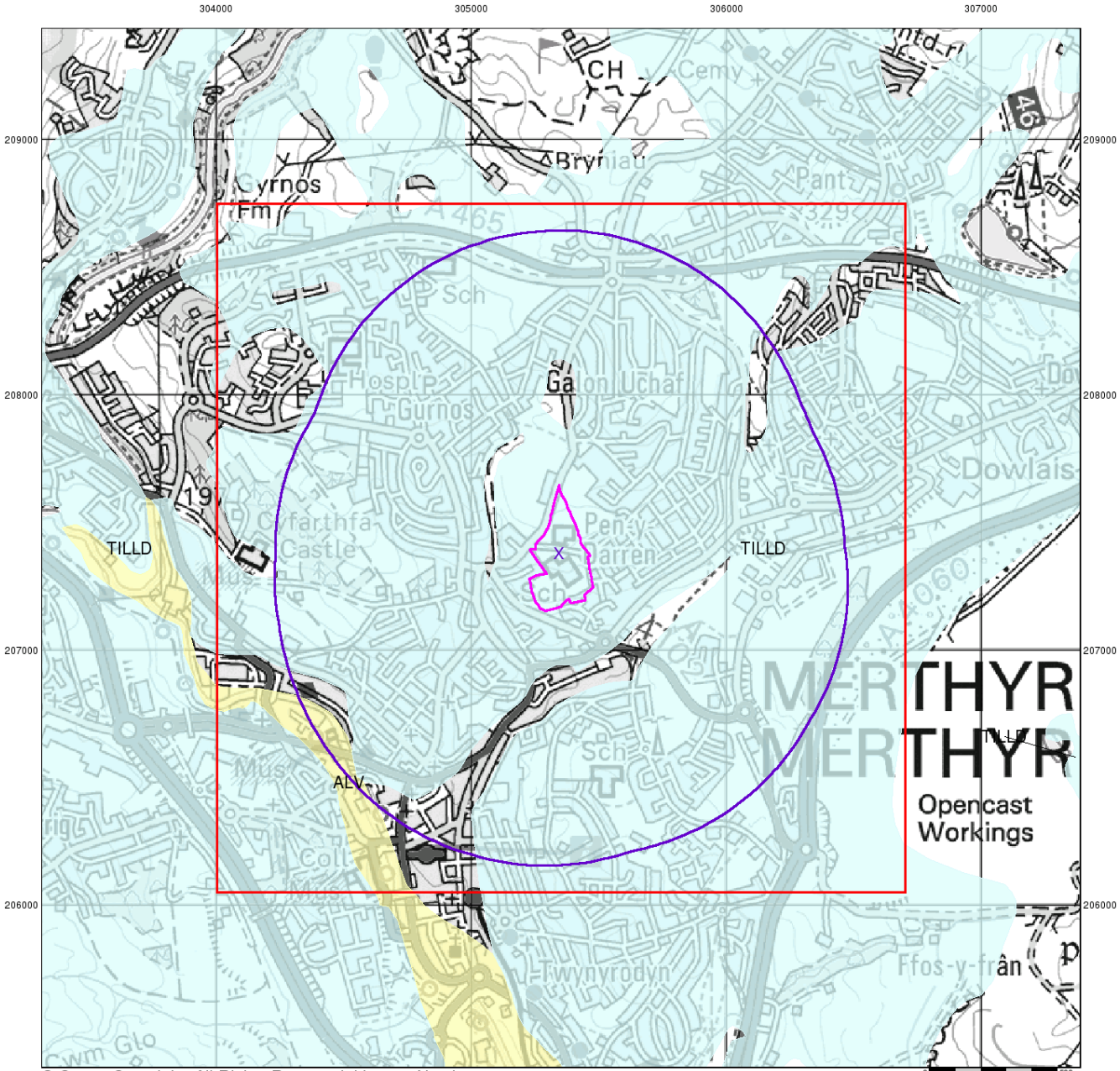

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Intégral
Géotechnique

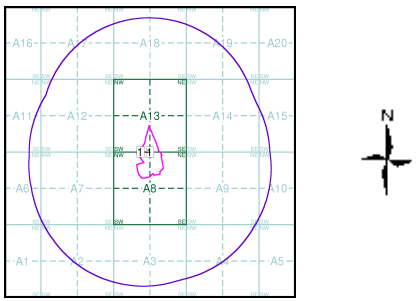
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



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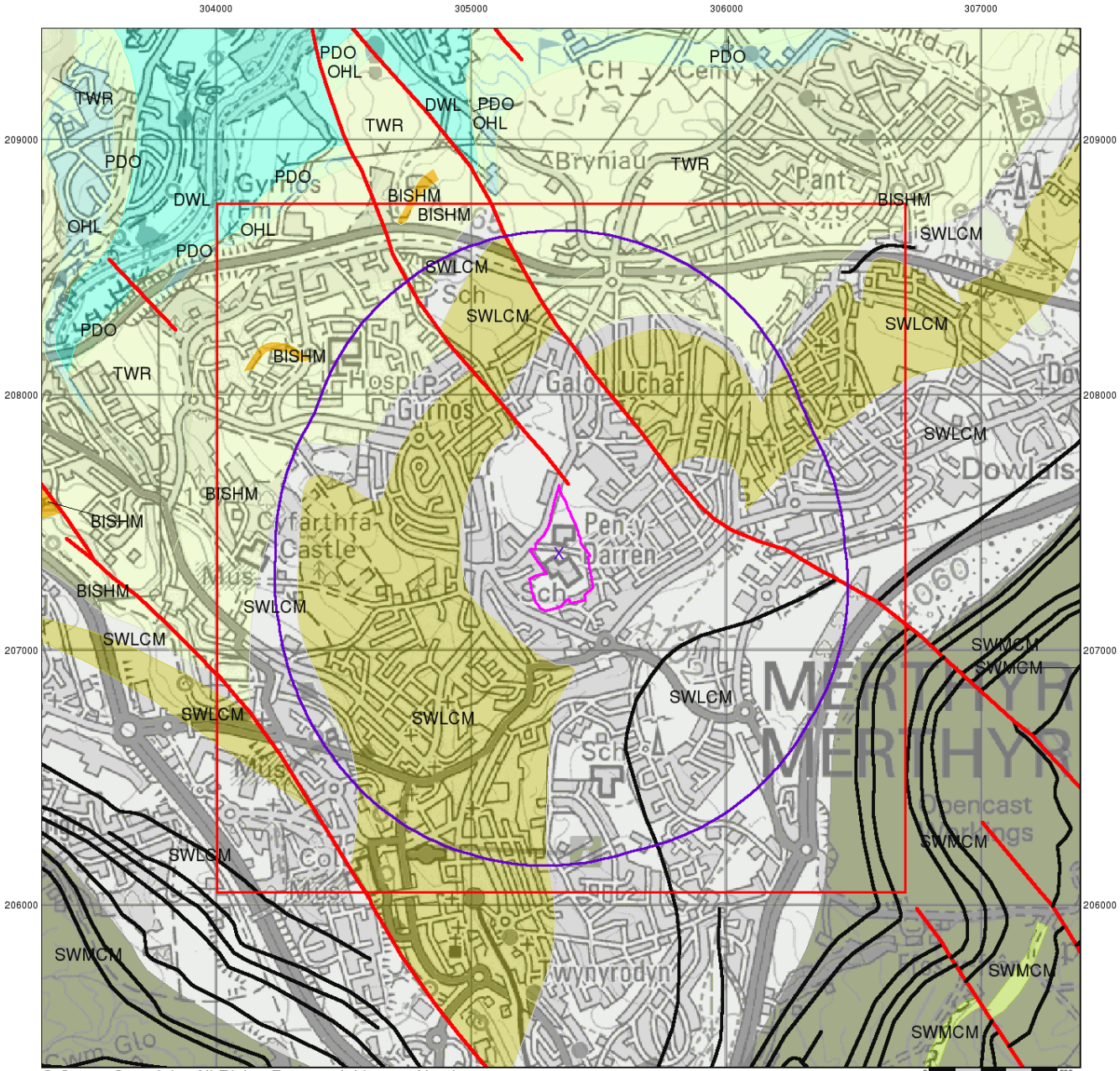

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Intégral Géotechnique

Bedrock and Faults

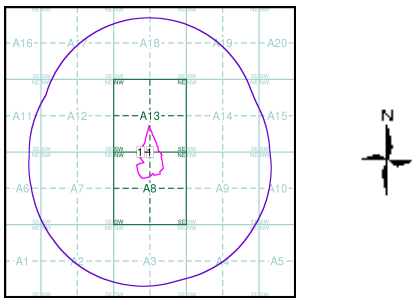
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



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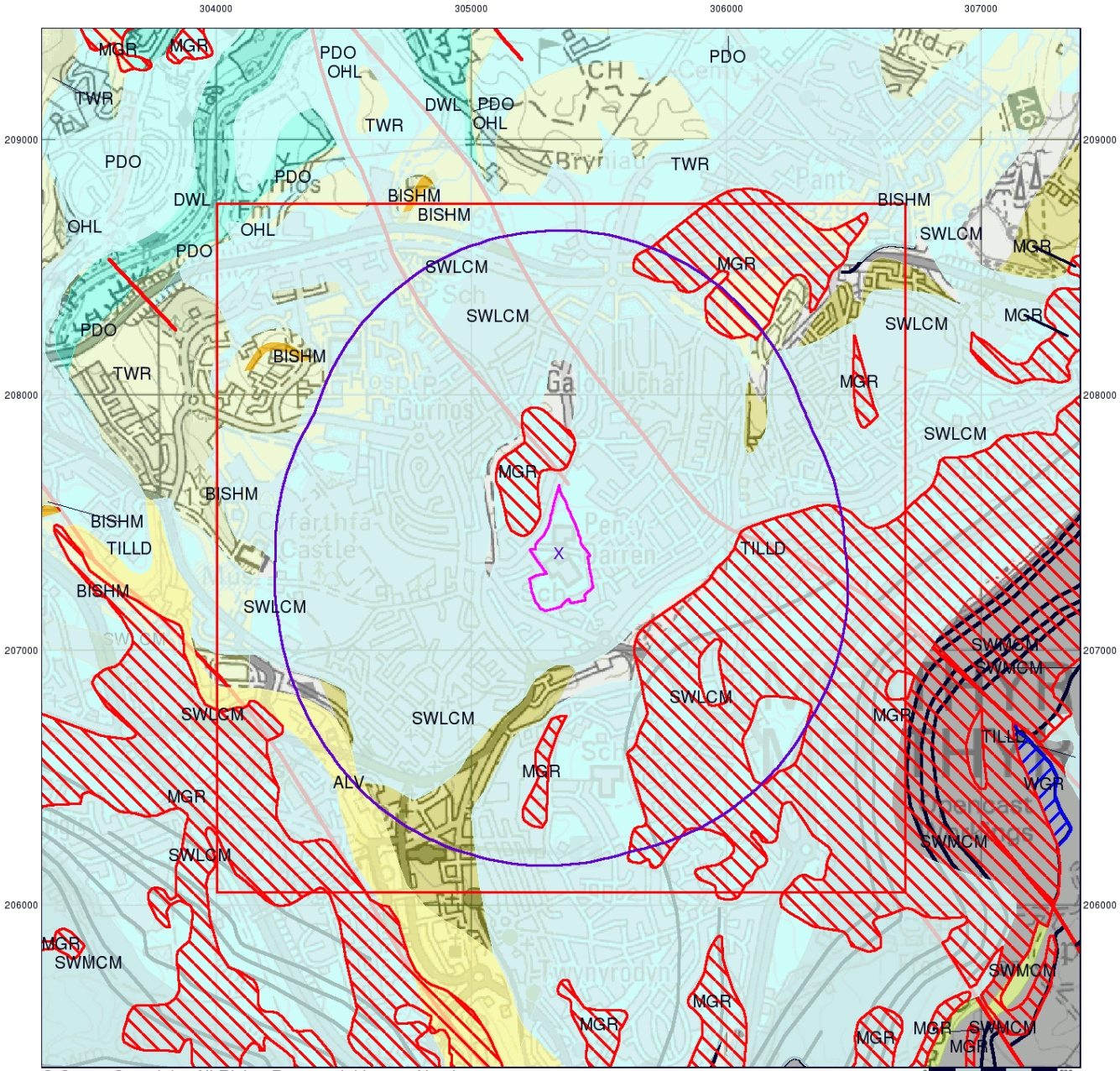

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Intégral Géotechnique

Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

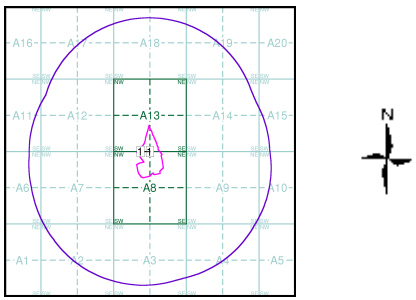
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Sloping Masonry
Pylon
Pole
Electricity Transmission Line
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

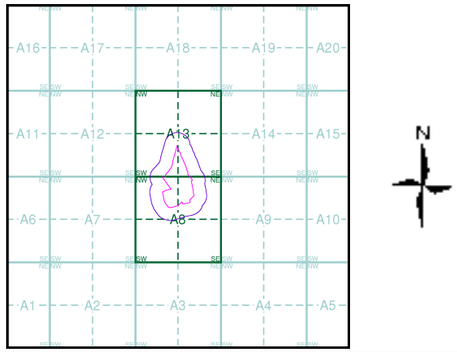
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Monmouthshire	1:10,560	1884	2
Brecknockshire	1:10,560	1884 - 1885	3
Glamorganshire	1:10,560	1885	4
Glamorganshire	1:10,560	1901	5
Brecknockshire	1:10,560	1905	6
Brecknockshire	1:10,560	1922	7
Brecknockshire	1:10,560	1938 - 1951	8
Historical Aerial Photography	1:10,560	1945	9
Brecknockshire	1:10,560	1951	10
Ordnance Survey Plan	1:10,000	1965	11
Ordnance Survey Plan	1:10,000	1977 - 1979	12
Ordnance Survey Plan	1:10,000	1983	13
Ordnance Survey Plan	1:10,000	1992	14
10K Raster Mapping	1:10,000	1999	15
10K Raster Mapping	1:10,000	2006	16
VectorMap Local	1:10,000	2021	17

Historical Map - Slice A



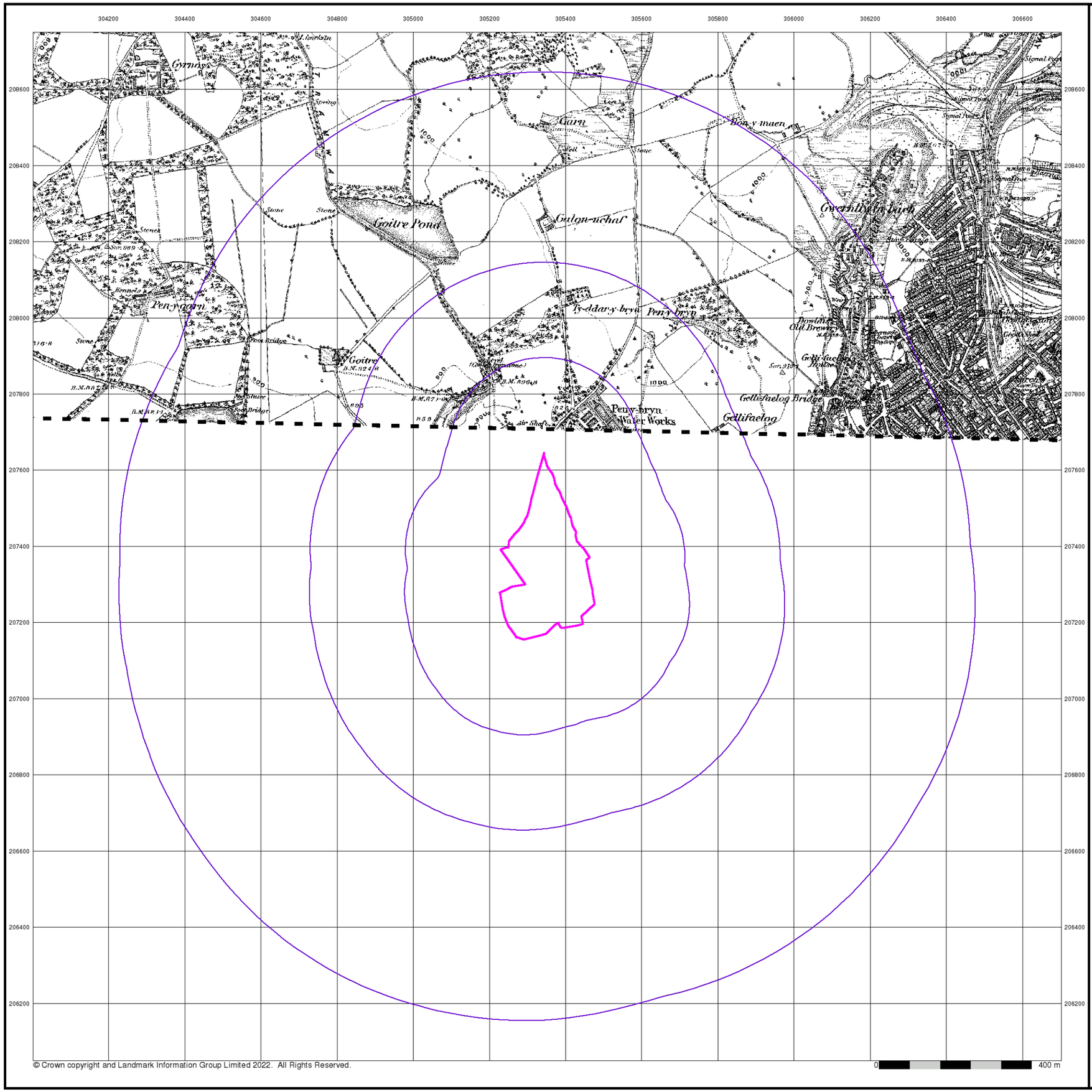
Order Details

Order Number: 299500301_1_1
Customer Ref: 14075/LP
National Grid Reference: 305350, 207380
Slice: A
Site Area (Ha): 6.79
Search Buffer (m): 1000

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk


304200
304400
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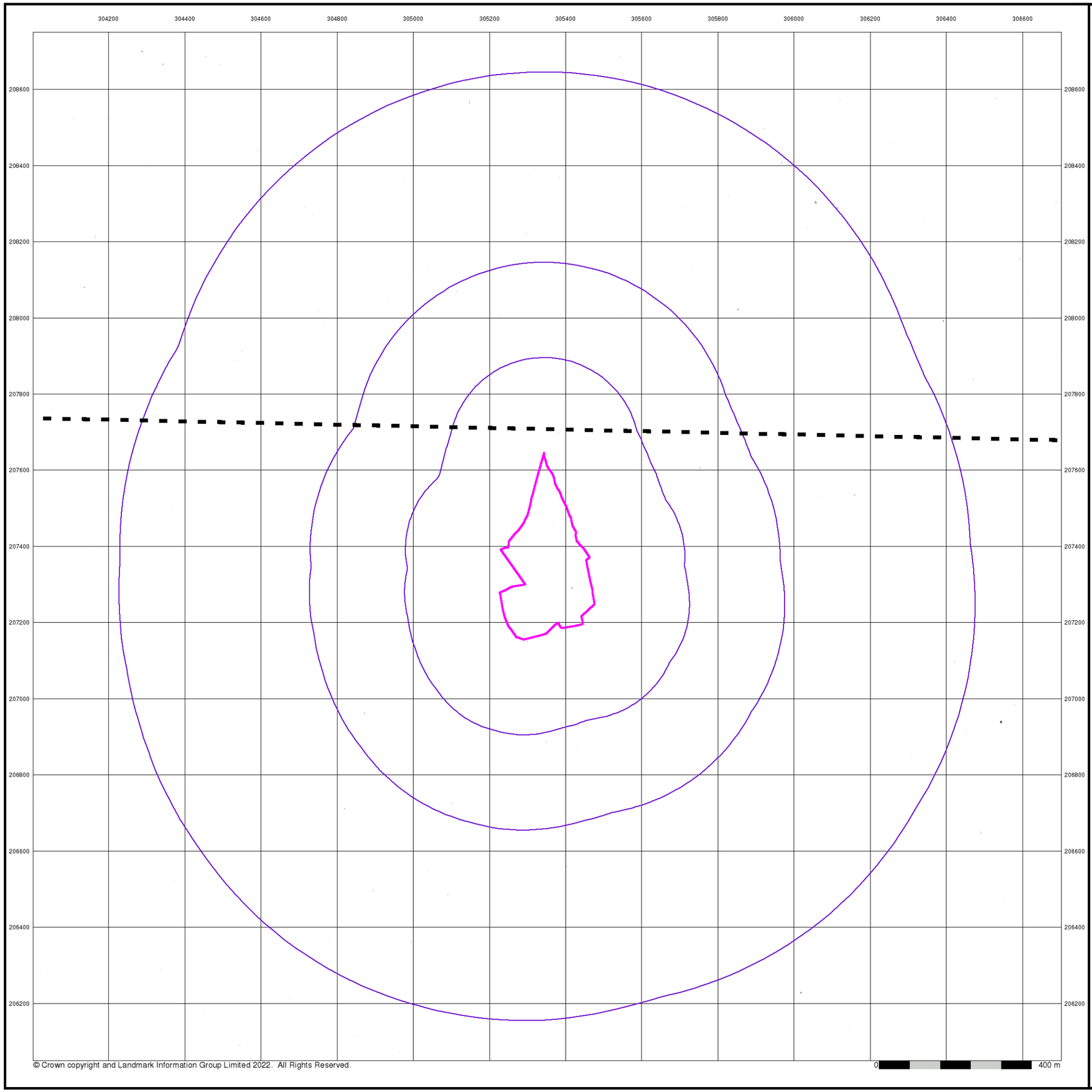
304800
305000
305200
305400
305600
305800
306000
306200
306400
306600
208600
208400
208200
208000
207800
207600
207400
207200
207000
206800
206600
206400
206200
Gymnasium
Cairn
Bon-y maen
Goitre Pond
Gulon-uchaf
Greenhill (in ruins)
Pen-y-cwm
Ty-ddar-y-bryn
Pen-y-bryn
Goitre
Old Brewery
Gellifaelog Bridge
Gellifaelog
Pen-y-bryn Water Works
Stone
Stone
Stone



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Intégral Géotechnique

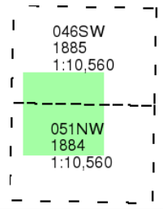
Brecknockshire

Published 1884 - 1885

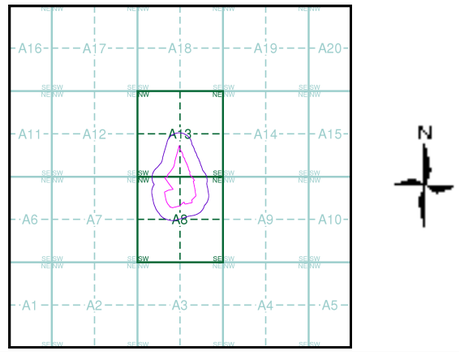
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

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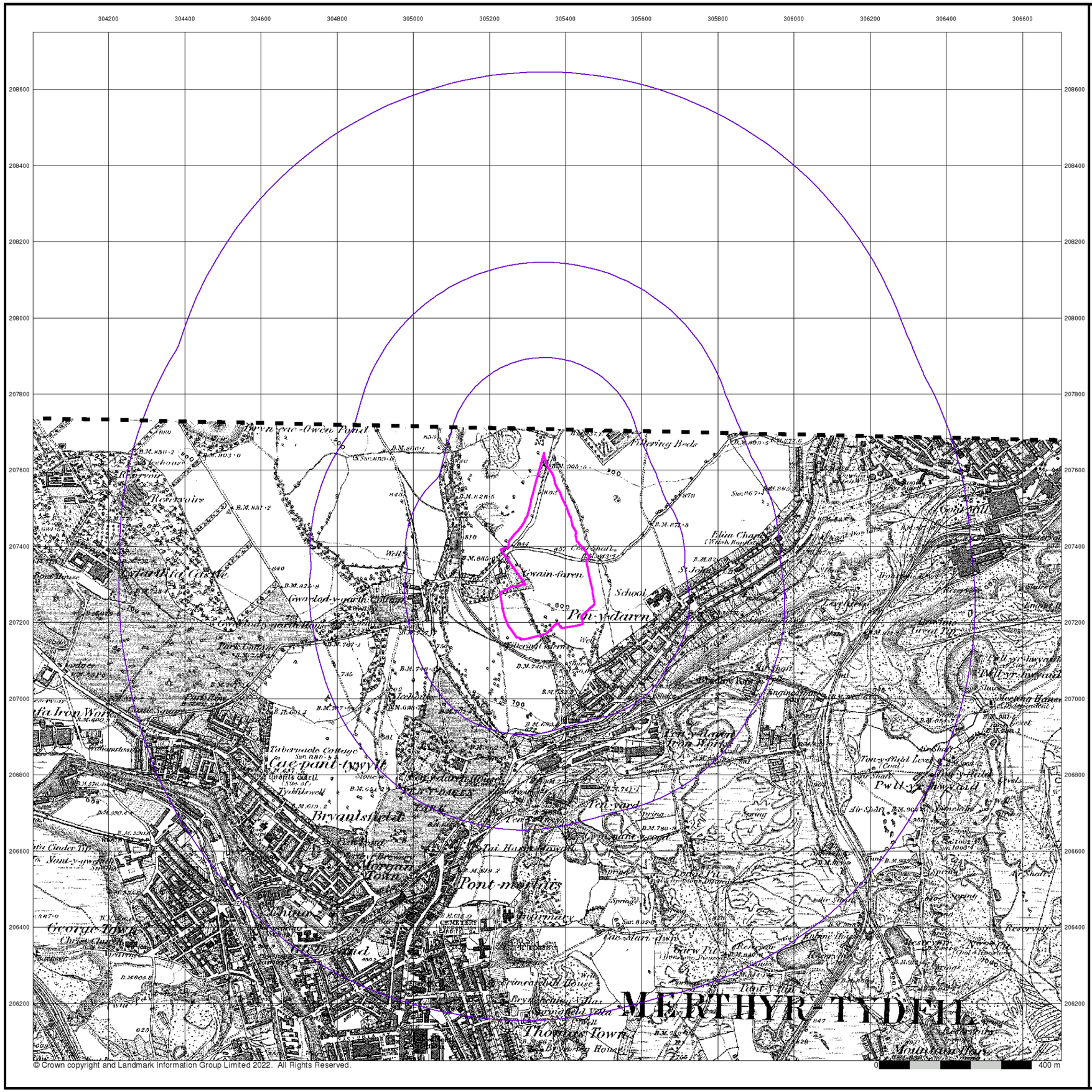

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Intégral Géotechnique

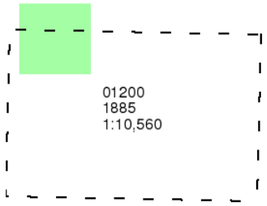
Glamorganshire

Published 1885

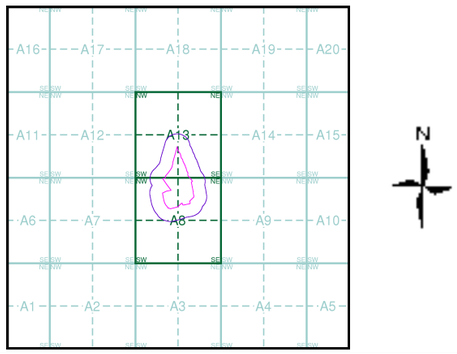
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

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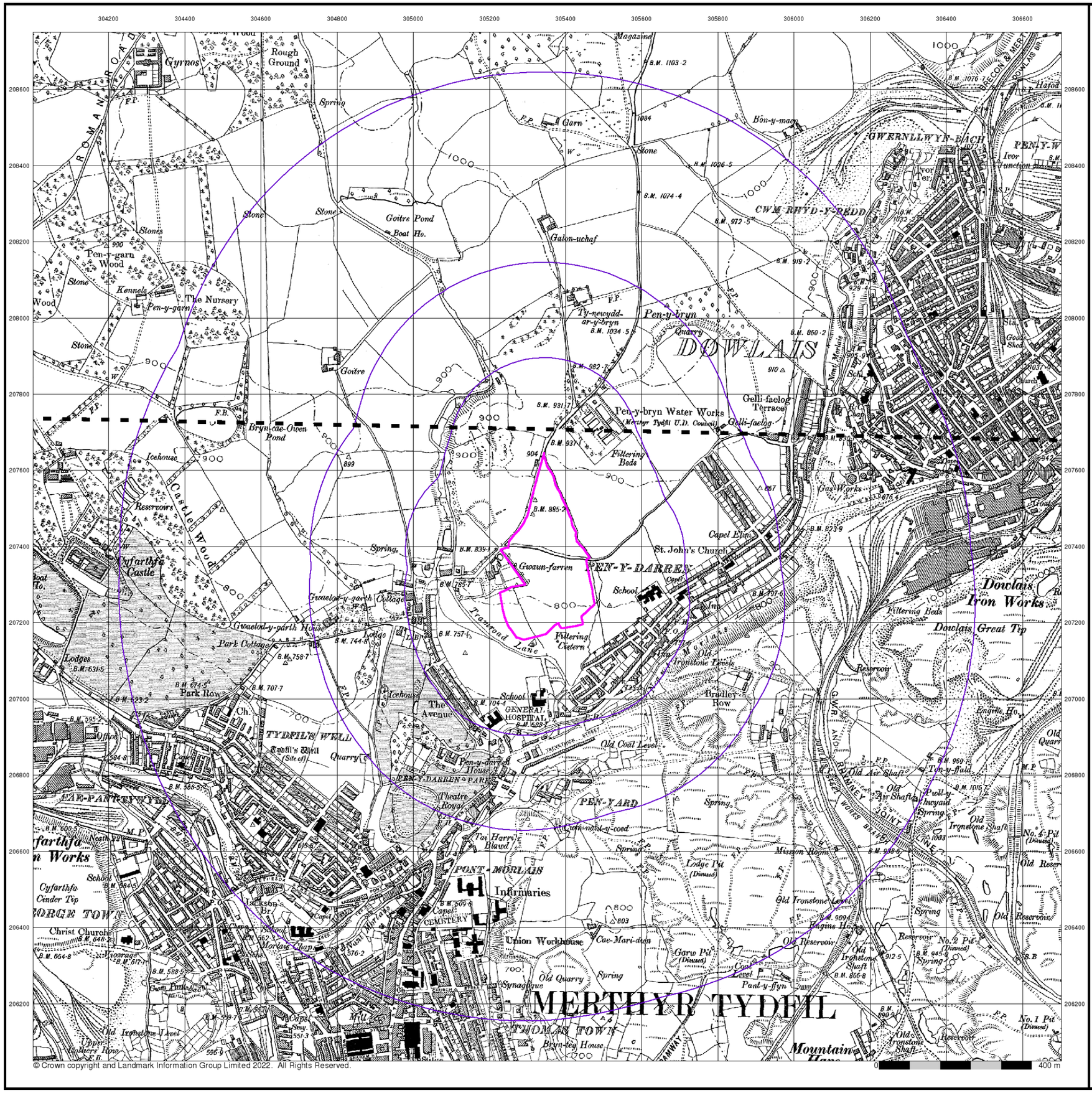
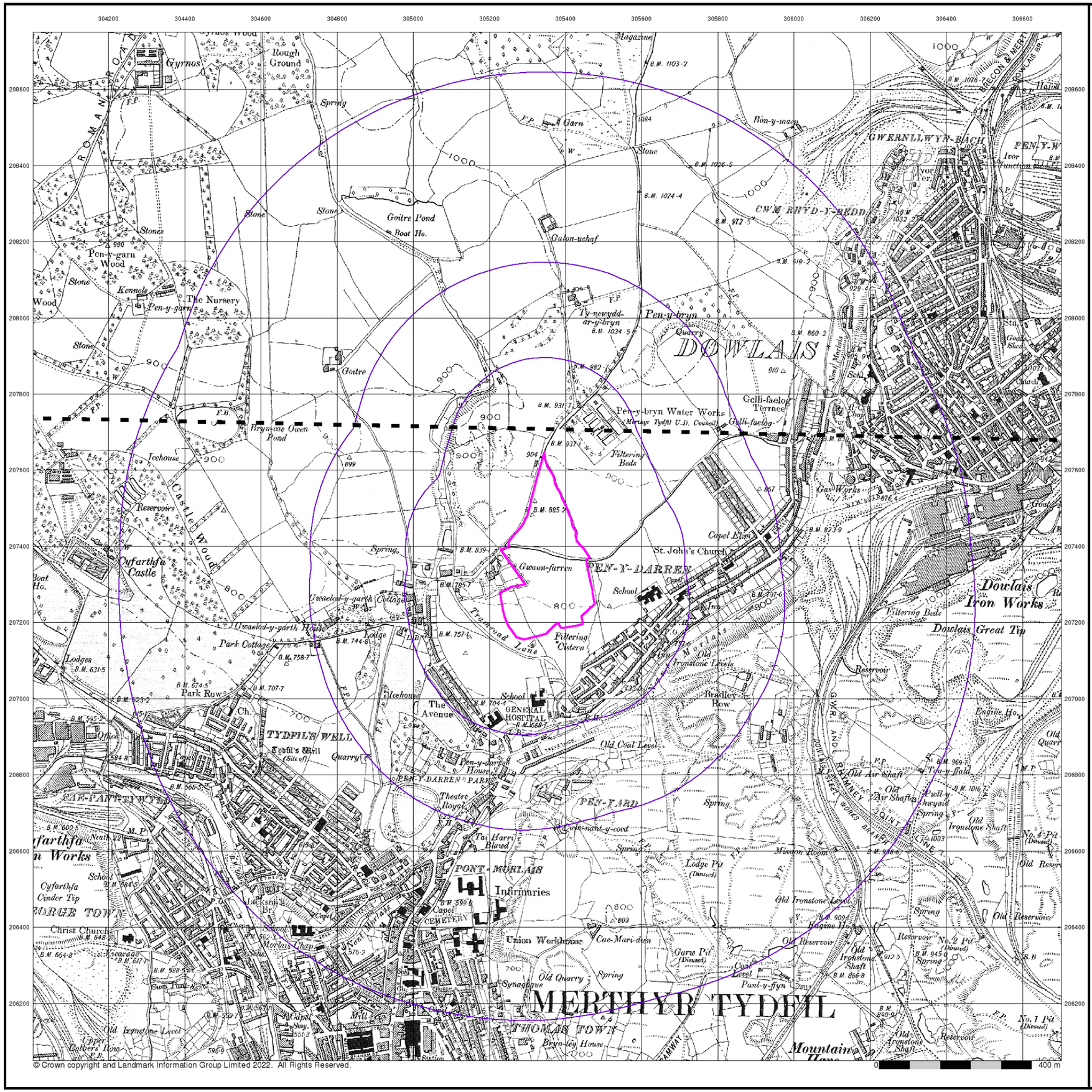

DOWLAIS
MERTHYR TYDFIL
PENYDARREN
PENYARD
TYDFIL'S WELL
GWERNLLWYN-BACH
CWM RHYD-Y-REDD
Pen-y-bryn Water Works
Dowlais Iron Works
Dowlais Great Tip
Cyfarthfa Castle
Cyfarthfa Cinder Tip
Infirmaries
Union Workhouse
Gas Works
Filtering Beds
Goitre Pond
Bryn-oe-Oven Pond
Pen-y-garn Wood
The Nursery
Castle Wood
Reservoirs
Icehouse
Park Rows
The Avenue
General Hospital
Cemetery
St. John's Church
School
Tramroad Lane
Old Coal Level
Old Ironstone Levels
Old Ironstone Shaft
Old Air Shaft
Engine Ho.
Bradley Row
Gelli-faelog Terrace
Pontmorlais
Thomas Town
Mountain Hare
Christ Church
Lodge Pit (Disused)
Garw Pit (Disused)
No. 1 Pit (Disused)
No. 2 Pit (Disused)
No. 4 Pit (Disused)
Old Reservoir
Spring
Stone
Quarry
Boat Ho.
Lodges
Park Cottages
Gwaelod-y-garth Cottage
Gwaelod-y-garth House
Groaun-farren
Pen-y-darren Park
Theatre Royal
Pen-y-darren House
Bryn-teg House
Pant-y-ffyn
Cae-Mari-dean
Old Quarry
Synagogue
Upper Colliers' Row
Mill
Station
Tramway
Pen-y-bryn Quarry
Ty-newydd-ar-y-bryn
Galon-uchaf
Bon-y-maen
Garn
Rough Ground
Gyrnos
Roman Road
Stones
Kennels
Magazine
Haford
Ivor Terr.
Junction
Goods Shed
Church
Sch.
Nant Morlais
Tai Harry Blaud
Cwm-nant-y-coed
Mission Room
Old Tramroad Level
Engine House
Reservoir
Pwll-y-hwyaid
Tom-y-fuddi
Ffynnon Wen
Pen-y-darren
Pen-y-garn
Ty-Ucha
Ty-Isaf
Ty-Gwyn
Ty-Mawr
Ty-Cwrt
Ty-Gwyn
Ty-Mawr
Ty-Cwrt
Ty-Isaf
Ty-Ucha



Intégral Géotechnique

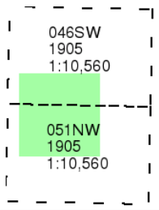
Brecknockshire

Published 1905

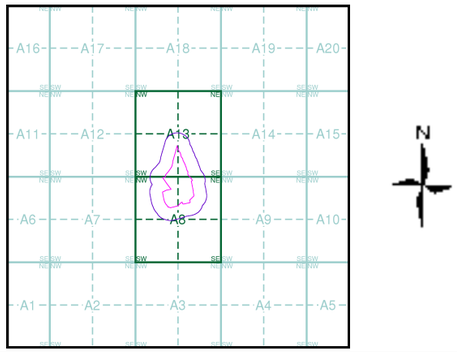
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



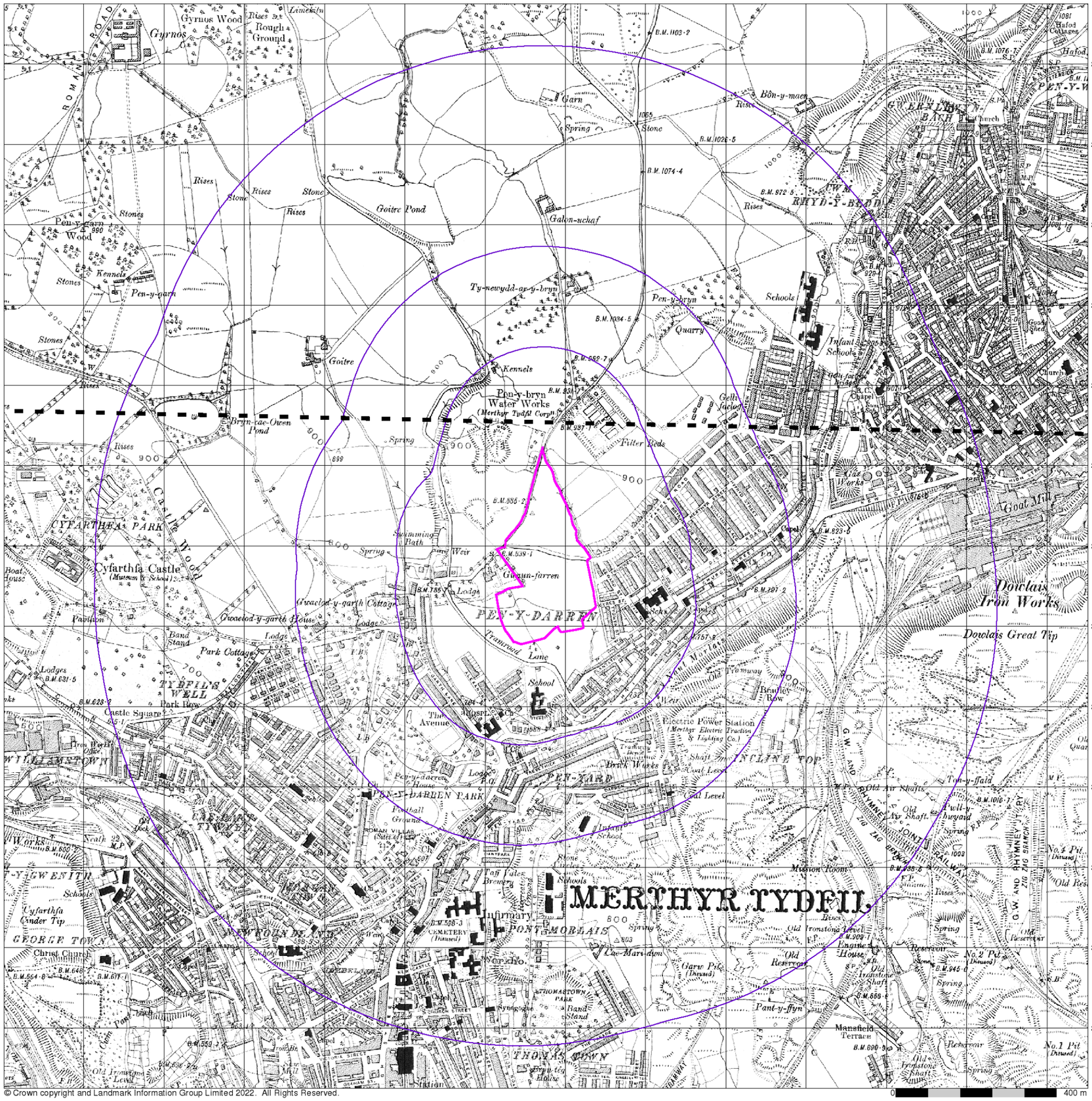
Order Details

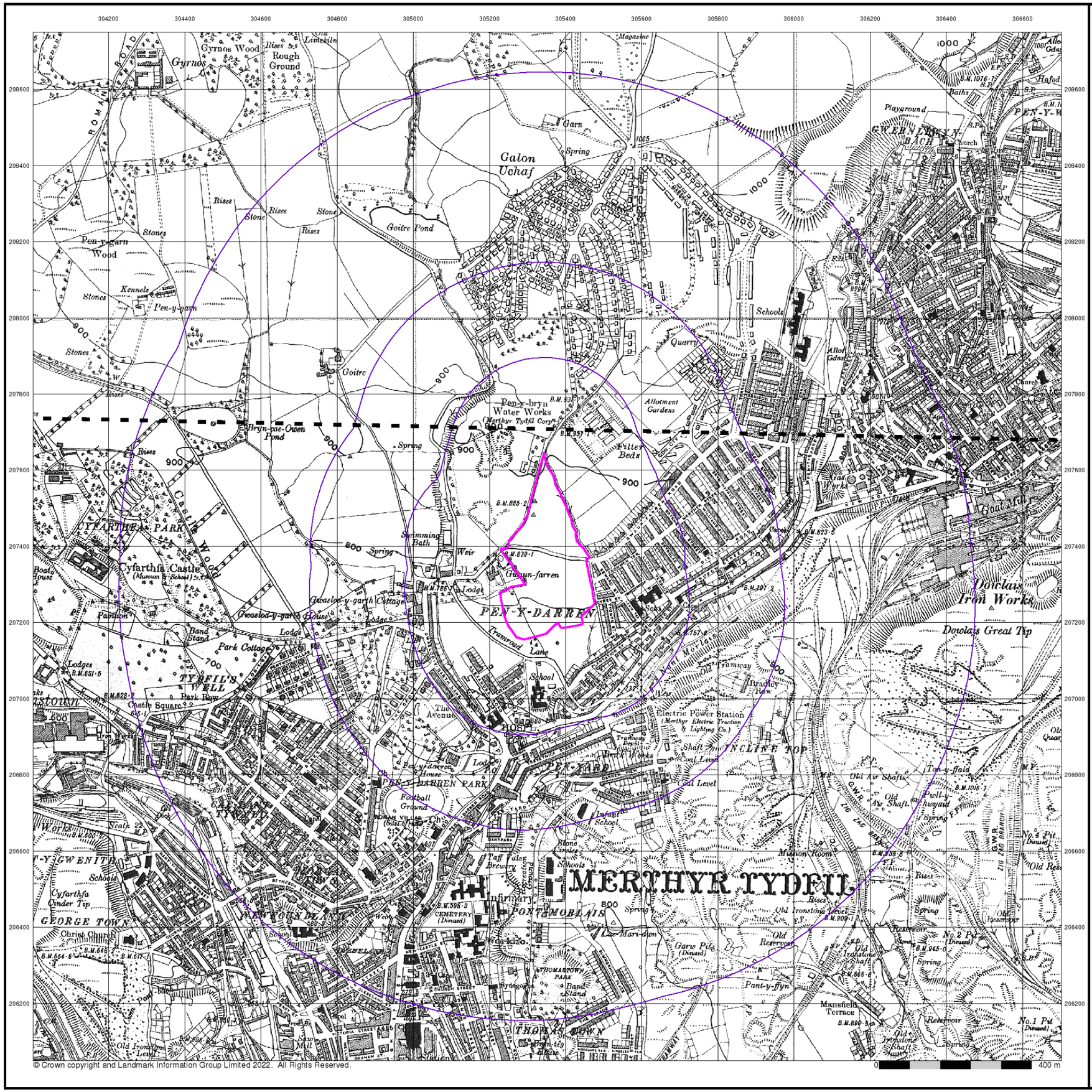
Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk


MERTHYR TYDFIL
Cyfarthfa Castle
CYFARTHFA PARK
Pen-y-darren Water Works
Goitre Pond
Galon-uchaf
Ty-newydd-ar-y-bryn
Pen-y-bryn
Quarry
Schools
Infant's Schools
Gas Works
Douglas Iron Works
Douglas Great Tip
PEN-Y-DARREN
Tramroad Lane
Electric Power Station
Brick Works
PEN-YARD
PEN-Y-DARREN PARK
Football Ground
Infirmary
CEMETERY
Mission Room
Engine House
Old Reservoir
Garw Pit
Pant-y-ffyn
Mansfield Terrace
Reservoir
No.1 Pit
No.2 Pit
No.4 Pit
Old Tramroad Level
Old Ironstone Shaft
Old Air Shaft
Pwll-y-bwyard
Tom-y-ffald
Cae-Mari-dym
THOMAS TOWN
THOMASTOWN PARK
Band Stand
Christ Church
GEORGE TOWN
Cyfarthfa Cinder Tip
Boat House
Pavilion
Band Stand
Park Cottages
Lodges
Castle Square
Park Row
TYDFIL'S WELL
WILLIAMSTOWN
Swimming Bath
Weir
Lodge
Gwaelod-y-garth Cottage
Gwaelod-y-garth House
Gwaun-farren
Brynn-ae-Owen Pond
Pen-y-garn Wood
Pen-y-garn
Kennels
Stones
Rises
Spring
Gyrnos Wood
Gyrnos
Rough Ground
Garn
Bôn-y-maen
RHYD-Y-BEDDAU
Hafod Cottages
Hafod
Church
Chapel
Goal Mill
Gelli Factory
Filter Beds
Tramway
Brewery
Station
Holme
Old Tramroad Level
Old Pit
Mill
Weir
Lodge
Pen-y-darren House
Tai-Mawr
Y-GWENITH
Schools
Works
Mill
Old Quarry
Old Pit
Old Tramroad Level
Old Tramroad Level
Old Tramroad Level


MERTHYR TYDFIL
Galon Uchaf
Gyrnos Wood
Rough Ground
Pen-y-garn Wood
Goitre Pond
Pen-y-bryn Water Works
Allotment Gardens
Bryn-oe-Oven Pond
CYFARTHFA PARK
Cyfarthfa Castle
Swimming Bath
PENYDARREN
TYDFIL'S WELL
Park Cottage
Dowlais Iron Works
Dowlais Great Tip
Electric Power Station
INCLINE TOP
PENYDARREN PARK
Football Ground
Infirmary
PONTMORLAIS
GEORGE TOWN
THOMASTOWN
Christ Church
Cyfarthfa Cinder Tip
Mansfield Terrace
Old Reservoir
Playground
Schools
Quarry
Baths
Church
Goat Mill
Tramroad Lane
Bradley Row
Tan-y-faid
Pant-y-ffyn
Garw Pit (Disused)
Old Ironstone Shaft
No. 2 Pit (Disused)
No. 1 Pit (Disused)
Old Tramway
Old Ironstone Level
Old Air Shafts
Mission Room
Taff Vale Brewery
Lodge
Park Row
Castle Square
Band Stand
Weir
Spring
Stones
Rises
Kennels
Pen-y-garn
Gwaelod-y-garth Cottage
Gwaelod-y-garth House
Pavilion
Boat House
Lodges
Tue Avenue
Pen-y-darren House
Birch Works
Coal Level
Stone Lodge
Schools
Cyfarthfa Cinder Tip
Christ Church
Old Ironstone Level
Old Reservoir
Reservoir
Old Reservoir
Garw Pit (Disused)
Lle Mari-don
Synagogue
Band Stand
Mill
Pen-y-darren House
Pen-y-darren Park
Lodge
Tramroad
Lane
School
Infant School

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Intégral Géotechnique

Historical Aerial Photography

Published 1945

Source map scale - 1:10,560

The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

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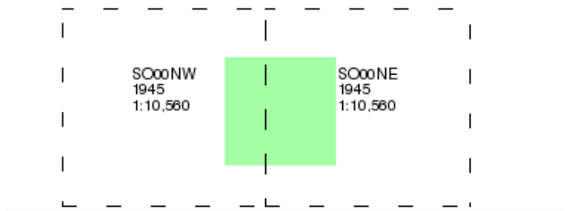
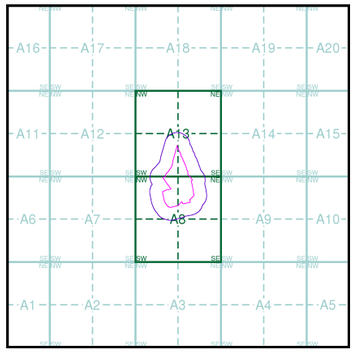
Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



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Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

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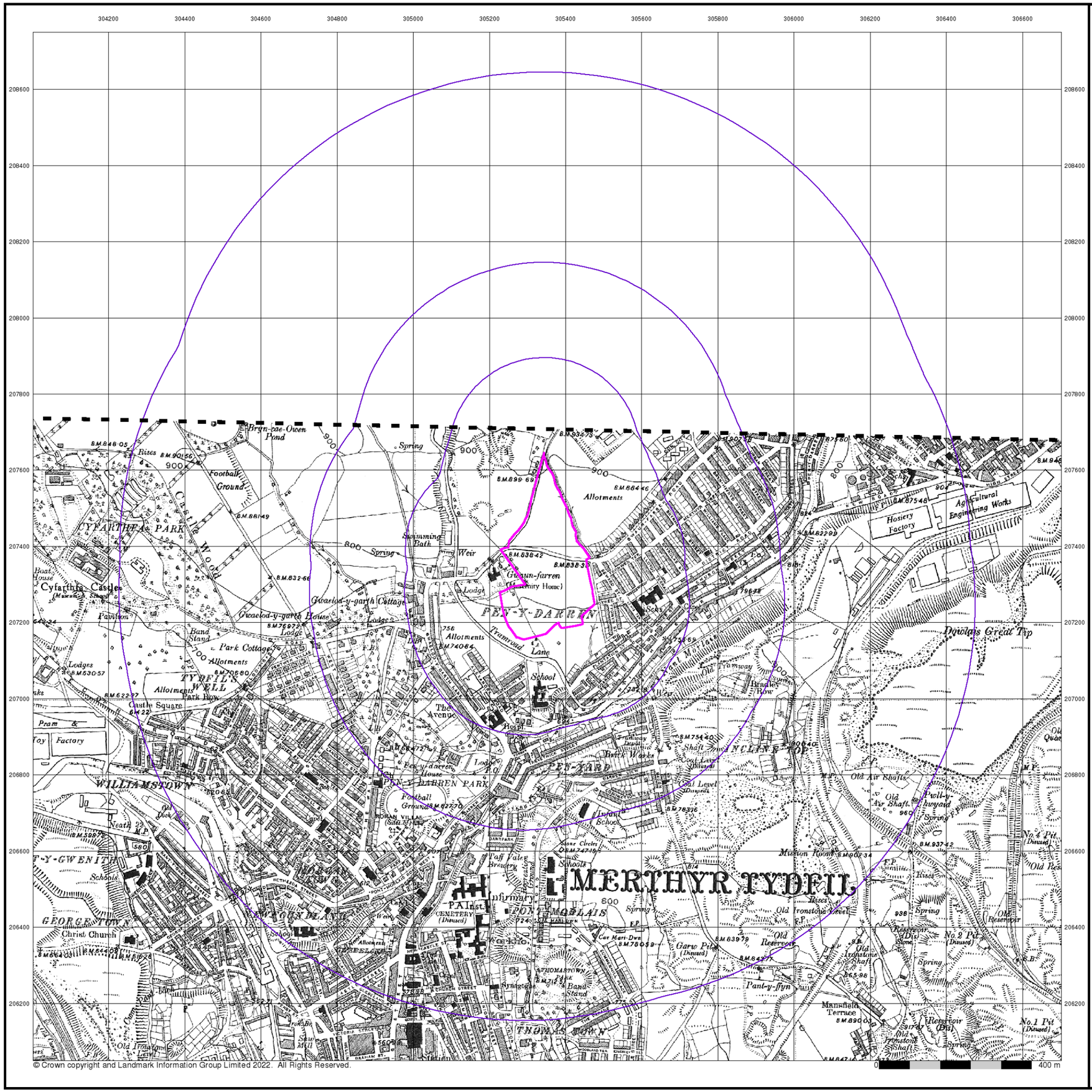

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Intégral Géotechnique

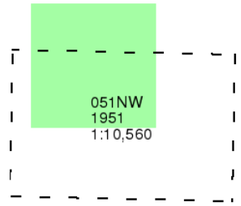
Brecknockshire

Published 1951

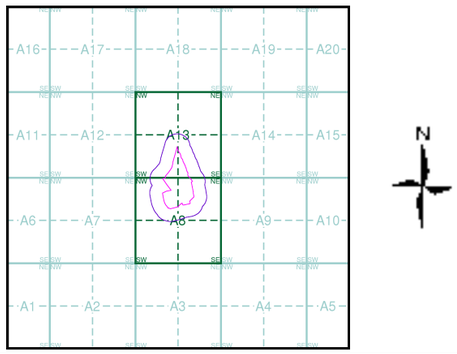
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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PEN-Y-DARREN
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CWM RHYDY-BEDU
GWERNLLWYN BACH
DOWLAIS
INCLINE TOP
PENYARD
PONTMORLAIS
WILLIAMSTOWN
MORGAN TOWN
NEWFOUNDLAND
GEORGETOWN
THOMAS TOWN
GLEBELAND
MOUNTAIN HARE
TYDFIL QUAY
CYFARTHFA PARK
Dowlais Great Tip
Cyfarthfa Cinder Tip
Cyfarthfa Castle Grammar School and Museum
Pen-y-garn Wood
Bryn-cae-Owen Pond
Goetre County Primary School
Gwaelodyrarth (School for Nurses)
Allotment Gardens
Football Field
Playing Field
Playing Fields
Hospital
Christ Church
Cae-pant-twyll
Pwll-y-hwyaid
Shaft (Dis)
Shaft Disused
Factory
Bakery
Swimming Baths
Gyrnos Farm
Pandy Farm
Penybryn
Garden City
Pen-y-bryn
Penydarren House
Depot
Offices
Baths
Works
Football Gd
Recn Gd
Cemy (Dis)
Weir
Pant-y-ffyn
Allot Gdns
Hafod
Chap
Sta
Sch
Ch
Chapel
Chips
Brill Hall
Drain
Stone
Spr
Tk
Under Construction
Rough Ground
Wood
The Bunsalow
Goetre Pond
Taff
Afon Taf
River
Canal
Railway
Footbridge
Footbridge
Footbridge

Gurnos
Prince Charles Hospital
Galon Uchaf
Penybryn
Cwm Rhyd-y-Bedd
Gwernllwyn-Bach
Dowlais
Cyfarthfa Park
Pen-y-Darren
MERTHYR TYDFIL
Incline Top
Penydarren (Pen-lard)
Pontmorlais
Thomas Town
Mountain Hare
Williamstown
Nantygwenith
Newtoundland
Glebeland
Industrial Estate
Dowlais Great Tip
Dismantled Railway
Bishop Hedley School
Hockey Field
Playing Field
Allotment Gardens
Youth Centre
Sports Field
Playing Fields
Football Field
Water Works
Gwaunfarren Farm
Pen-y-garn Wood
Gyrnos Farm
Rough Ground
Wood
Bryn-cae-Owen Pond
Castle Wood
Cyfarthfa Castle
Pandy Farm
Thomastown Park
Pant-y-ffyn
Fwll-y-Cwm-yaid
Tip (disused)
Tips (disused)
Factories
Factory
Works
Warehouse
Depot
Sch
Hospl
Chap
Pol Sta
Bus Sta
Tel Ex
Offices
Cemetery (disused)
Football Ground
School
Playing Field
Pavilion
Weir
Subway
Tunnel
Bridge
Track
Spring
Shaft (dis)
Tip (dis)
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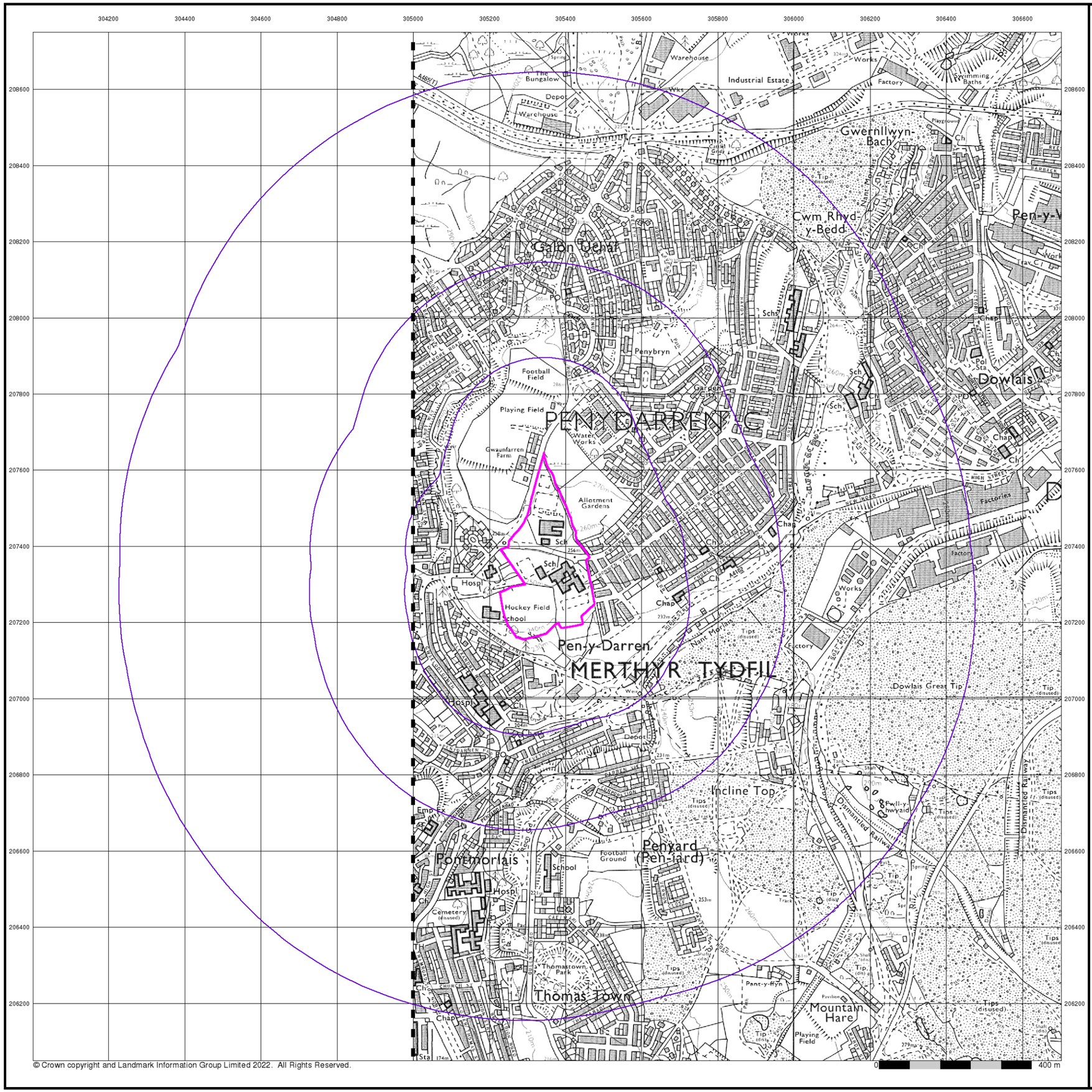
Tips (disused)
Tip (disused)
Tip (dis)
Tip (dis)
Tip (disused)
Tip (disused)
Tip (disused



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Intégral Géotechnique

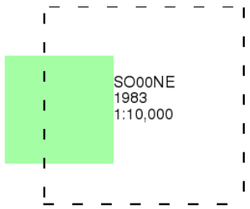
Ordnance Survey Plan

Published 1983

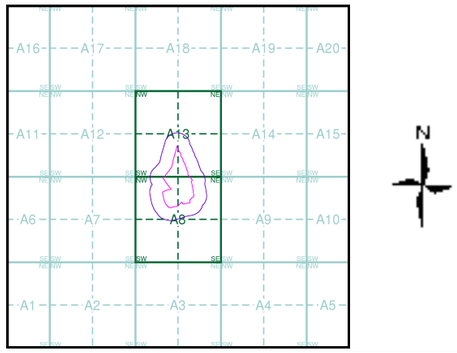
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



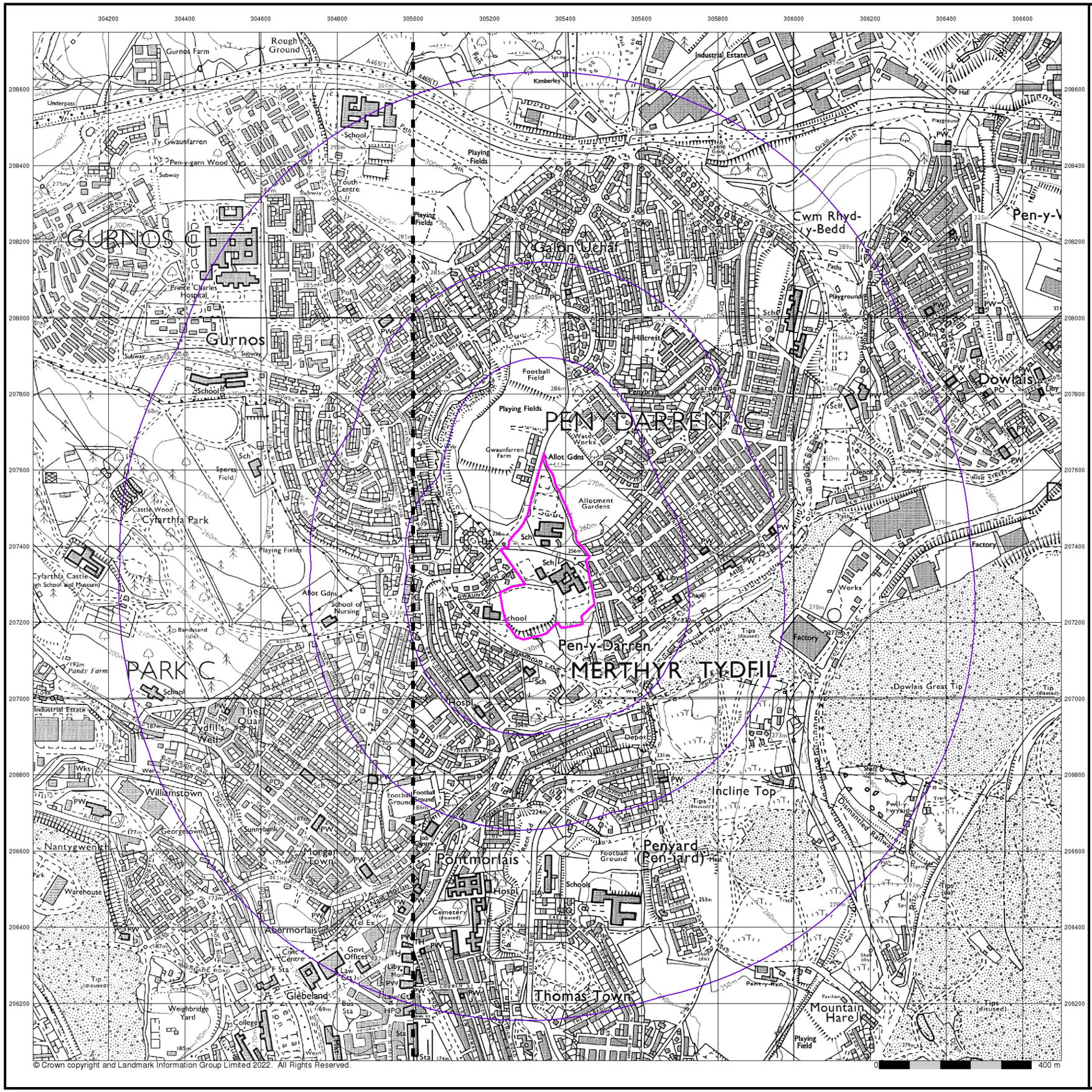
Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Intégral Géotechnique

Ordnance Survey Plan

Published 1992

Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

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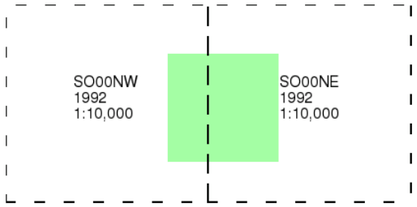
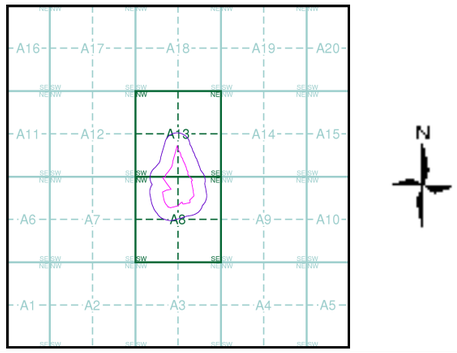


Historical Map - Slice A



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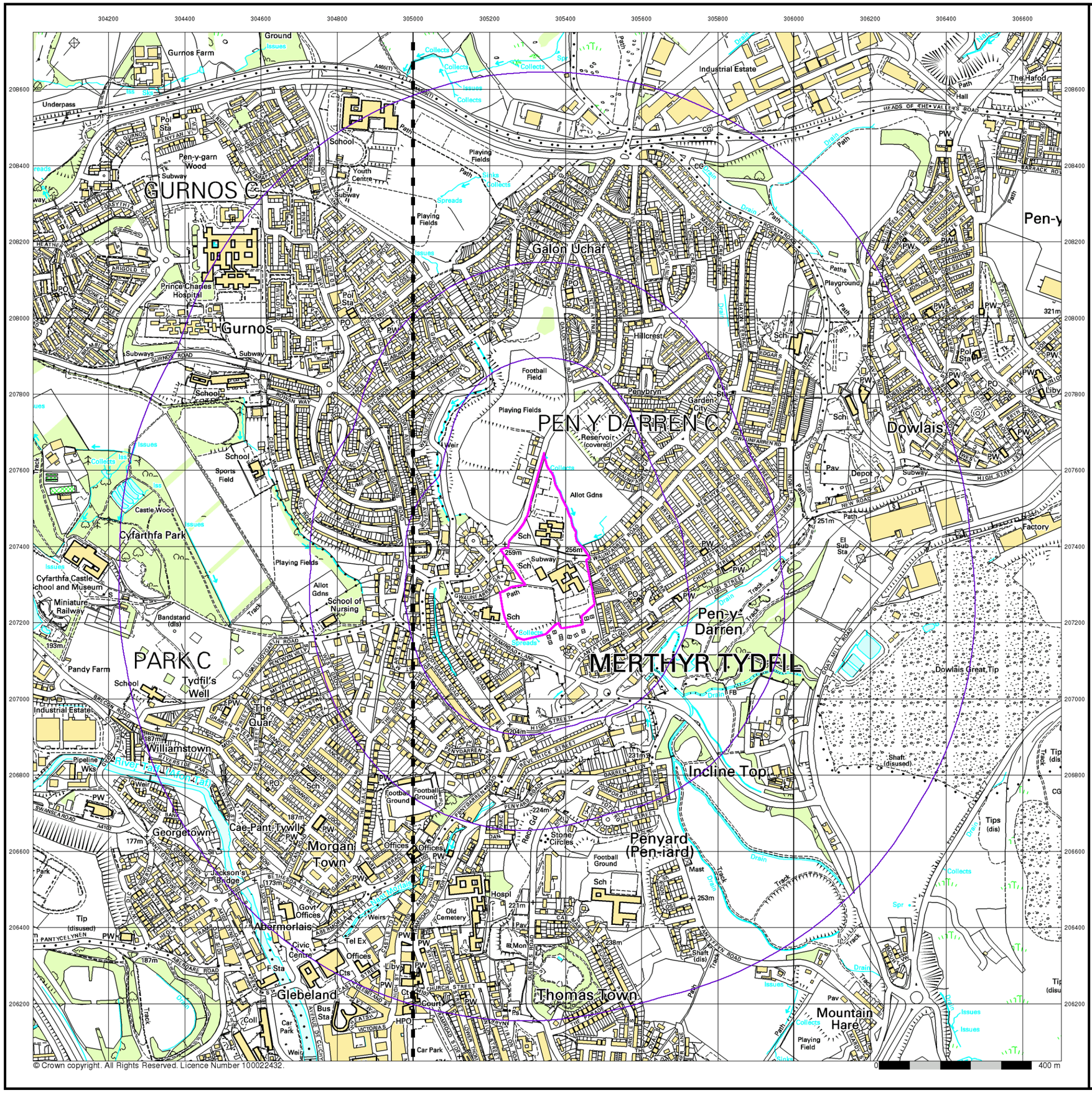

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Intégral Géotechnique

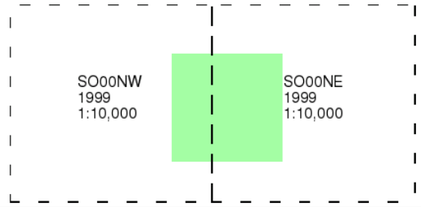
10k Raster Mapping

Published 1999

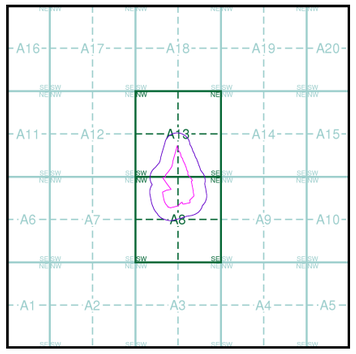
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	299500301_1_1
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National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
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Intégral Géotechnique

10k Raster Mapping

Published 2006

Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

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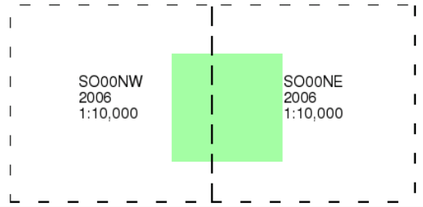
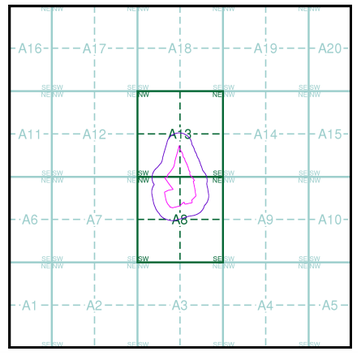


Historical Map - Slice A



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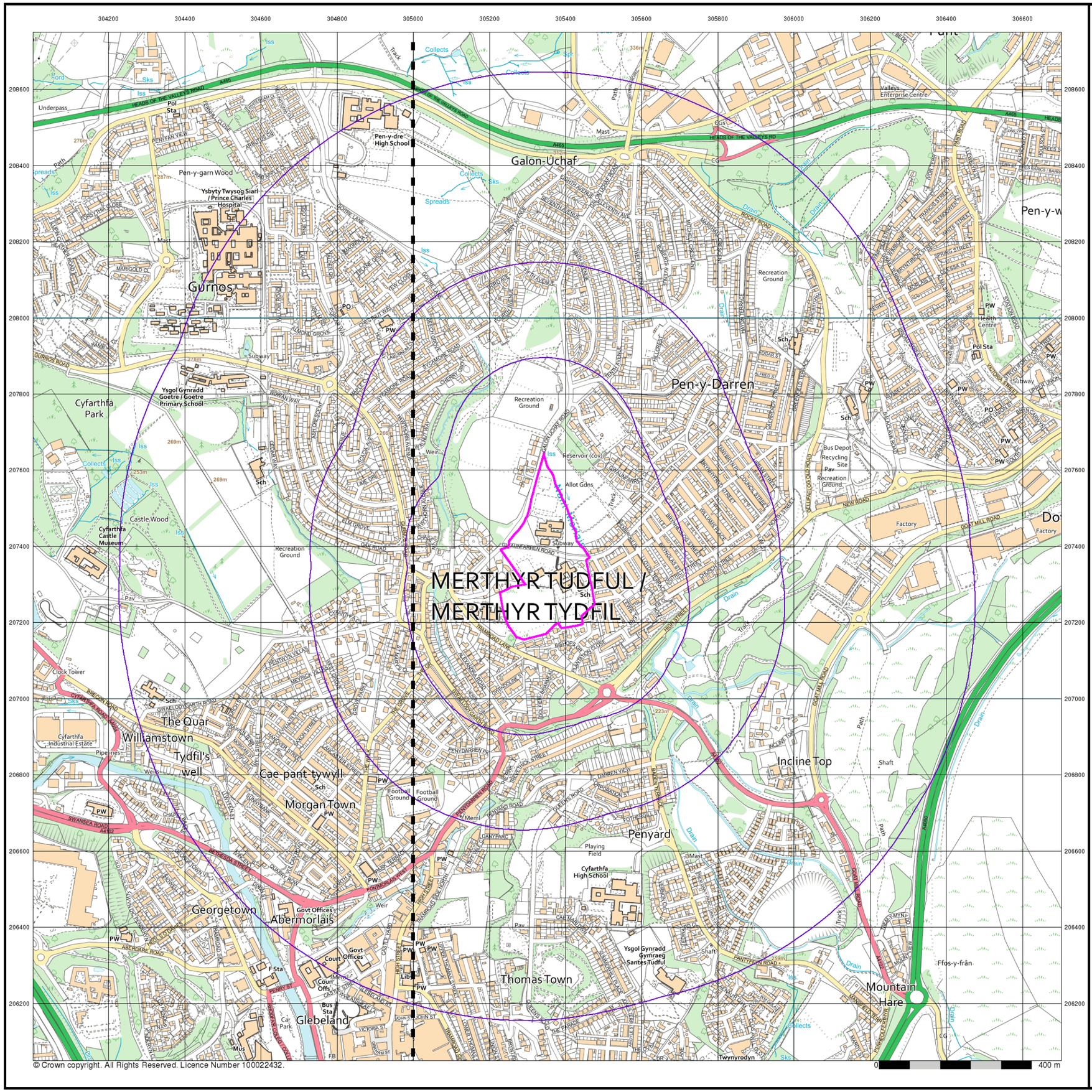

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Intégral Géotechnique

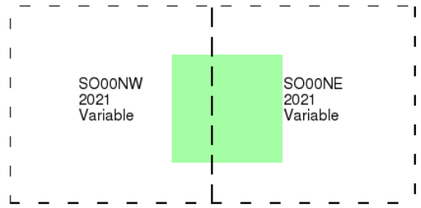
VectorMap Local

Published 2021

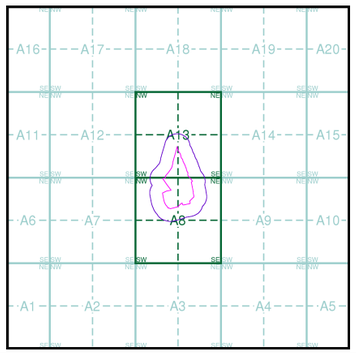
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)



Historical Map - Slice A



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Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
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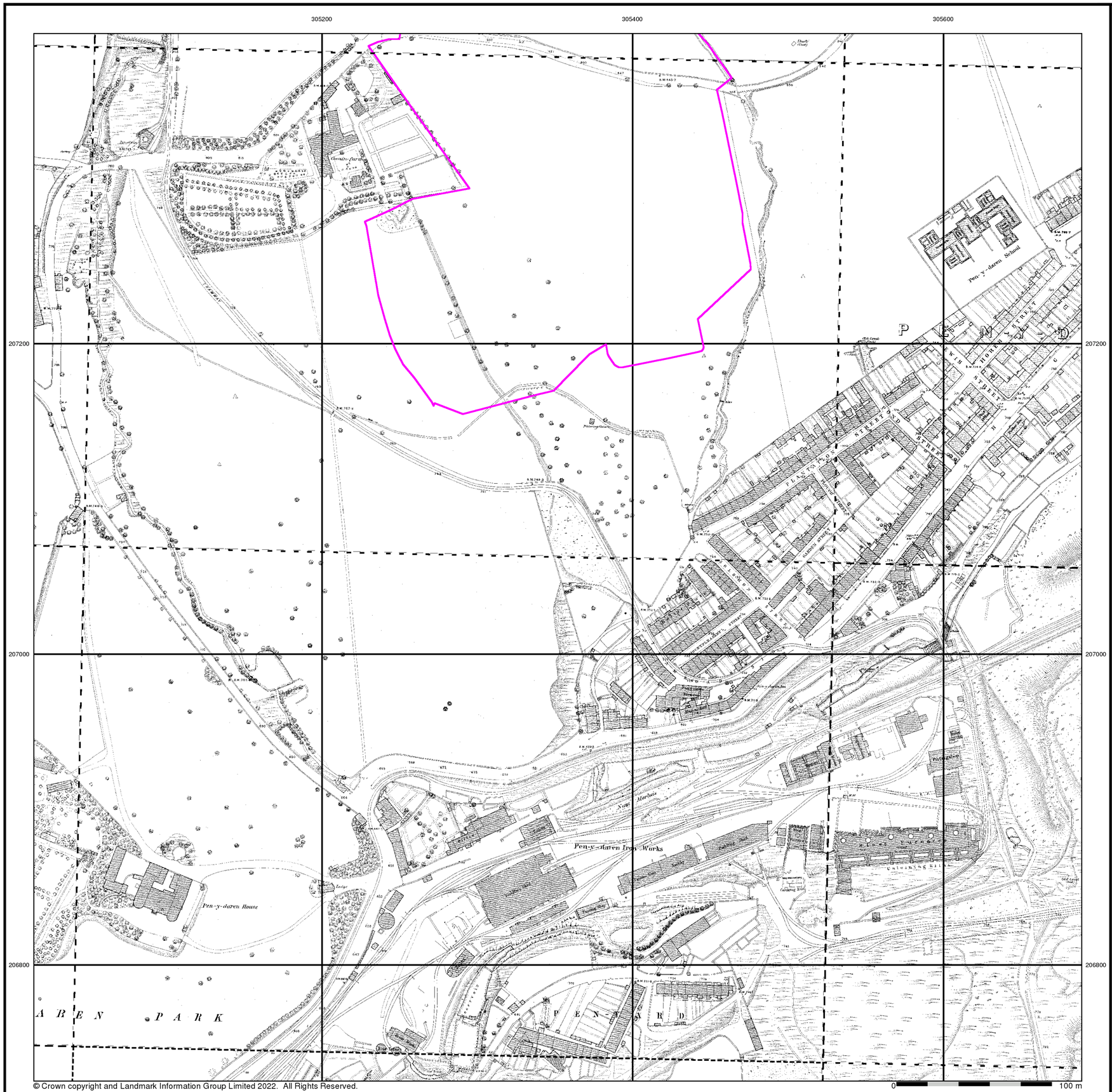
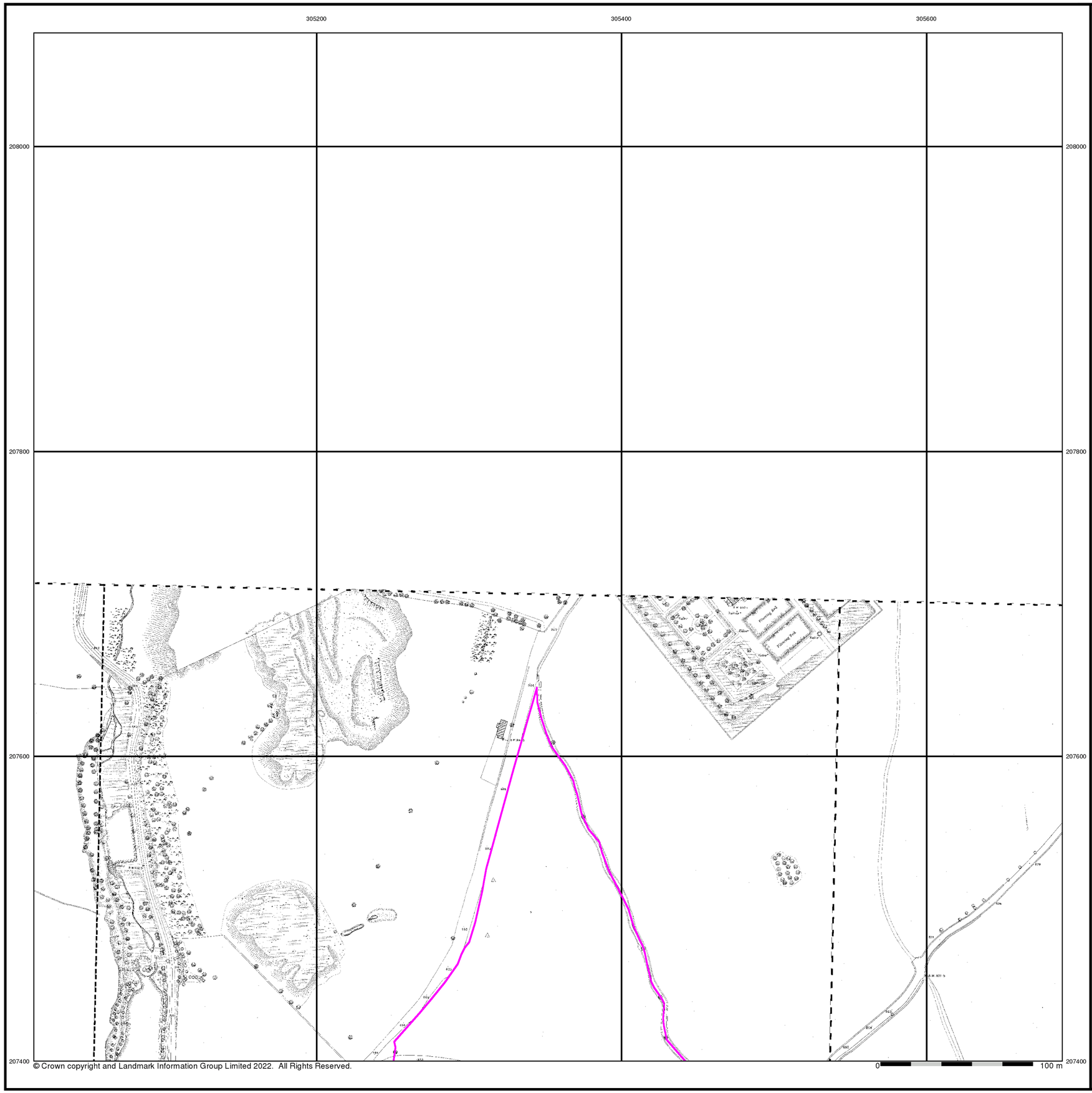

305200
305400
305600
207200
207000
206800
Pen-y-daren Iron Works
Pen-y-daren House
Pen-y-daren School
Nant Morlais
Gas Works
Gas Tank
Gas Tank
Gas Tank



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Intégral Géotechnique

Glamorganshire

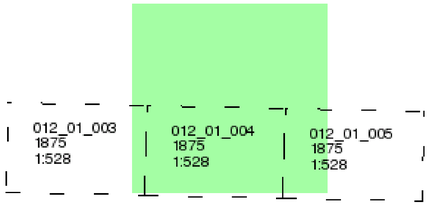
Published 1875

Source map scale - 1:528

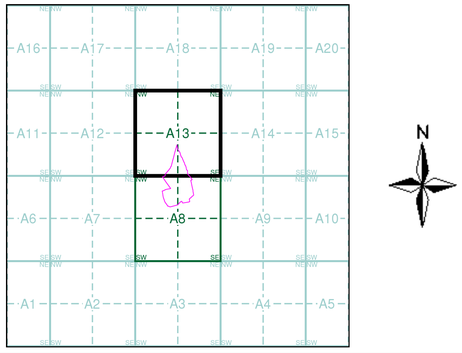
The 1:528 scale Ordnance Survey mapping was adopted in 1850 as an alternative to the 1:1056 scale, that had been deemed to be inadequate for sanitary planning, which had come very much to the fore following the passing of the Public Health Act of 1948. Around 29 towns in England and Wales were surveyed at this scale, the bulk of which were undertaken between 1850 and 1855. These were predominantly towns that were outside the areas being surveyed at 1:10,560 or 1:2500 scale. As well as showing the details characteristic of the later 1:500 plans, they show features of sanitary interest such as privies, taps, cow houses, cess pits, brew and bake houses and cart sheds and stables.

Please note: Due to the partial coverage of Historical Town Plans, it is possible that not all segments within an order will contain mapping. Only the segments that have Town Plan coverage will be generated.

Map Name(s) and Date(s)



Historical Town Plan - Segment A13



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	0

Site Details

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Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500

Quarry
Gravel Pit
Sand Pit
Clay Pit
Shingle
Refuse Heap
Sloping Masonry
Flat Rock
Marsh
Reeds
Osiers
Rough Pasture
Furze
Wood
Mixed Wood
Brushwood
Orchard
Fir
Ford
Stepping Stones
Ferry
Waterfall
Lock
Trig. Station
507 Altitude at Trig. Station
B.M.325·9 Bench Mark
342 Surface Level
Arrow denotes flow of water
Antiquities (site of)
Cutting
Embankment
Railway crossing Road
Level Crossing
Road crossing Railway
Railway crossing River or Canal
Road over single stream
Road over River or Canal

County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250

Inactive Quarry, Chalk Pit or Clay Pit
Active Quarry, Chalk Pit or Clay Pit
Rock
Boulders
Cliff
Slopes
Top
Roofed Building
Glazed Roof Building
Sloping Masonry
Archway
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
Bench Mark
Antiquity (site of)
Cave Entrance
Triangulation Station
Electricity Pylon
Electricity Transmission Line

County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy London Borough Boundary
Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250

Cliff
Slopes
Top
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Positioned Boulder
Scree
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
Triangulation Station
Antiquity (site of)
Electricity Transmission Line
Electricity Pylon
BM 291.60m Bench Mark
Buildings with Building Seed
Roofed Building
Glazed Roof Building

Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

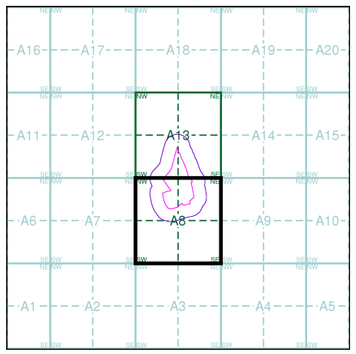
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:2,500	1875	2
Glamorganshire	1:2,500	1900	3
Brecknockshire	1:2,500	1904	4
Brecknockshire	1:2,500	1919	5
Ordnance Survey Plan	1:1,250	1957	6
Additional SIMs	1:1,250	1957 - 1989	7
Ordnance Survey Plan	1:2,500	1958 - 1963	8
Ordnance Survey Plan	1:1,250	1963 - 1972	9
Ordnance Survey Plan	1:1,250	1970	10
Supply of Unpublished Survey Information	1:1,250	1975	11
Additional SIMs	1:1,250	1985 - 1988	12
Additional SIMs	1:1,250	1989	13
Large-Scale National Grid Data	1:1,250	1993	14
Large-Scale National Grid Data	1:1,250	1994 - 1995	15
Large-Scale National Grid Data	1:1,250	1995	16
Historical Aerial Photography	1:2,500	2001	17

Historical Map - Segment A8



Order Details

Order Number: 299500301_1_1
Customer Ref: 14075/LP
National Grid Reference: 305350, 207380
Slice: A
Site Area (Ha): 6.79
Search Buffer (m): 100

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
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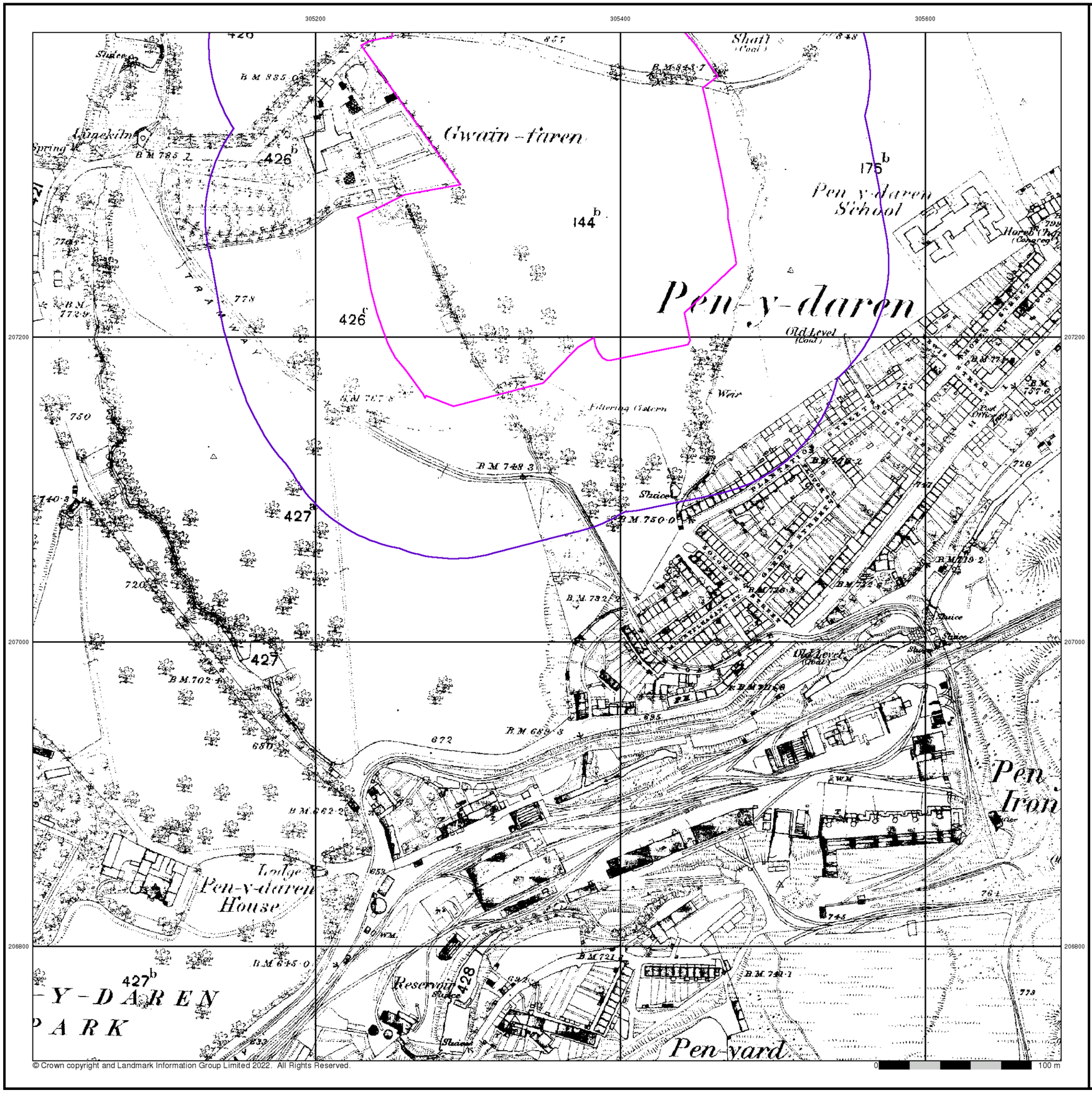

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0 100 m

Intégral Géotechnique

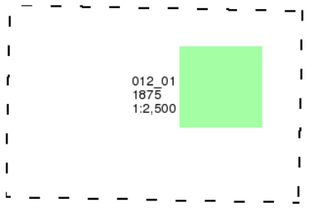
Glamorganshire

Published 1875

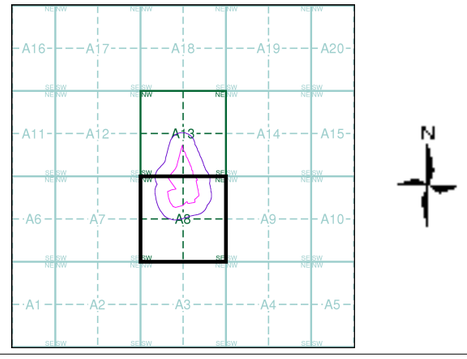
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A8



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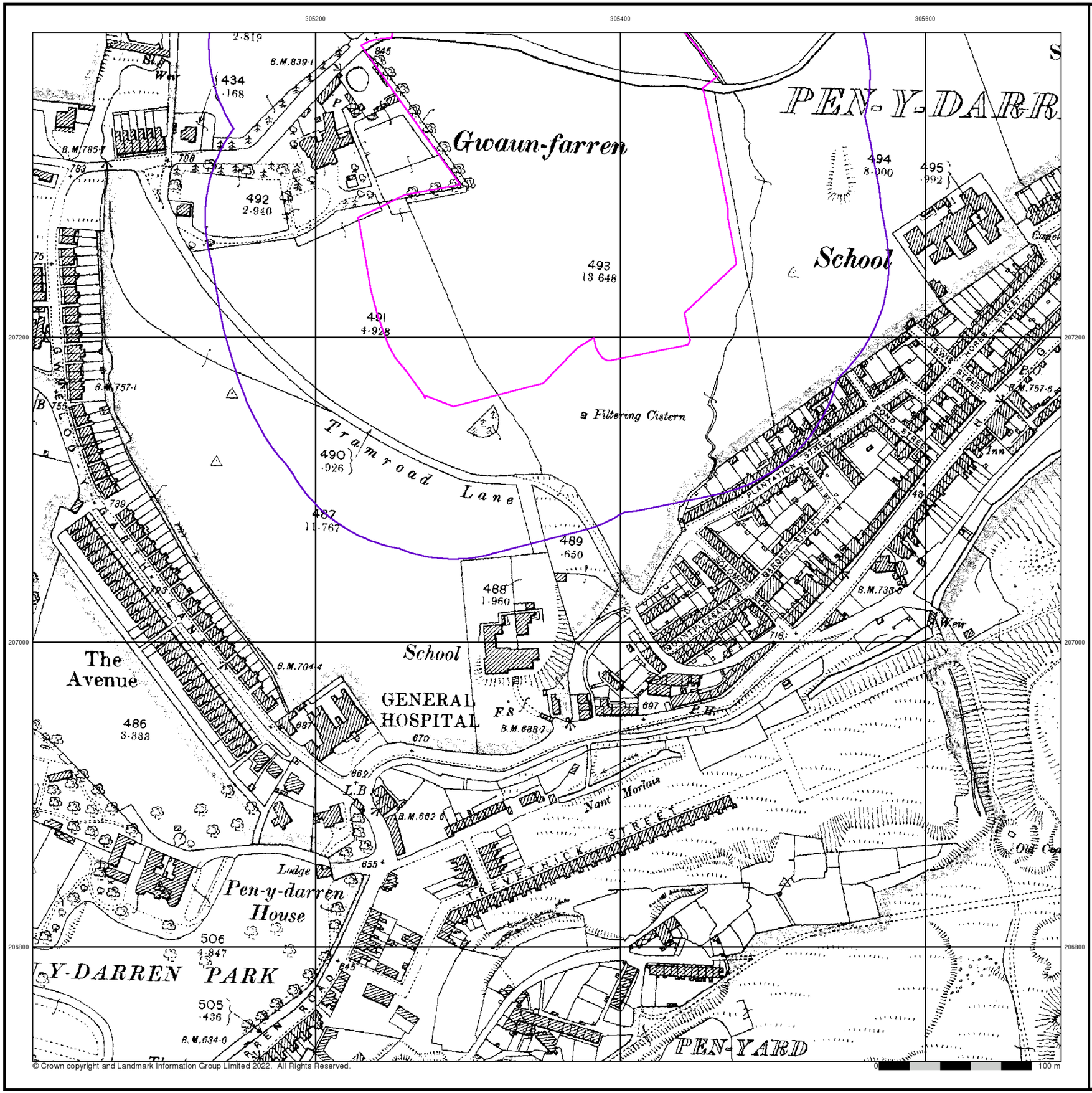

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Intégral Géotechnique

Glamorganshire

Published 1900

Source map scale - 1:2,500

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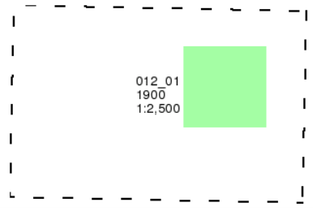
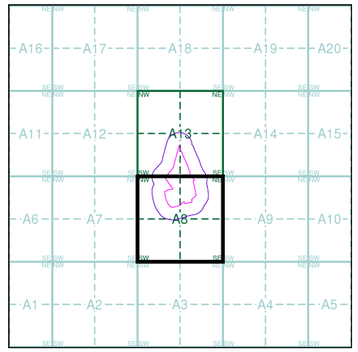


Historical Map - Segment A8



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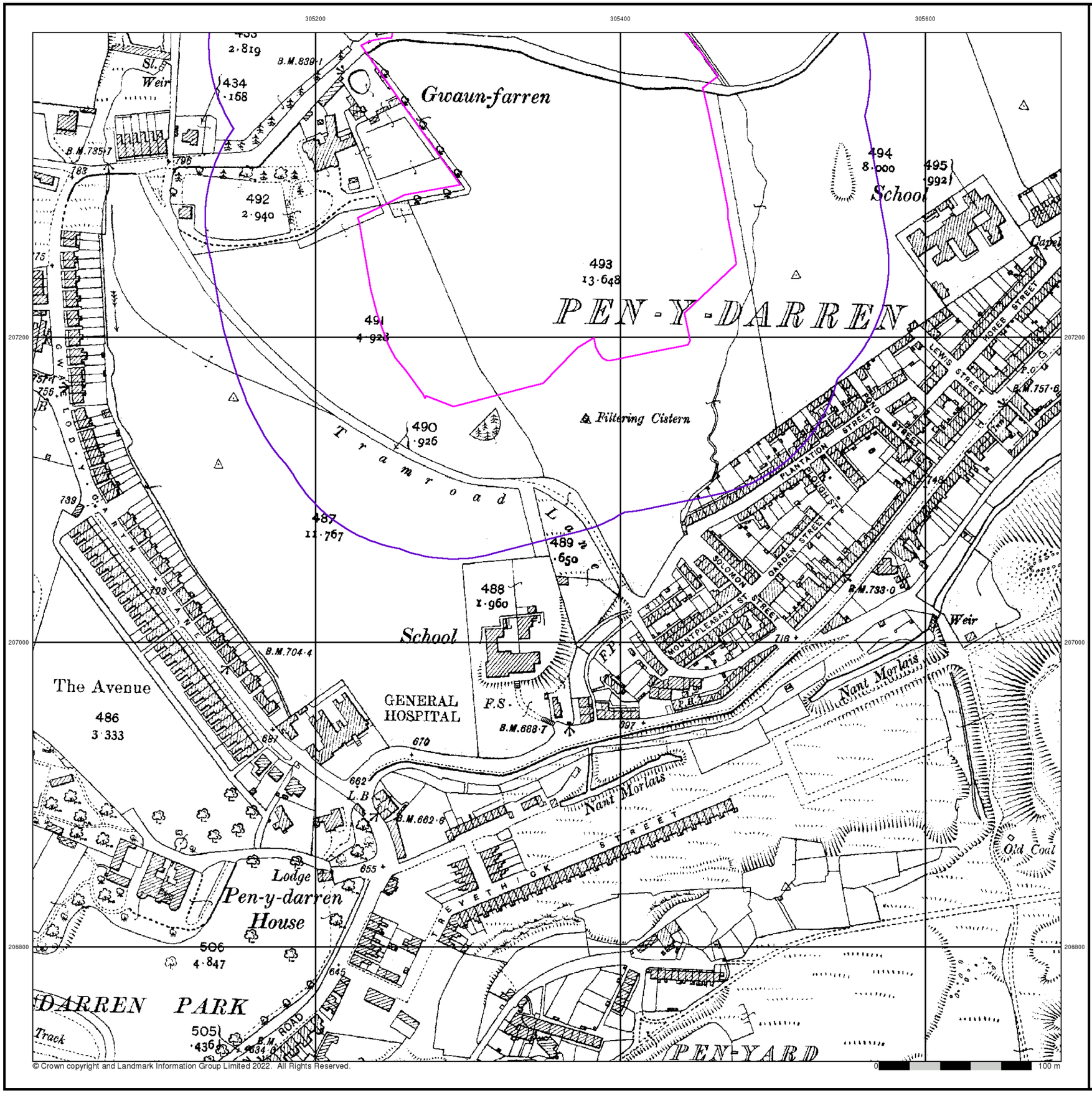

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Intégral Géotechnique

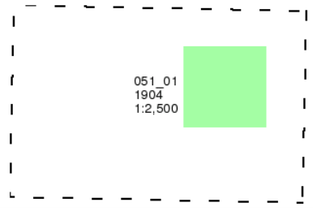
Brecknockshire

Published 1904

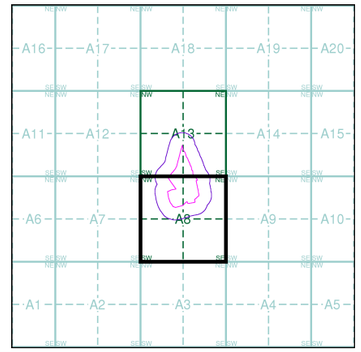
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A8



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

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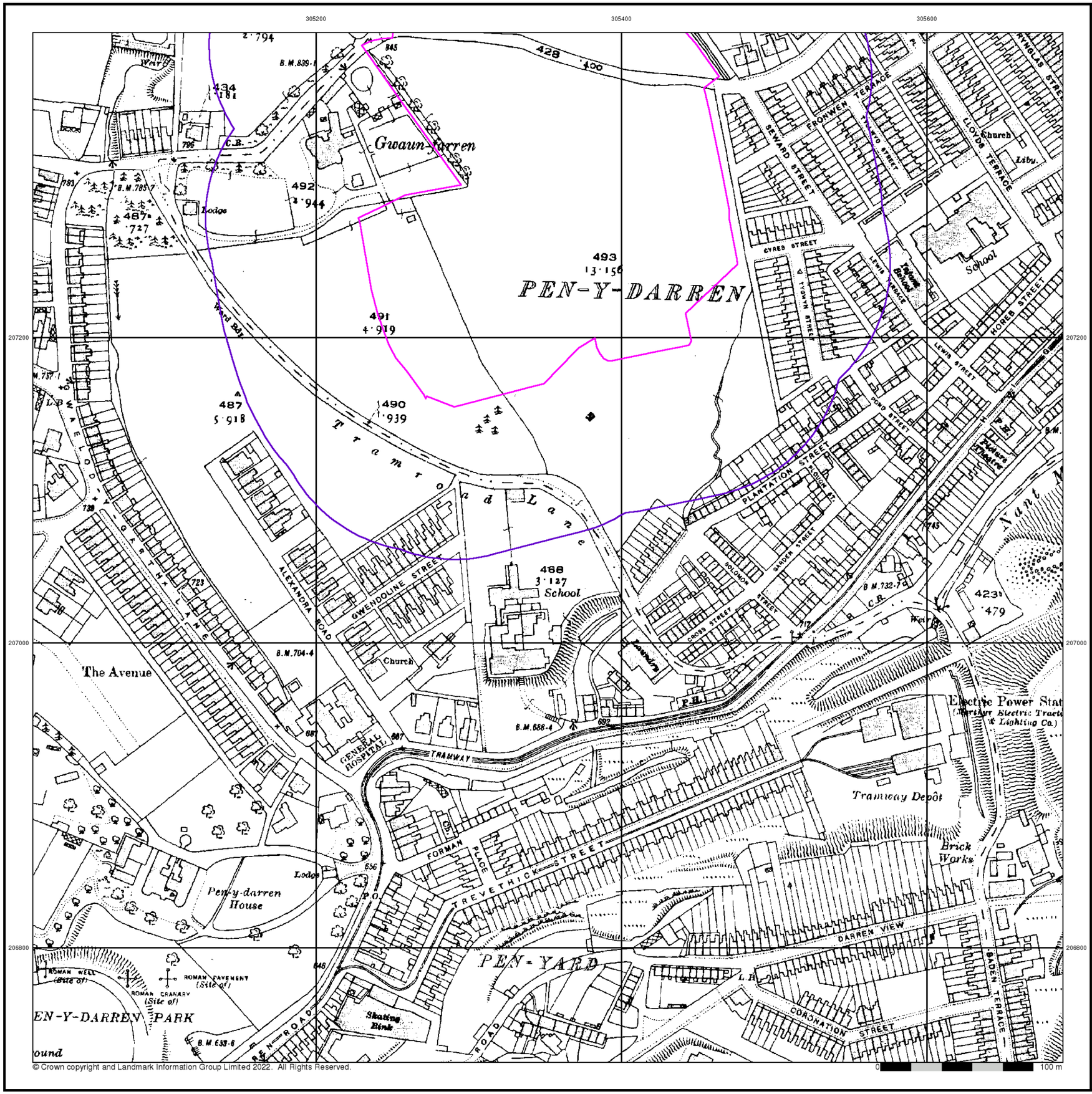
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Intégral Géotechnique

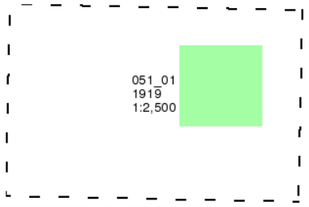
Brecknockshire

Published 1919

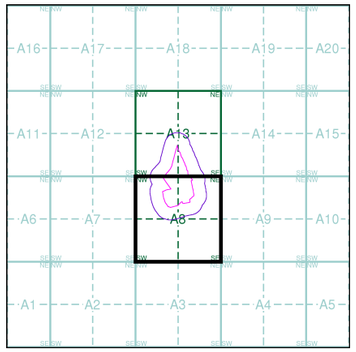
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A8



Order Details

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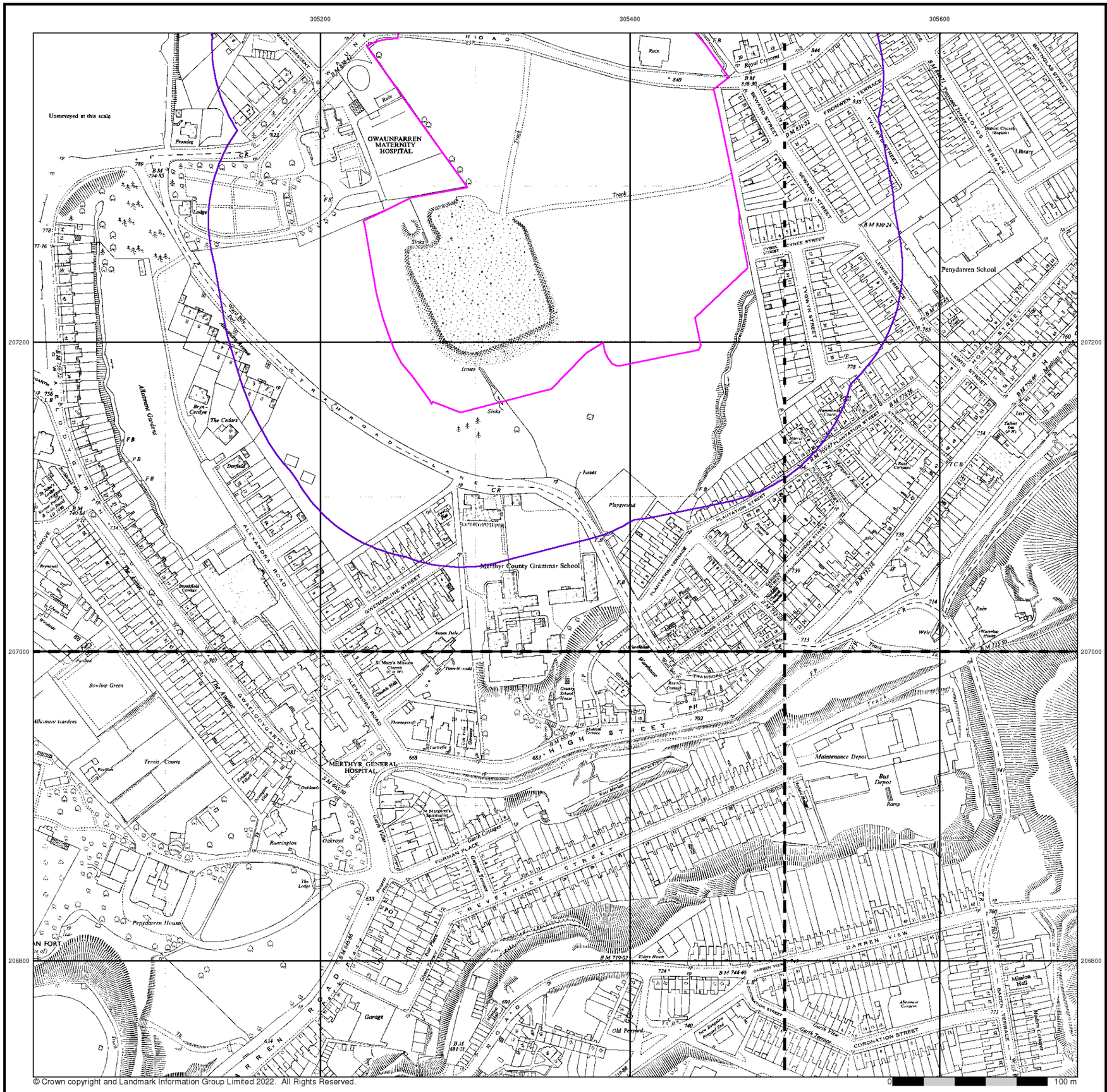


Intégral Géotechnique

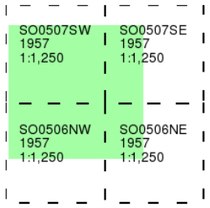
Ordnance Survey Plan

Published 1957

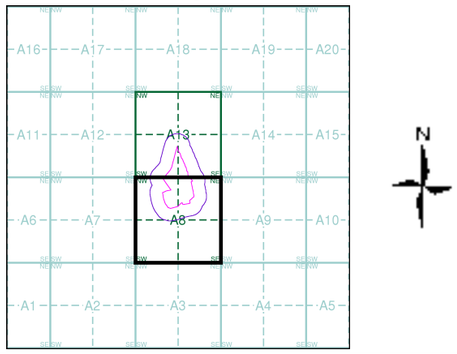
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A8



Order Details

Order Number:	299500301_1_1
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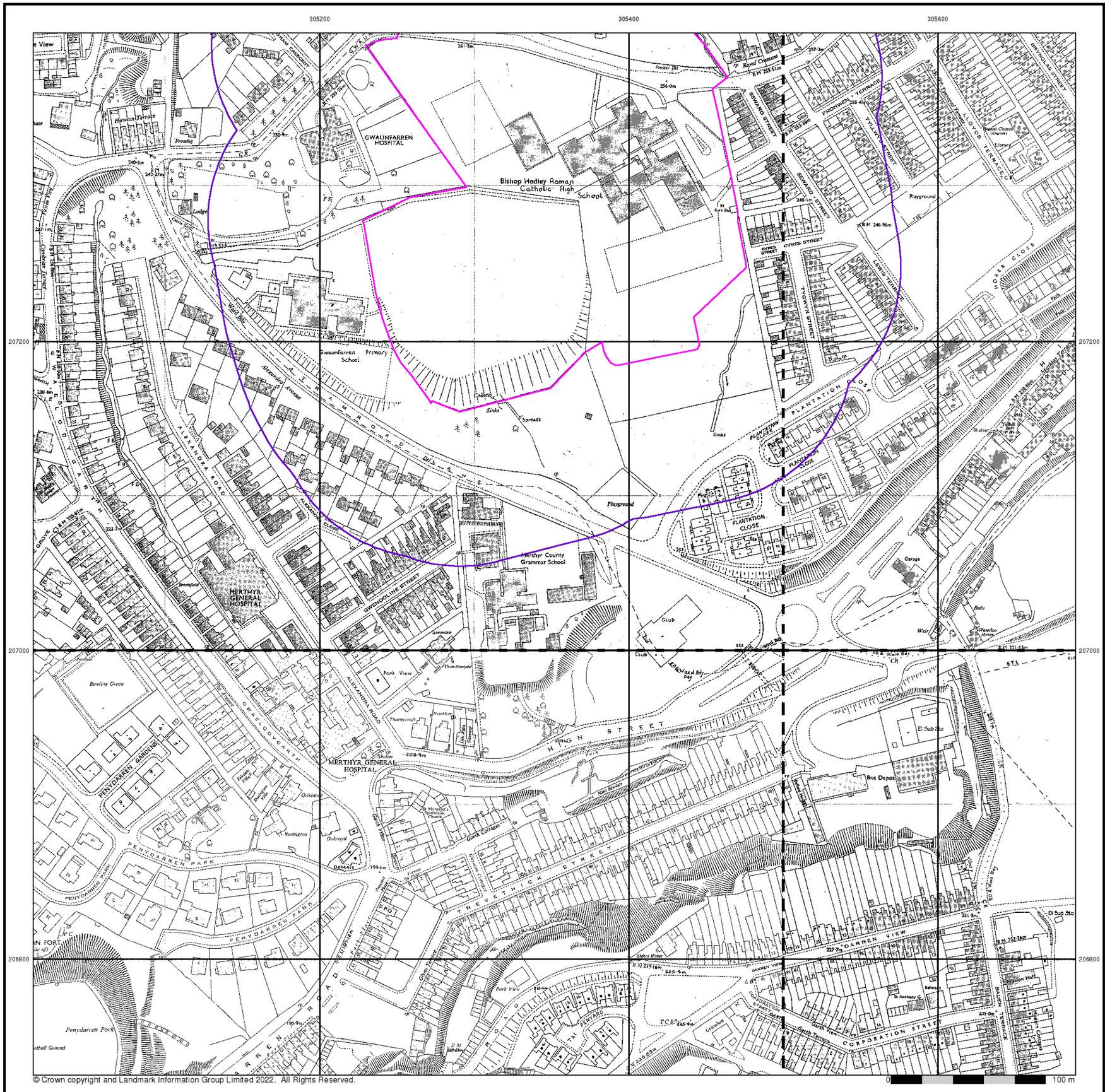

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Intégral Géotechnique

Additional SIMs

Published 1957 - 1989

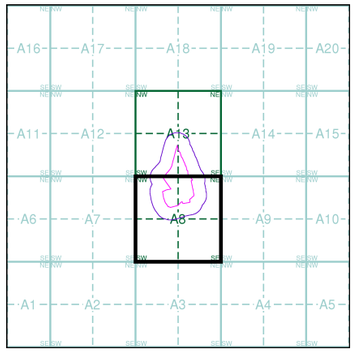
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SO0507SW 1979 1:1,250	SO0507SE 1957 1:1,250
SO0506NW 1982 1:1,250	SO0506NE 1989 1:1,250

Historical Map - Segment A8



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Intégral Géotechnique

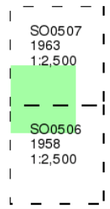
Ordnance Survey Plan

Published 1958 - 1963

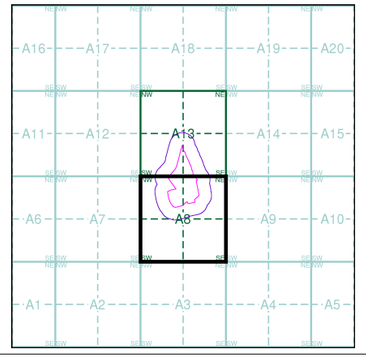
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A8



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Order Number:	299500301_1_1
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National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

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Intégral Géotechnique

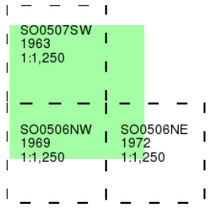
Ordnance Survey Plan

Published 1963 - 1972

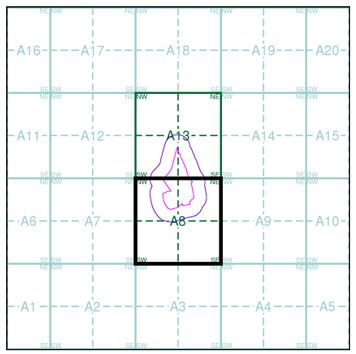
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A8



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
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Intégral Géotechnique

Ordnance Survey Plan

Published 1970

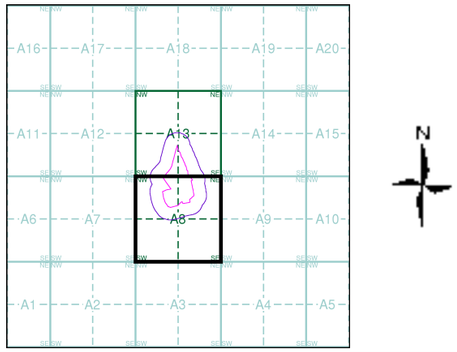
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SO0507SW
1970
1:1,250

Historical Map - Segment A8



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

Site Details

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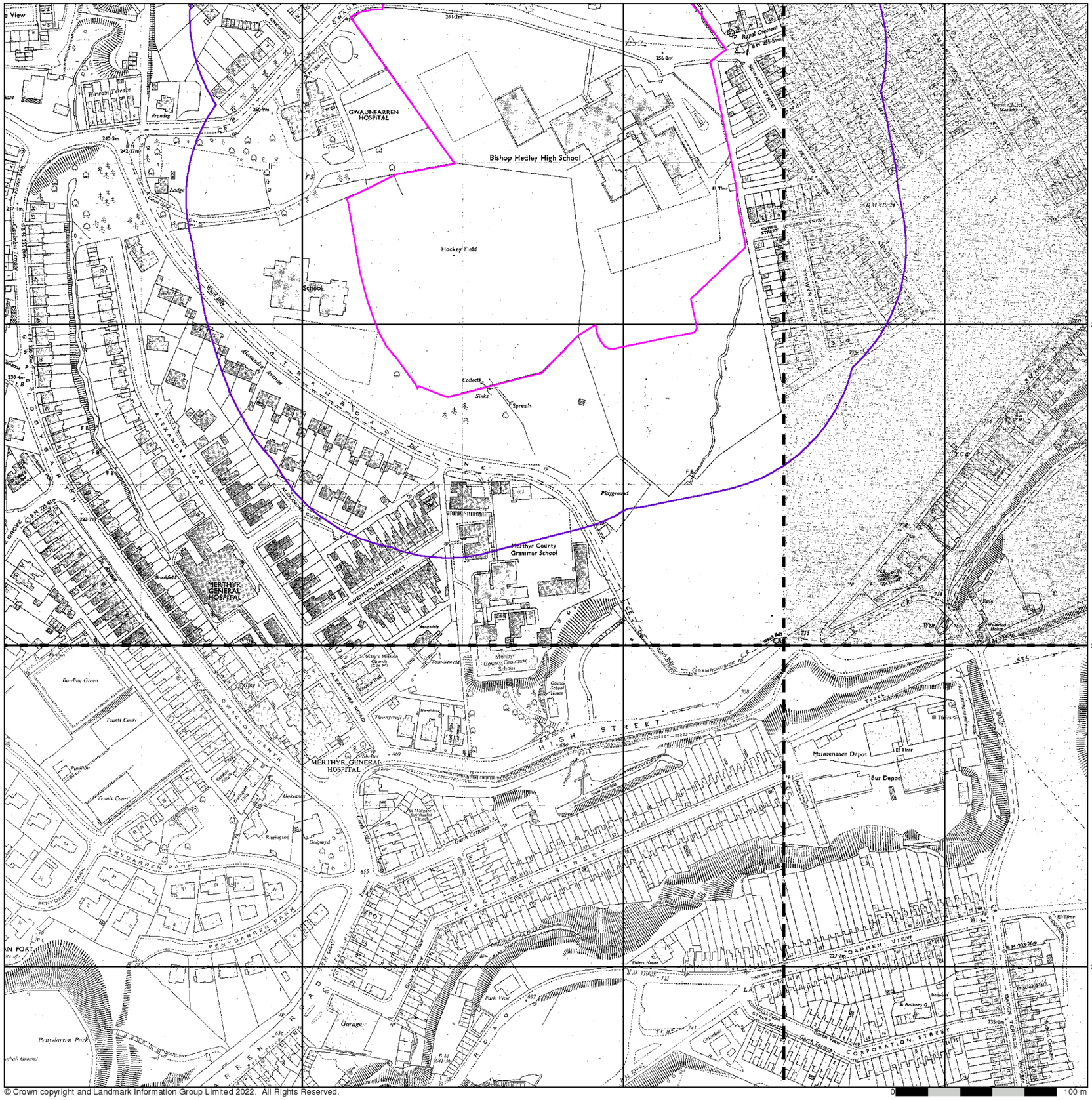

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Intégral Géotechnique

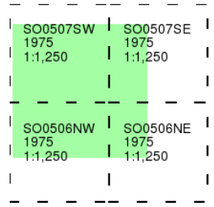
Supply of Unpublished Survey Information

Published 1975

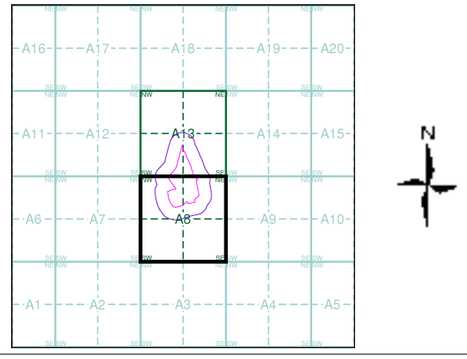
Source map scale - 1:1,250

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A8



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
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Site Details

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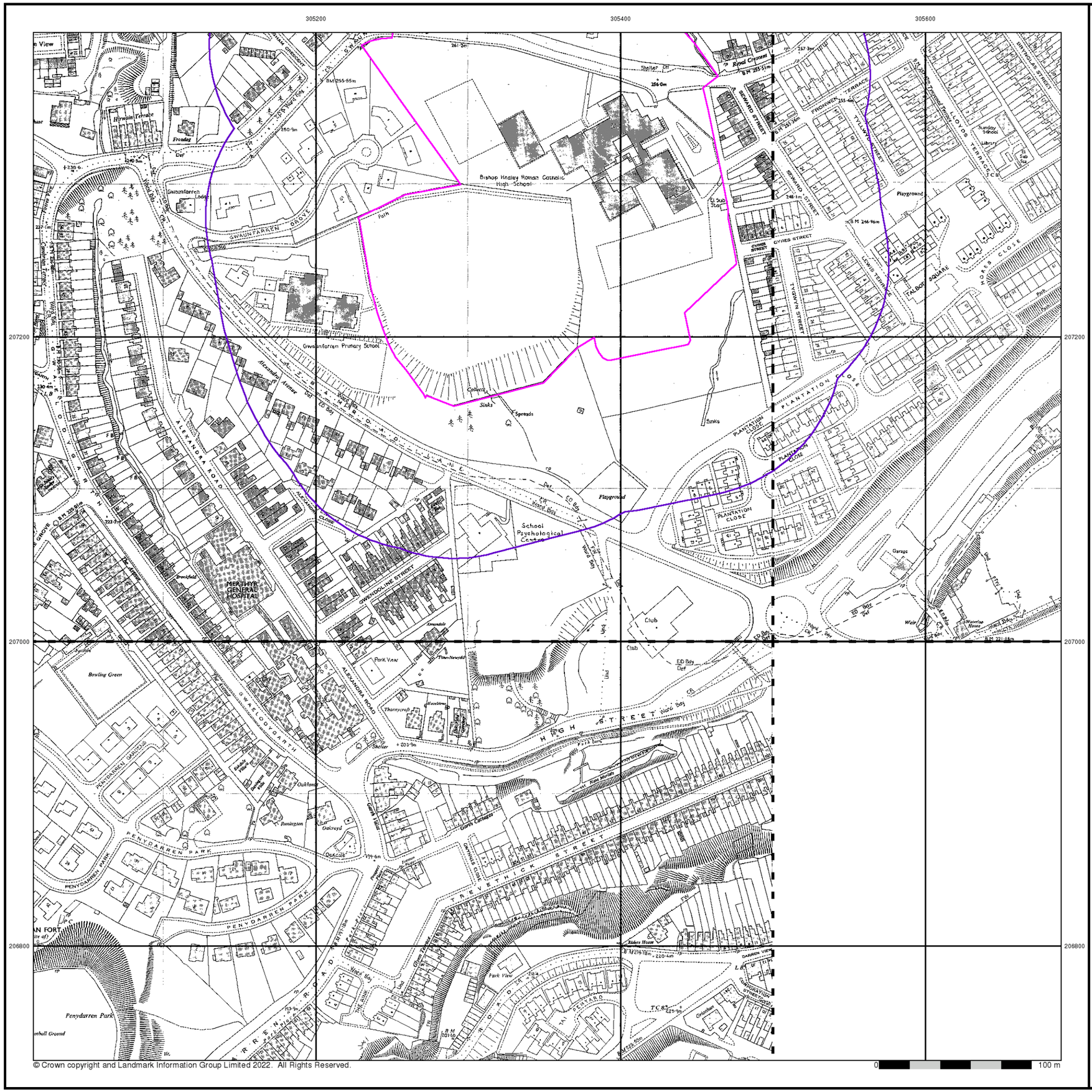

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Intégral Géotechnique

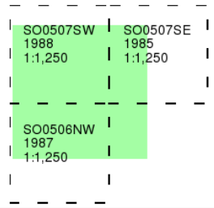
Additional SIMs

Published 1985 - 1988

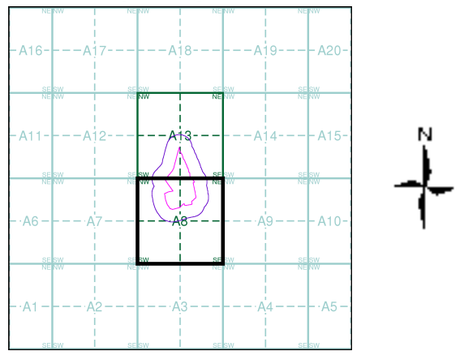
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A8



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Order Number:	299500301_1_1
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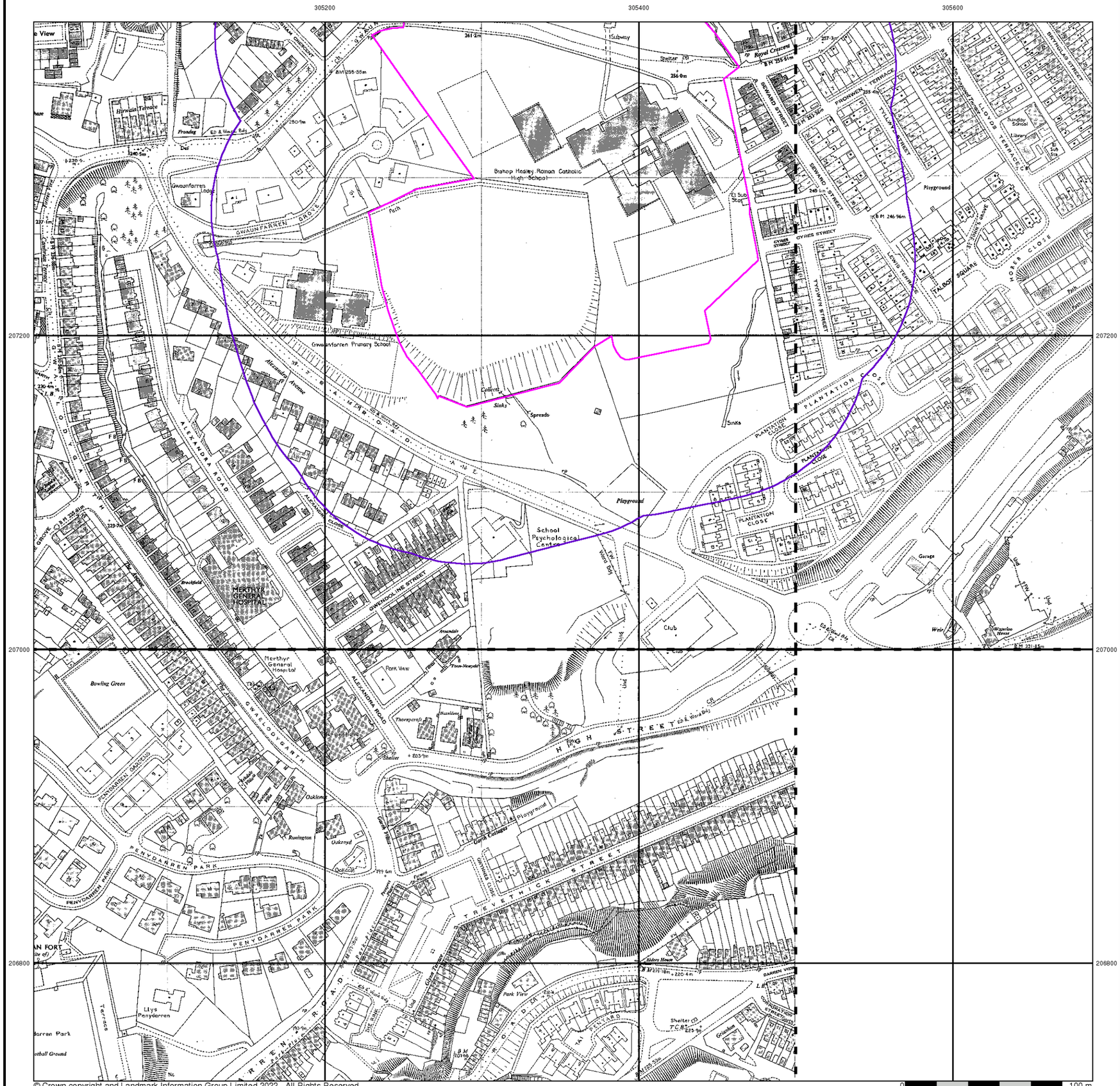


Intégral Géotechnique

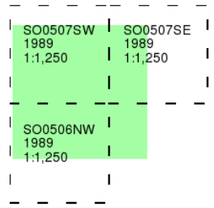
Additional SIMs

Published 1989

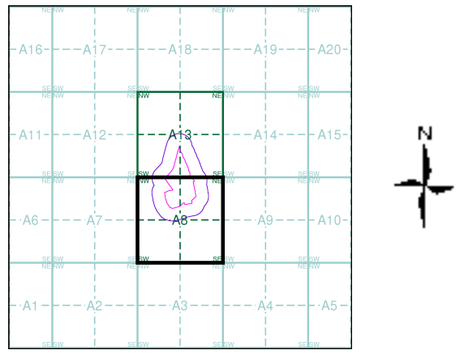
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A8



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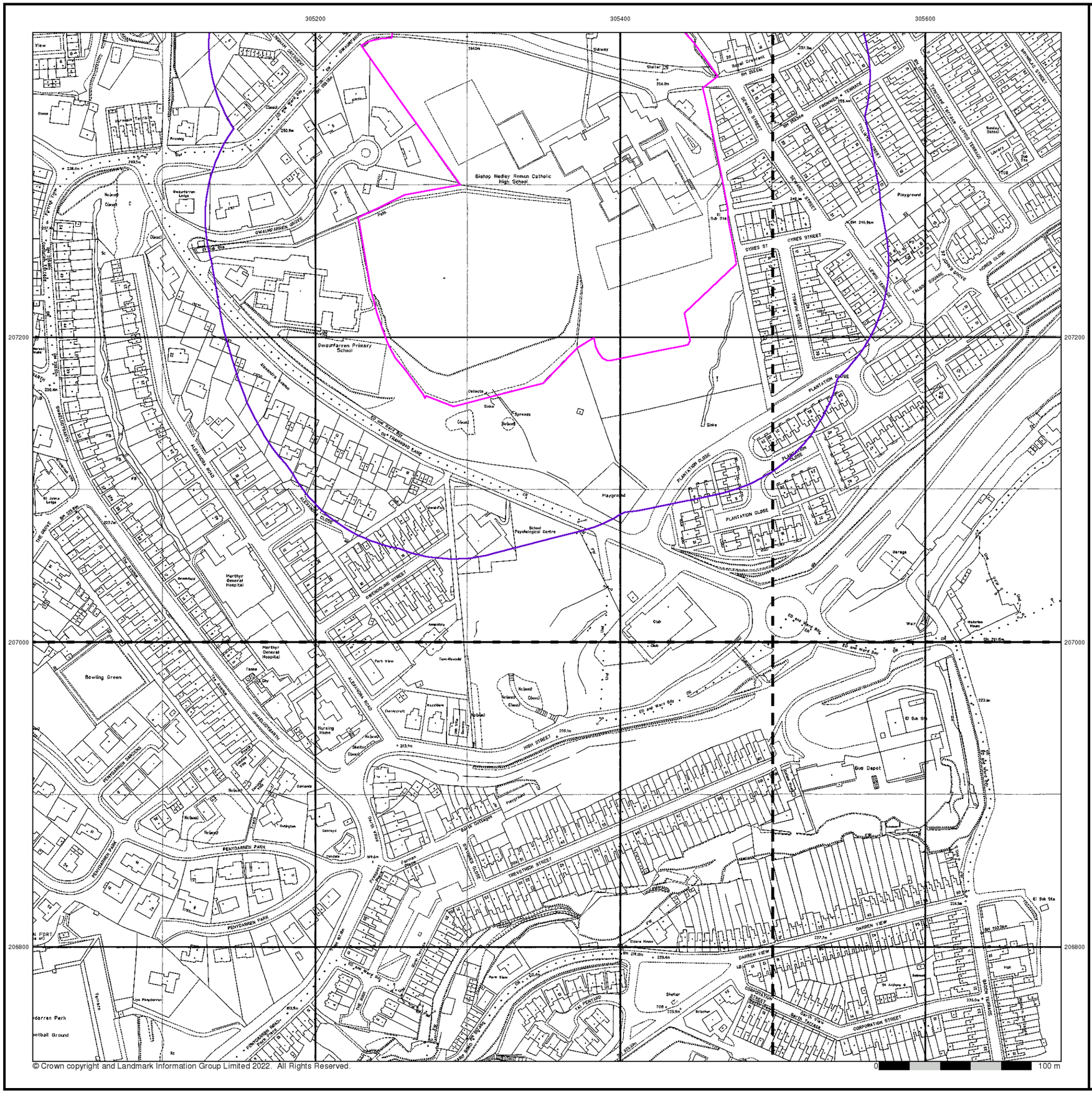
305200
305400
305600
207200
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206800
Bishop Hedley Roman Catholic High School
Gwaunfarren Primary School
Playground
Merthyr General Hospital
Bowling Green
Nursing Home
Bus Depot
Club
Playground
School Psychological Centre
Sunday School
Library
Garage
Weir
Shelter
Sub Sta
Sinks
Spreads
Collects
Sidewalk
Shelter
Park
Pond
Gwaunfarren Grove
Alexandra Road
Gwaunfarren Road
Pentdarren Ground
Pentdarren Park
Pentdarren Road
Pentdarren Drive
Pentdarren Close
Pentdarren Avenue
Pentdarren Place
Pentdarren Terrace
Pentdarren Square
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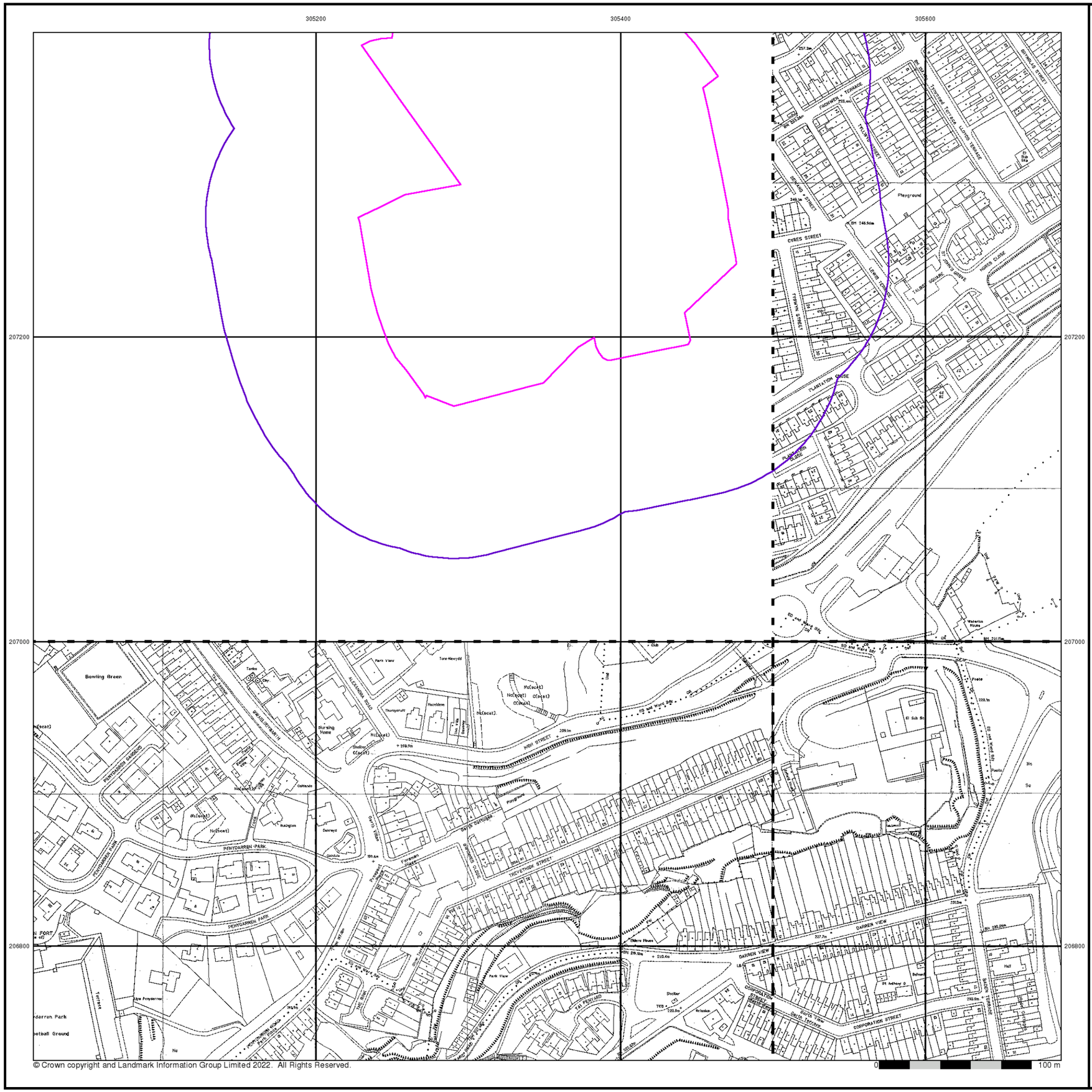
Dr Jenkins Close
Dr Jenkins Drive
Dr Jenkins Grove
Dr Jenkins Avenue
Dr Jenkins Street



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Intégral Géotechnique

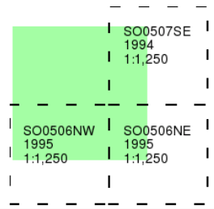
Large-Scale National Grid Data

Published 1994 - 1995

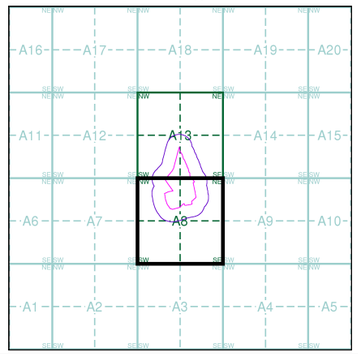
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A8



Order Details

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Search Buffer (m):	100

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0 100 m

Intégral Géotechnique

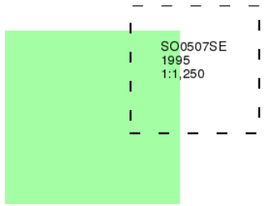
Large-Scale National Grid Data

Published 1995

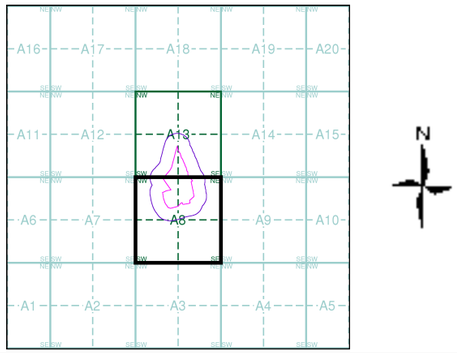
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A8



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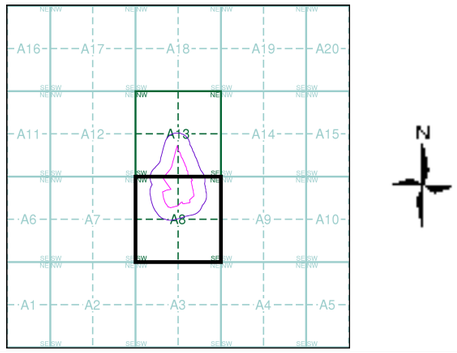
Intégral Géotechnique

Historical Aerial Photography

Published 2001

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A8



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

Site Details

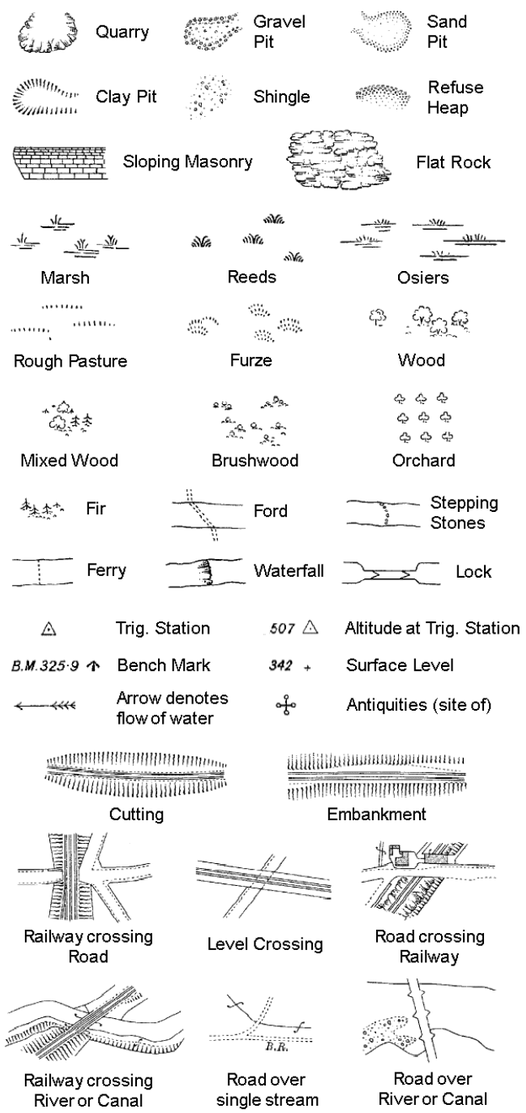
Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Historical Mapping Legends

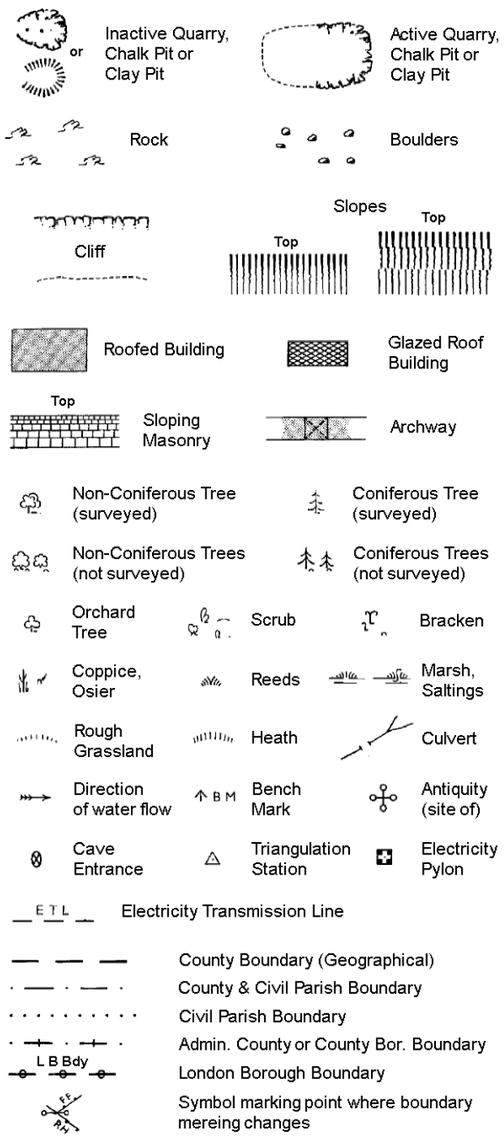
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

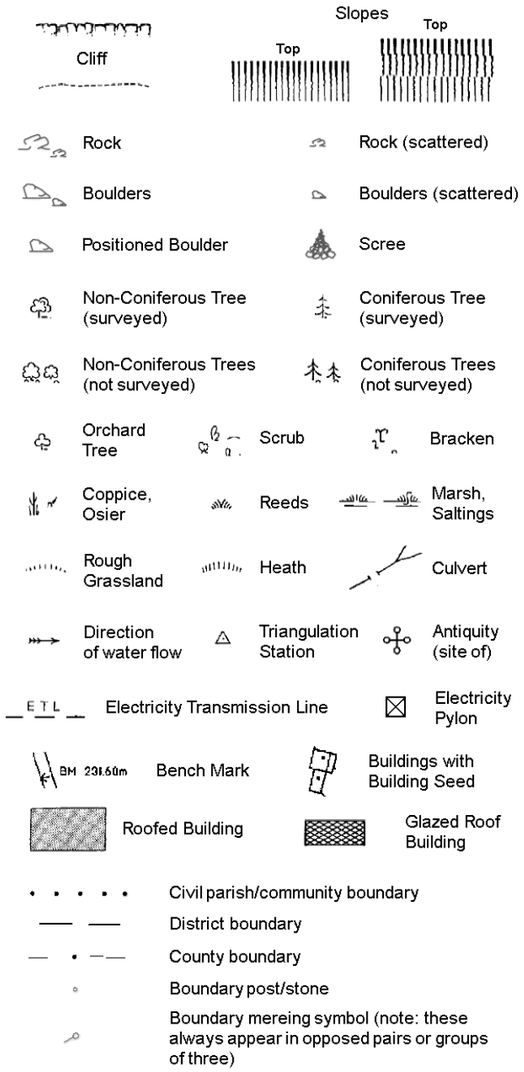
Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy London Borough Boundary
Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



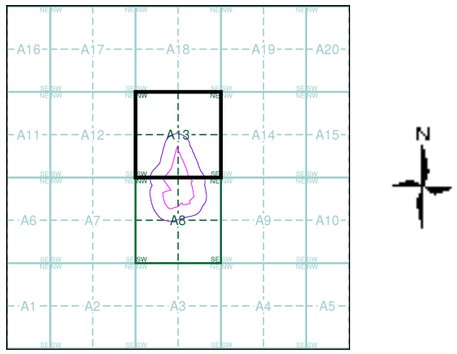
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:2,500	1875	2
Brecknockshire	1:2,500	1887	3
Glamorganshire	1:2,500	1900	4
Brecknockshire	1:2,500	1904	5
Brecknockshire	1:2,500	1919	6
Ordnance Survey Plan	1:1,250	1956 - 1957	7
Additional SIMs	1:1,250	1957 - 1988	8
Ordnance Survey Plan	1:2,500	1963 - 1964	9
Ordnance Survey Plan	1:1,250	1963 - 1971	10
Ordnance Survey Plan	1:1,250	1970	11
Supply of Unpublished Survey Information	1:1,250	1975	12
Additional SIMs	1:1,250	1985 - 1989	13
Ordnance Survey Plan	1:2,500	1986	14
Additional SIMs	1:1,250	1989	15
Large-Scale National Grid Data	1:1,250	1993	16
Large-Scale National Grid Data	1:1,250	1994	17
Large-Scale National Grid Data	1:1,250	1995	18
Historical Aerial Photography	1:2,500	2001	19

Historical Map - Segment A13



Order Details

Order Number: 299500301_1_1
Customer Ref: 14075/LP
National Grid Reference: 305350, 207380
Slice: A
Site Area (Ha): 6.79
Search Buffer (m): 100

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

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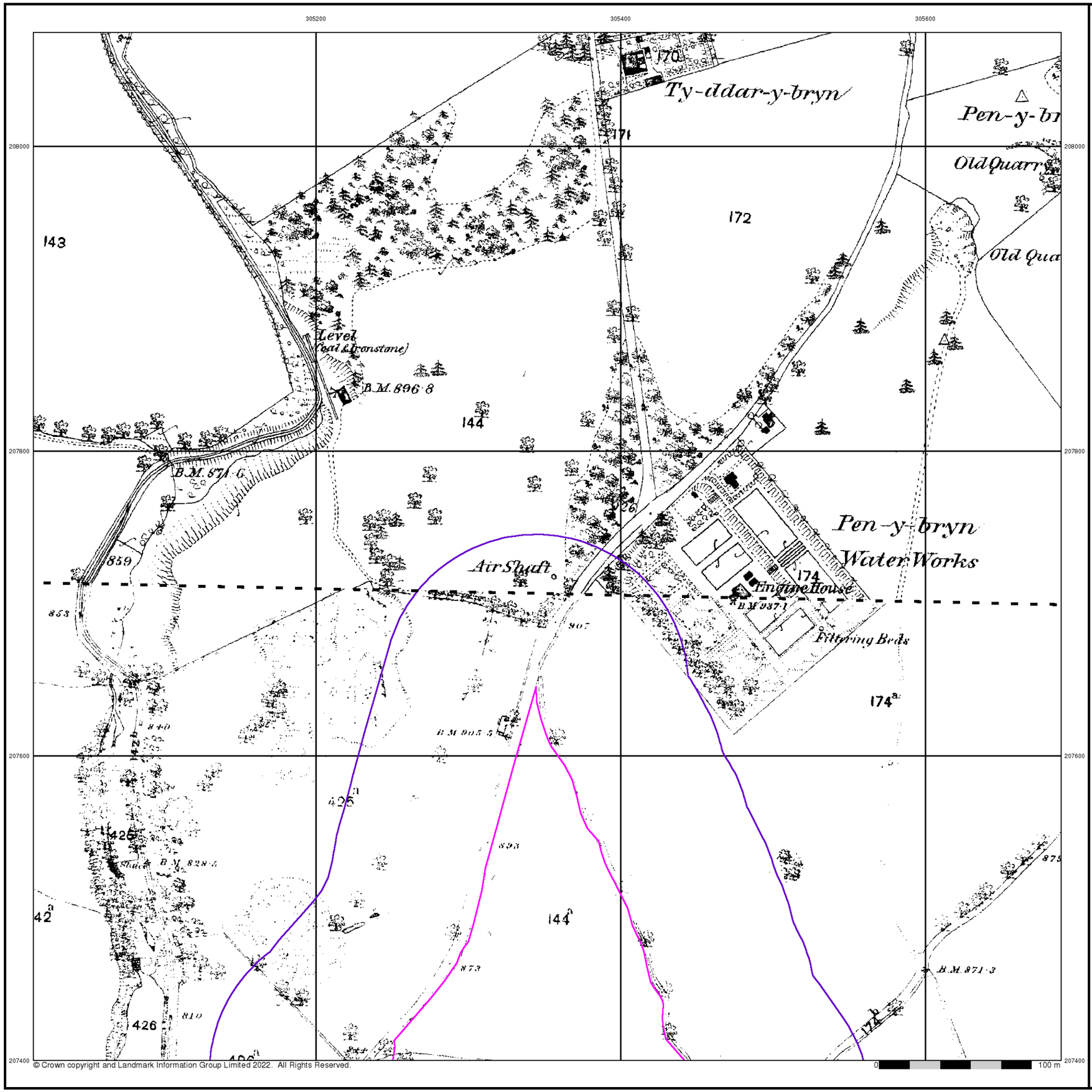


Intégral Géotechnique

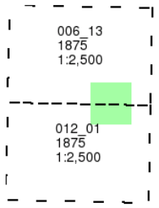
Glamorganshire

Published 1875

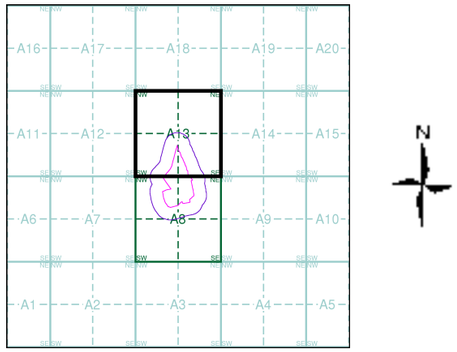
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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Search Buffer (m):	100

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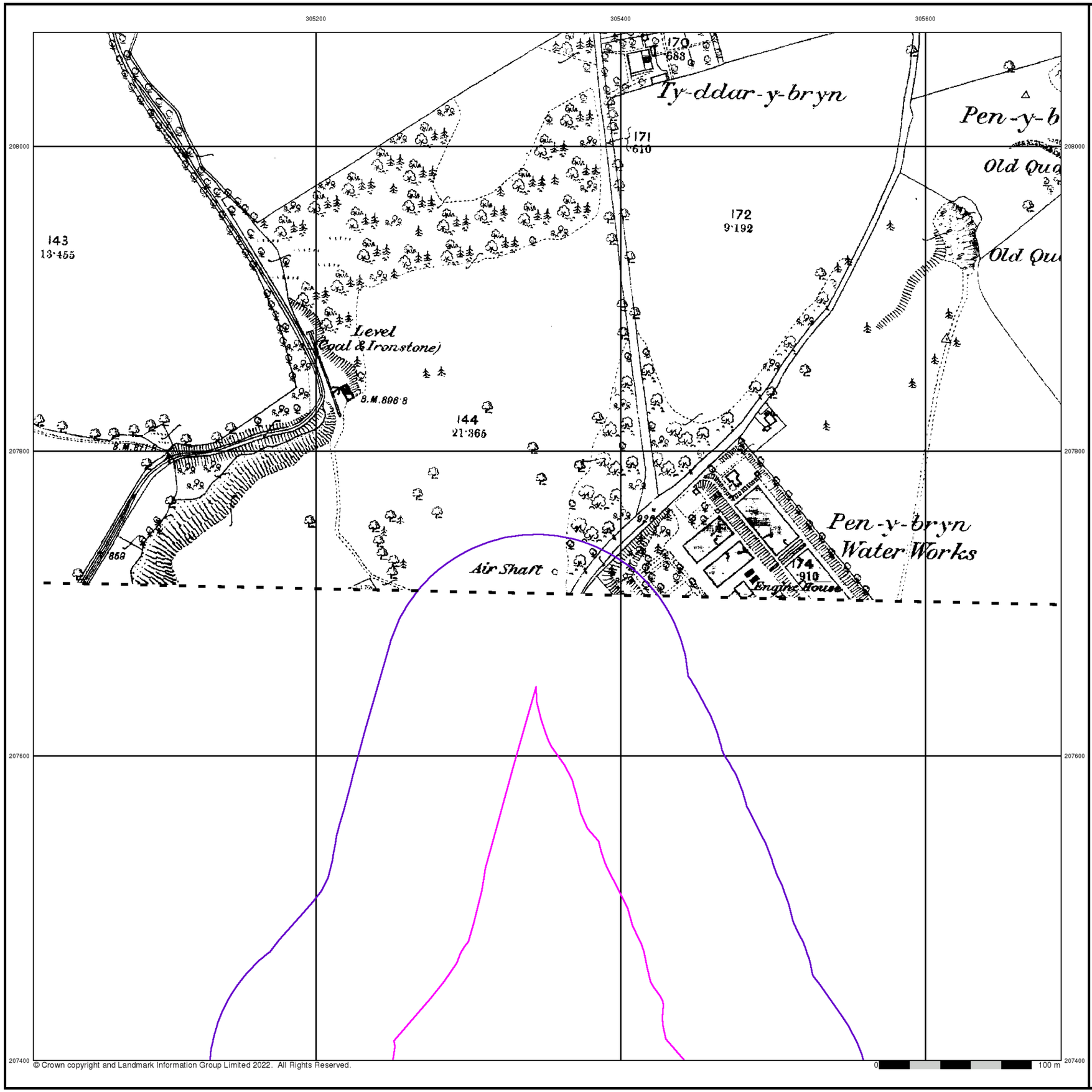

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Intégral Géotechnique

Brecknockshire

Published 1887

Source map scale - 1:2,500

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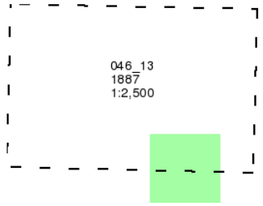
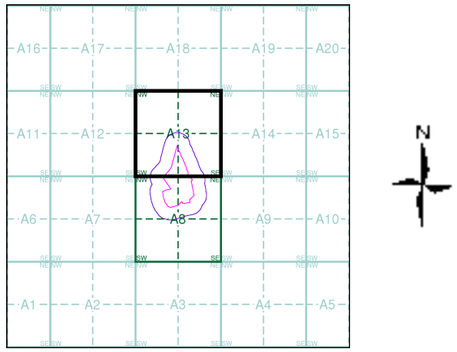
Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	299500301_1_1
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Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

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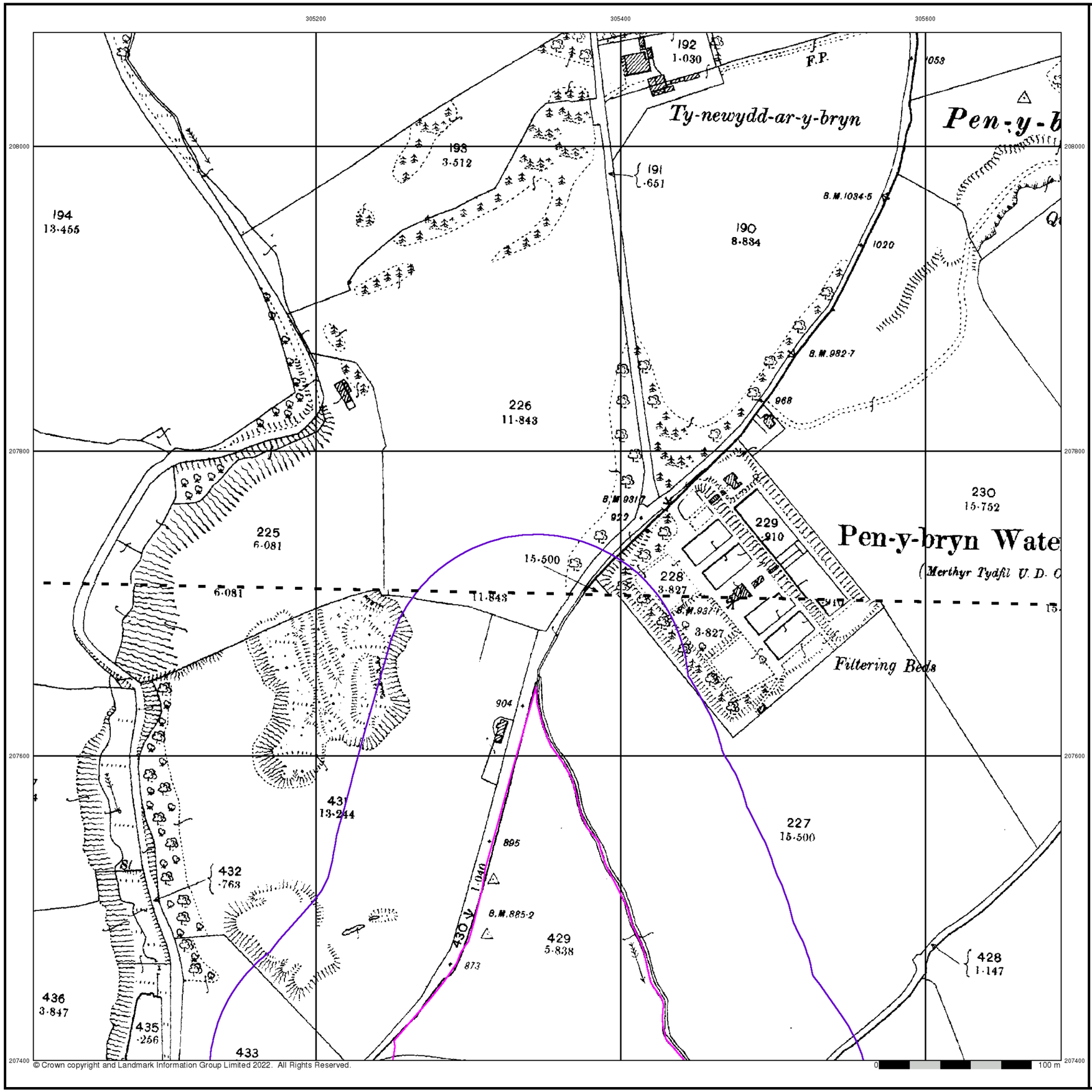

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Intégral Géotechnique

Glamorganshire

Published 1900

Source map scale - 1:2,500

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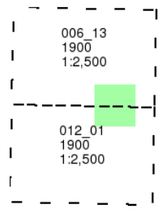
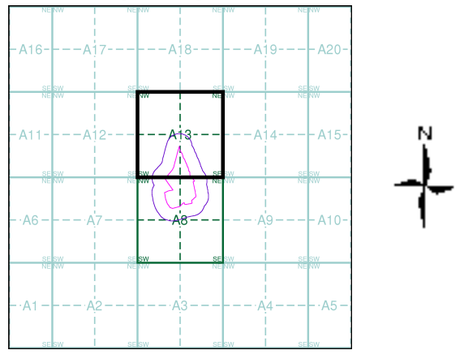
Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

Site Details

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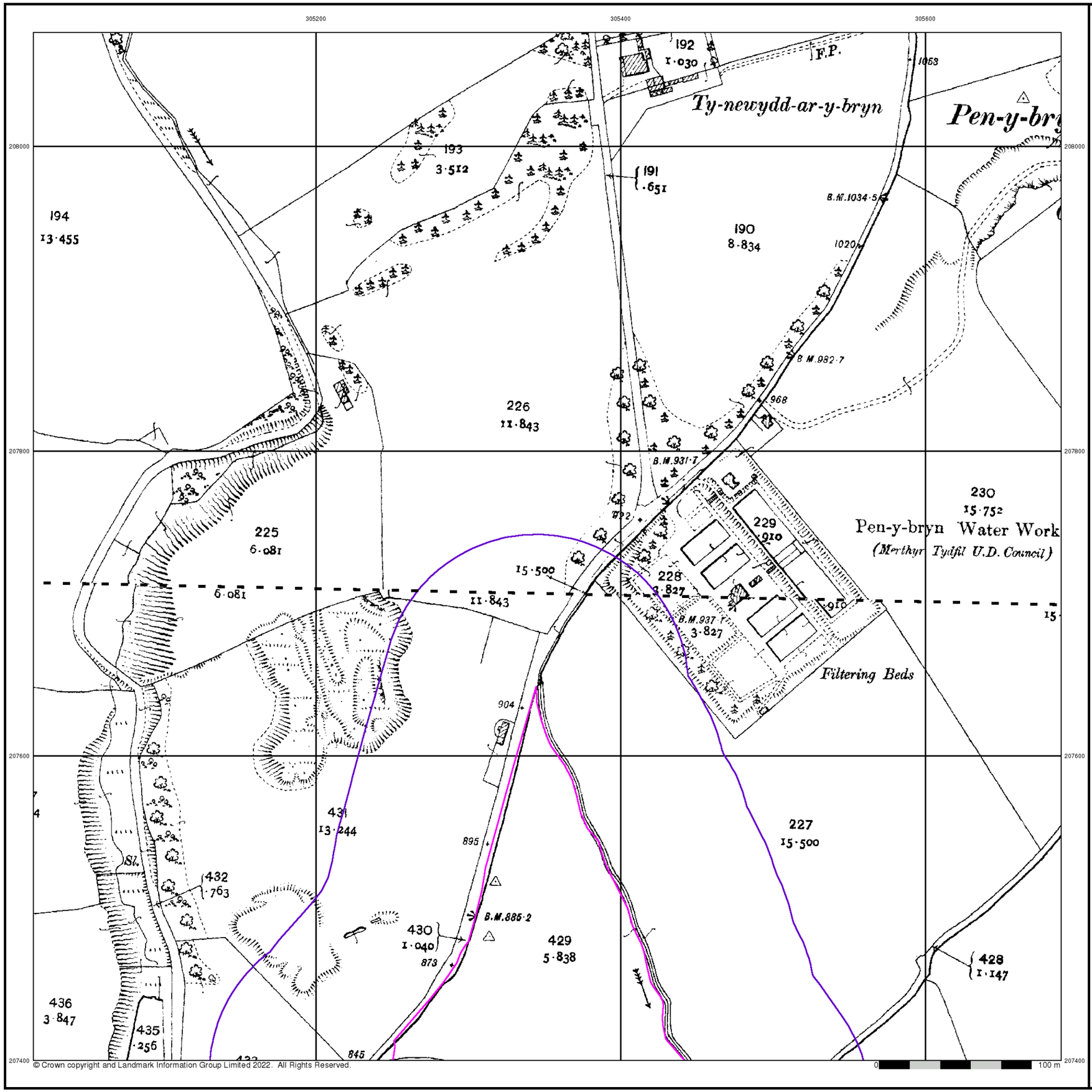

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Intégral Géotechnique

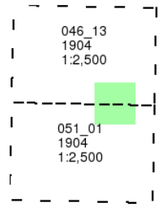
Brecknockshire

Published 1904

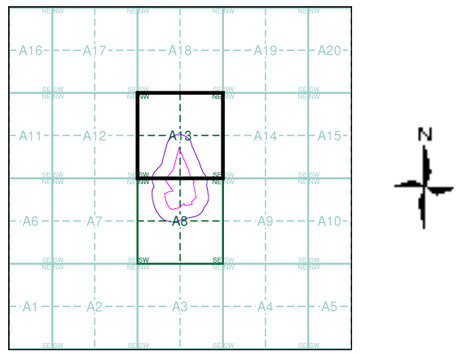
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

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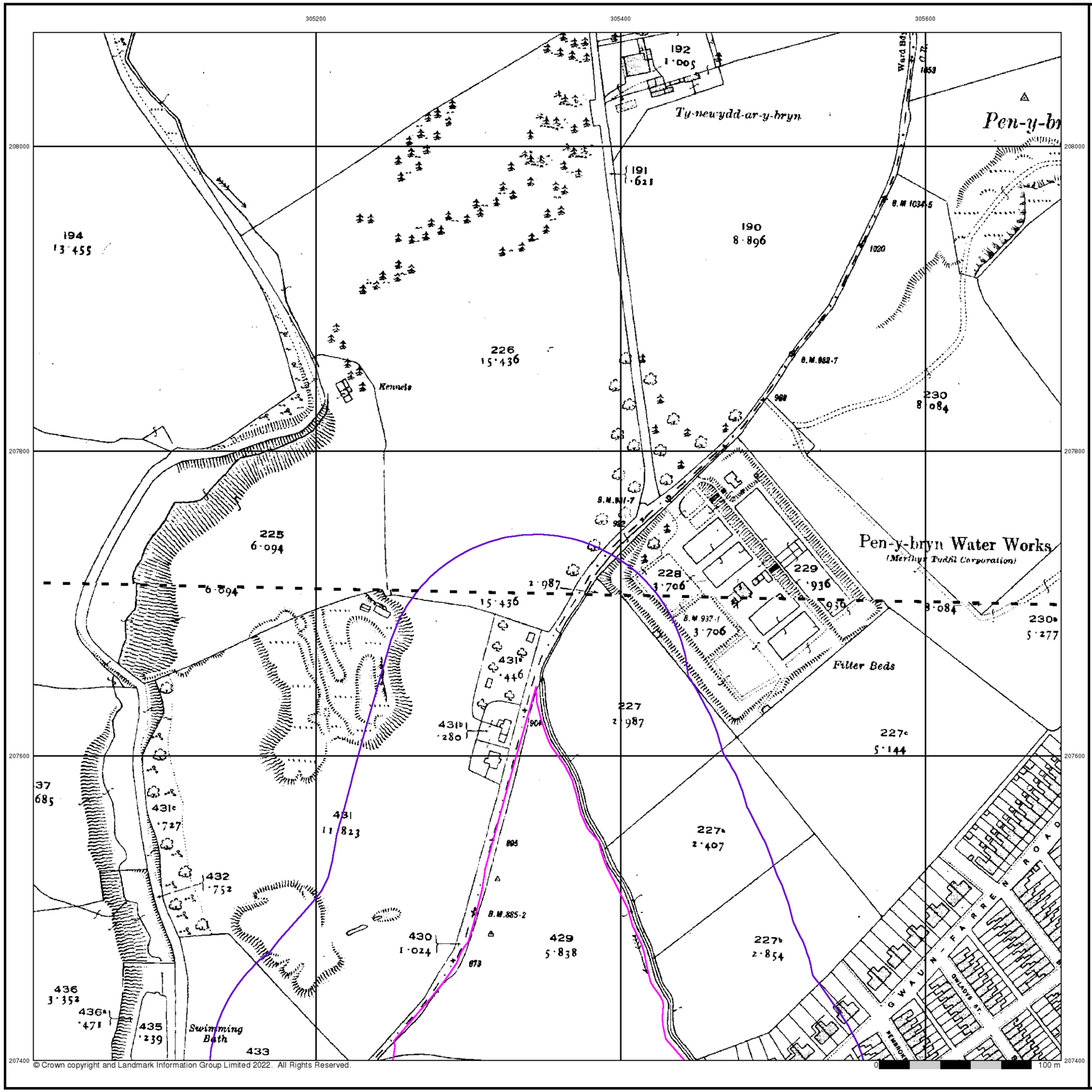

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Intégral Géotechnique

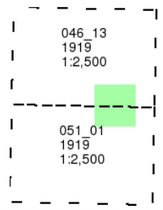
Brecknockshire

Published 1919

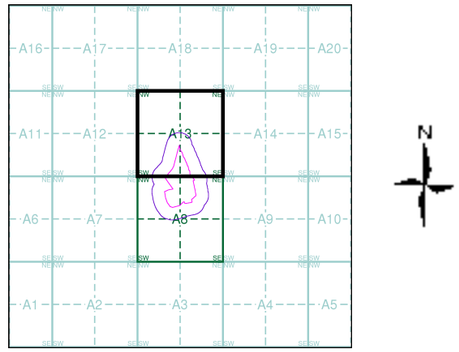
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	299500301_1_1
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Slice:	A
Site Area (Ha):	6.79
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Site Details

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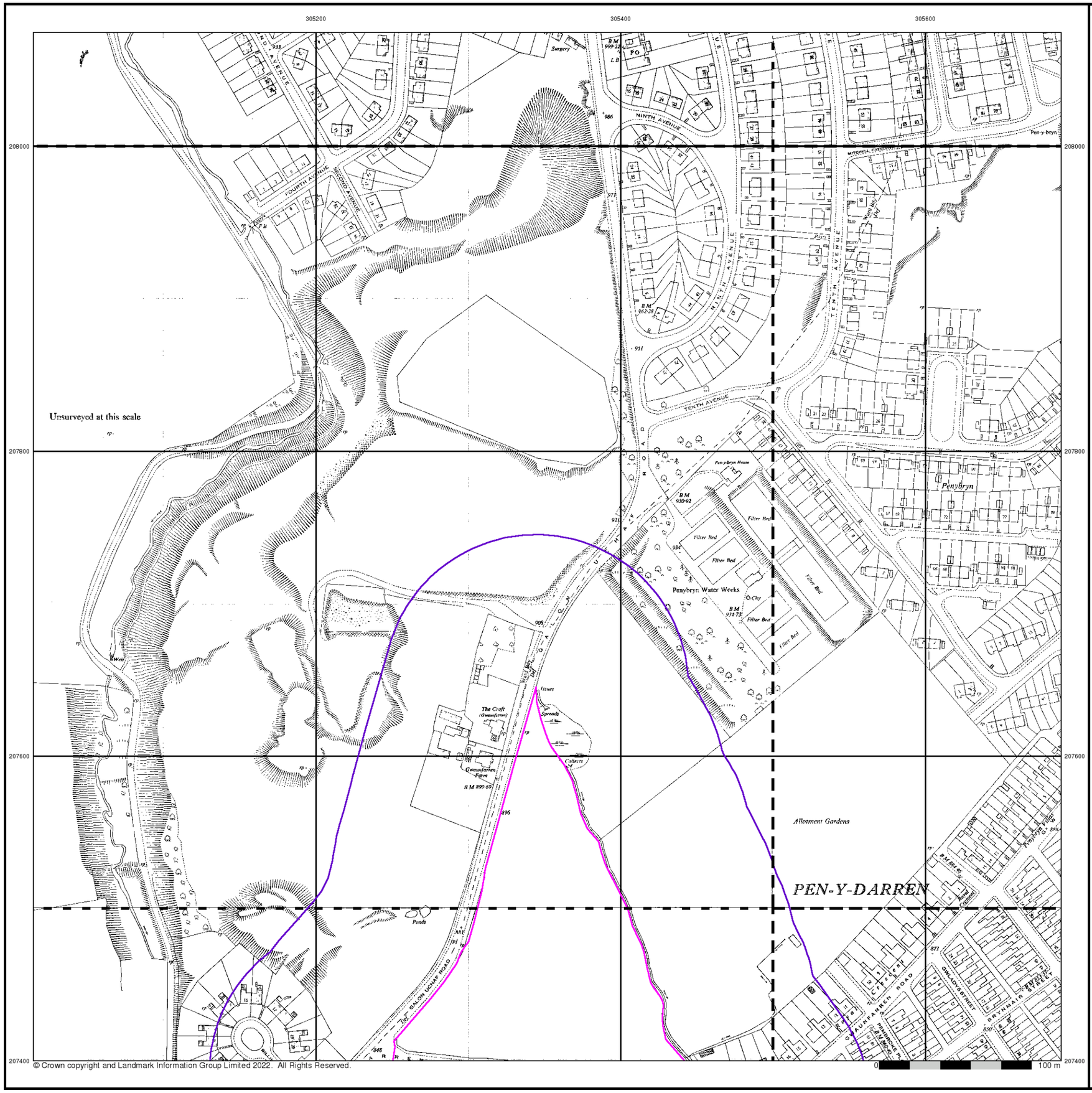

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Intégral Géotechnique

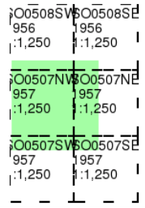
Ordnance Survey Plan

Published 1956 - 1957

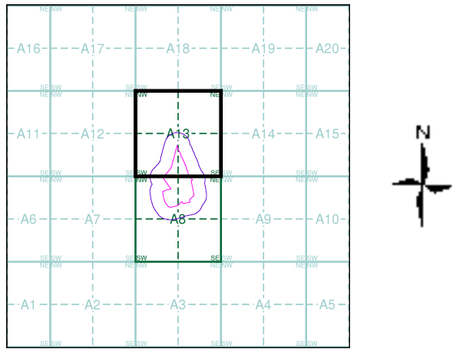
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

Site Details

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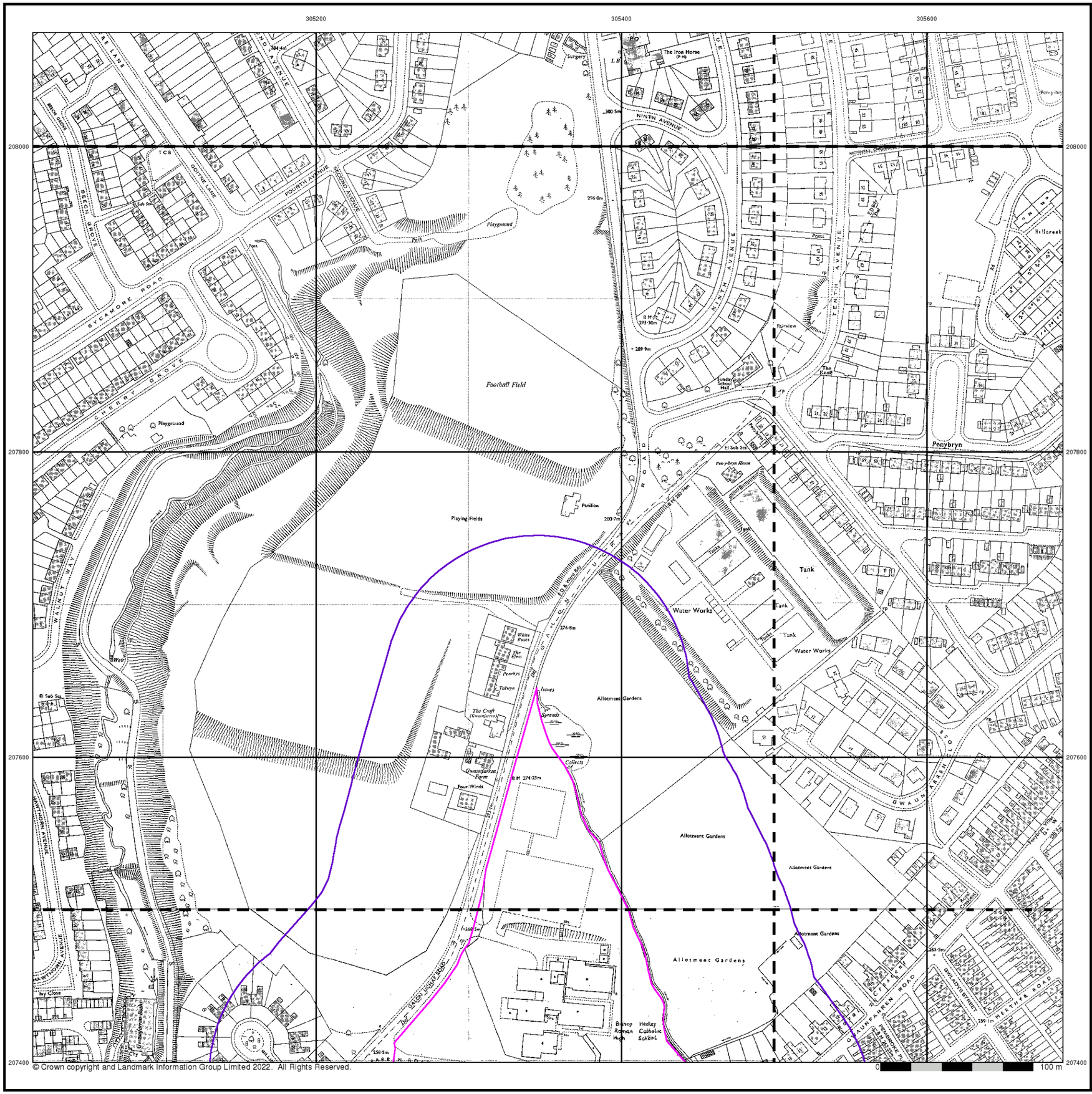

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Intégral Géotechnique

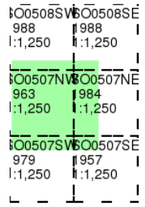
Additional SIMs

Published 1957 - 1988

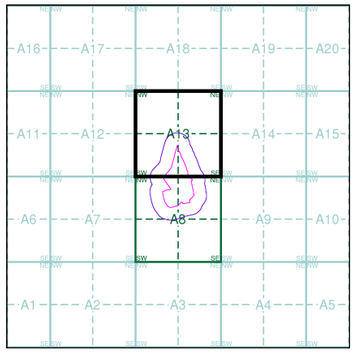
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	299500301_1_1
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Slice:	A
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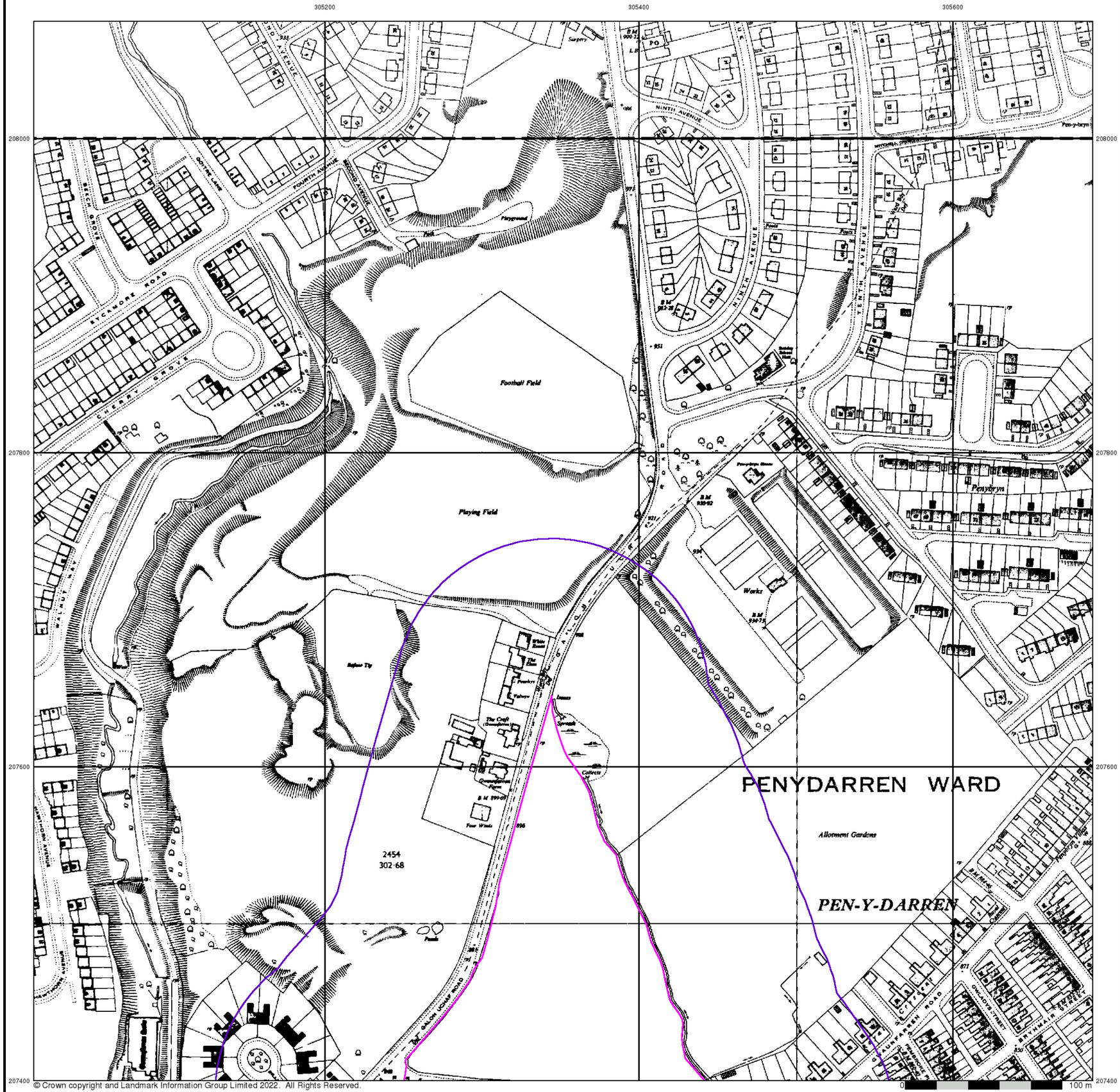

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Intégral Géotechnique

Ordnance Survey Plan

Published 1963 - 1964

Source map scale - 1:2,500

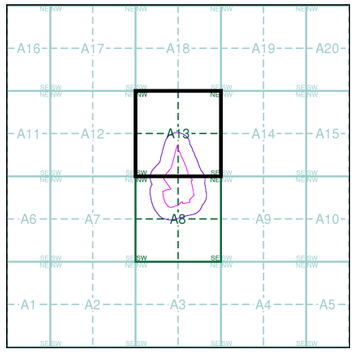
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SO0508
1964
1:2,500

SO0507
1963
1:2,500

Historical Map - Segment A13



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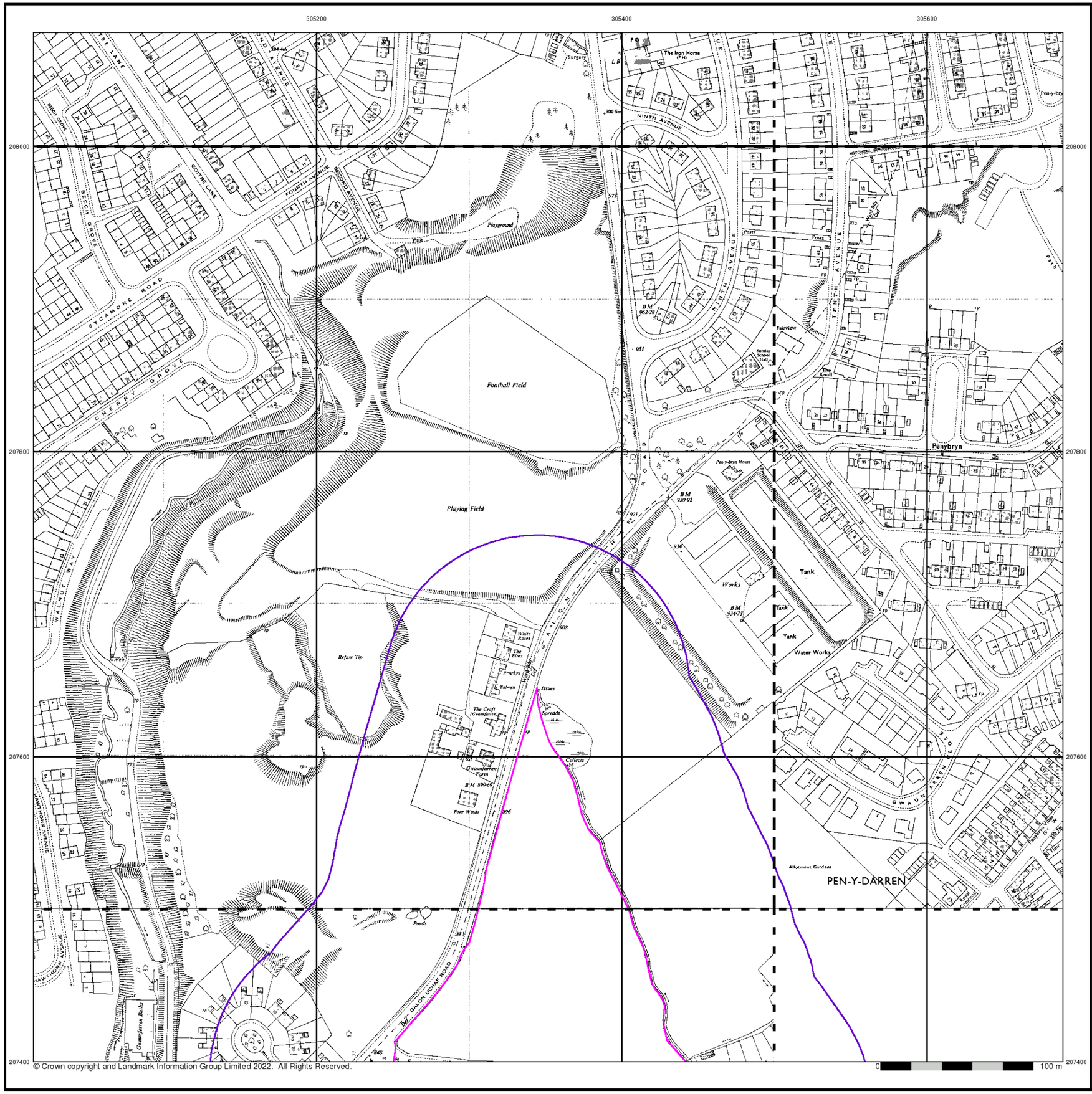

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Intégral Géotechnique

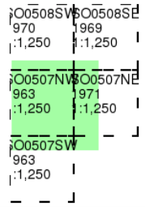
Ordnance Survey Plan

Published 1963 - 1971

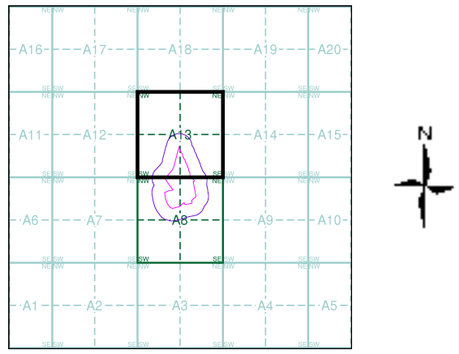
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



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Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	100

Site Details

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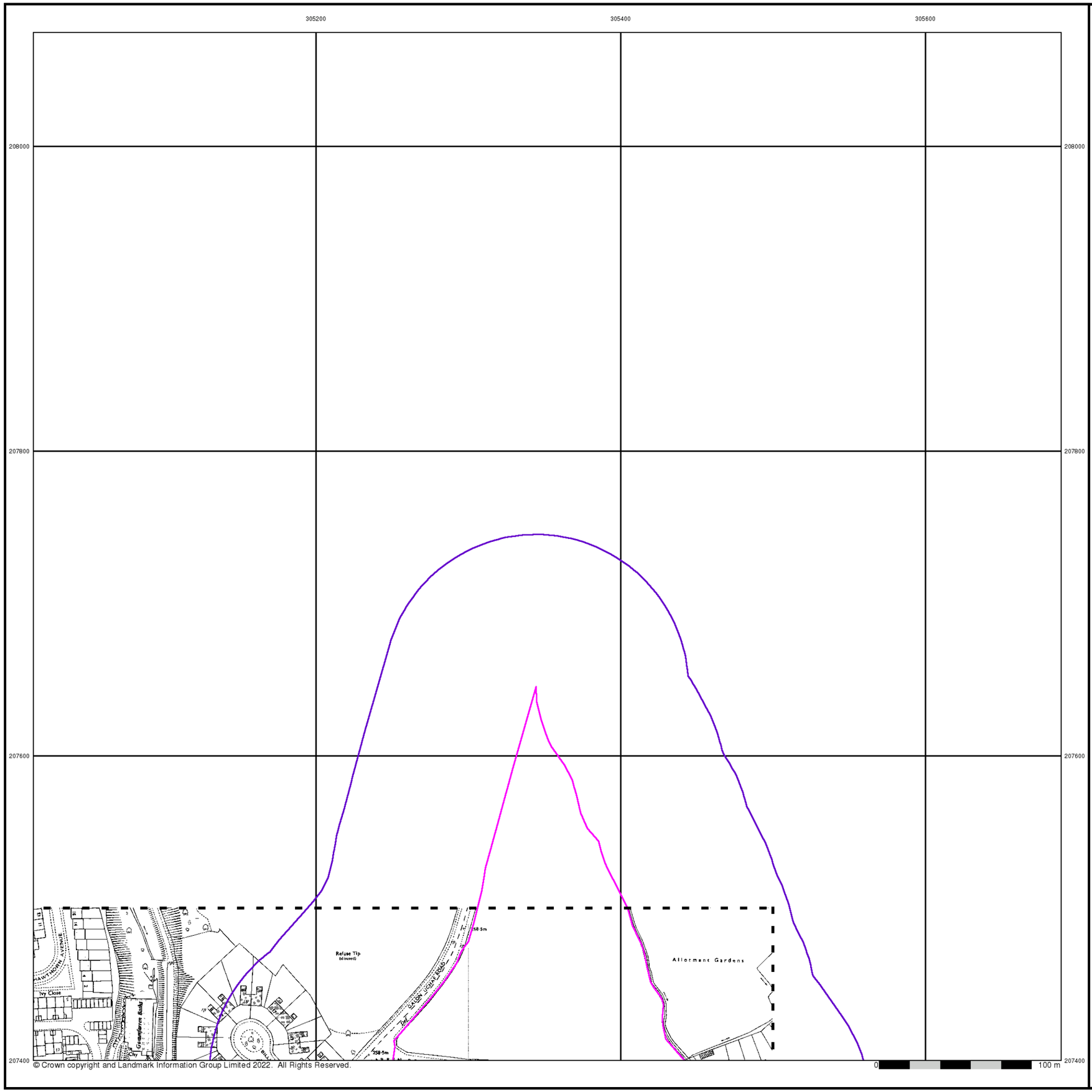

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Intégral Géotechnique

Ordnance Survey Plan

Published 1970

Source map scale - 1:1,250

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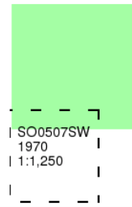
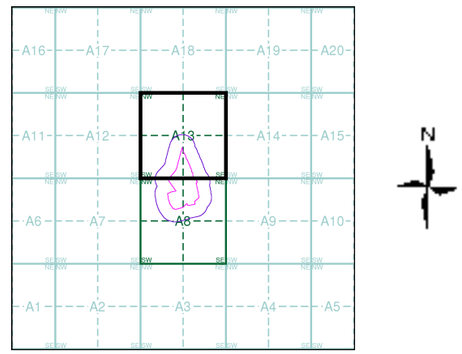


Historical Map - Segment A13



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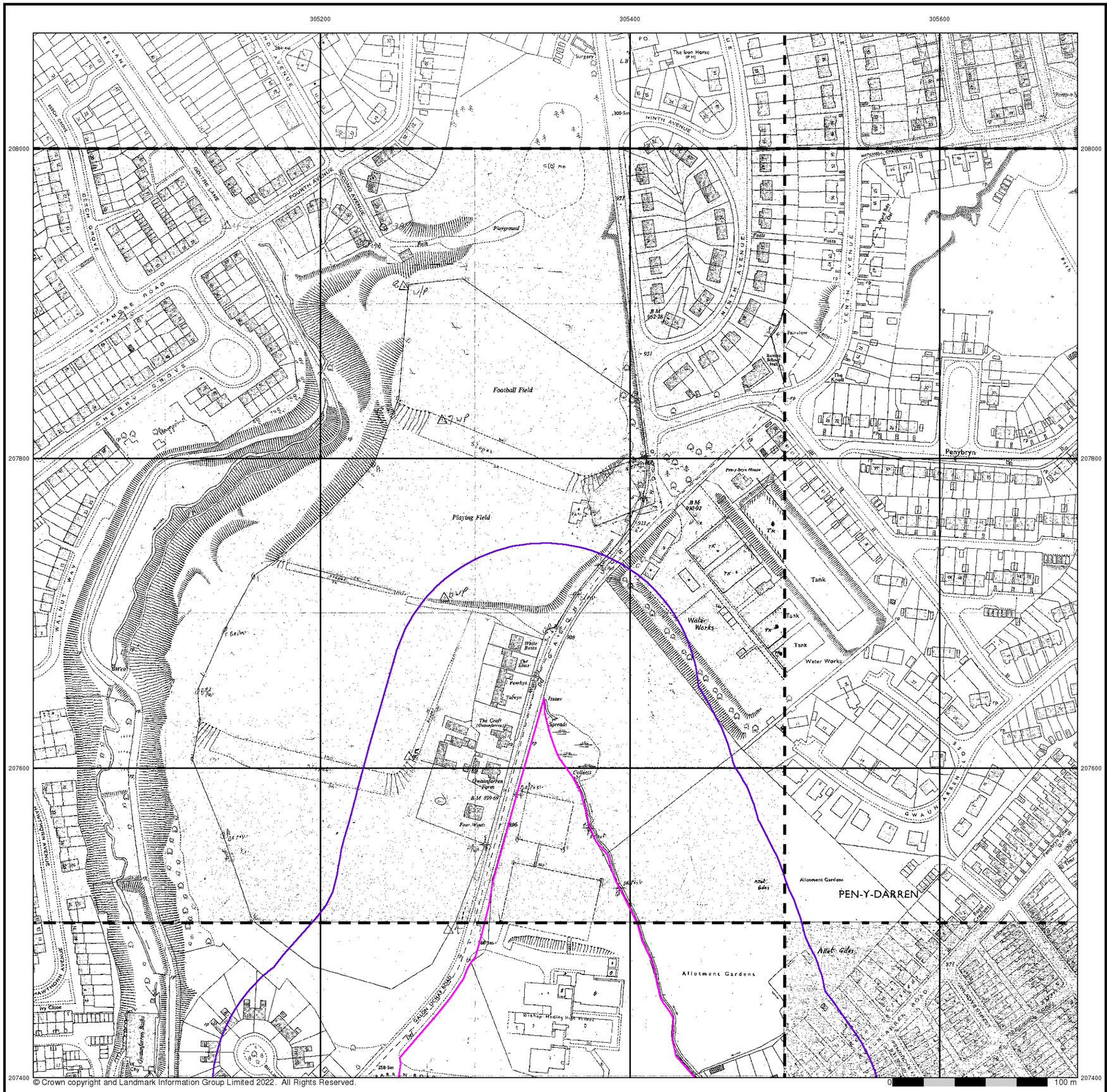

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Intégral Géotechnique

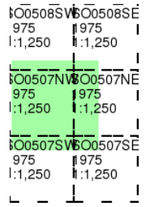
Supply of Unpublished Survey Information

Published 1975

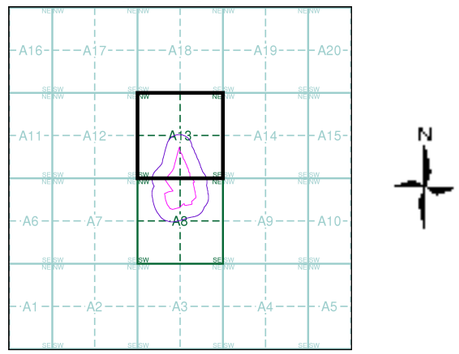
Source map scale - 1:1,250

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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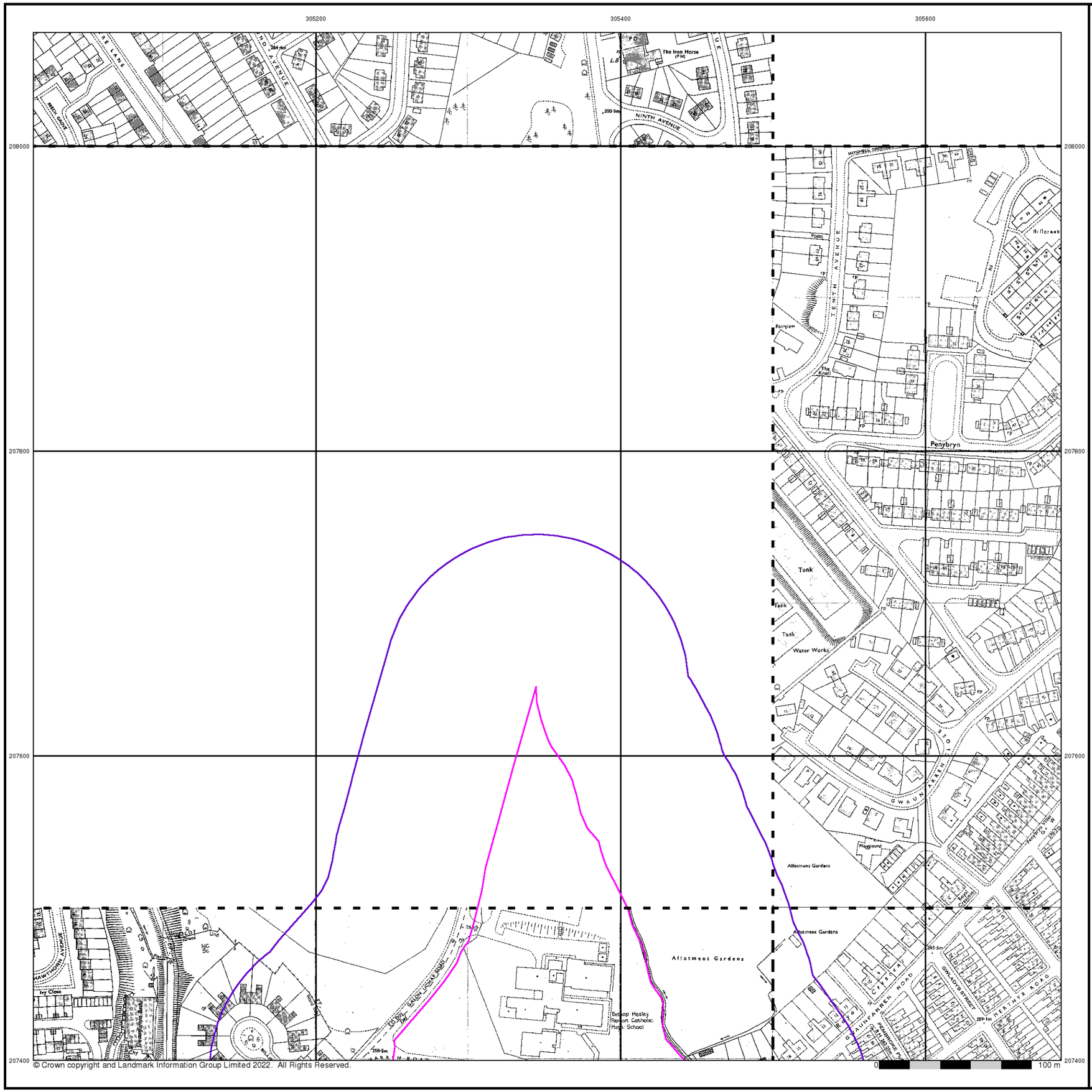

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Intégral Géotechnique

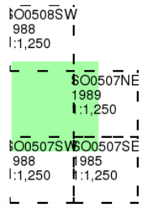
Additional SIMs

Published 1985 - 1989

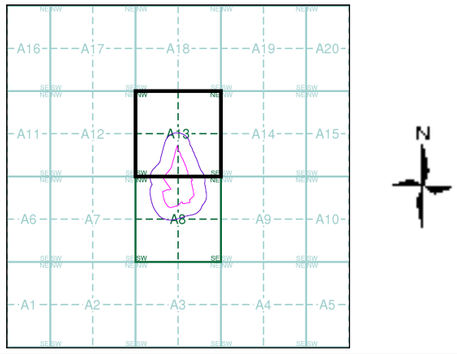
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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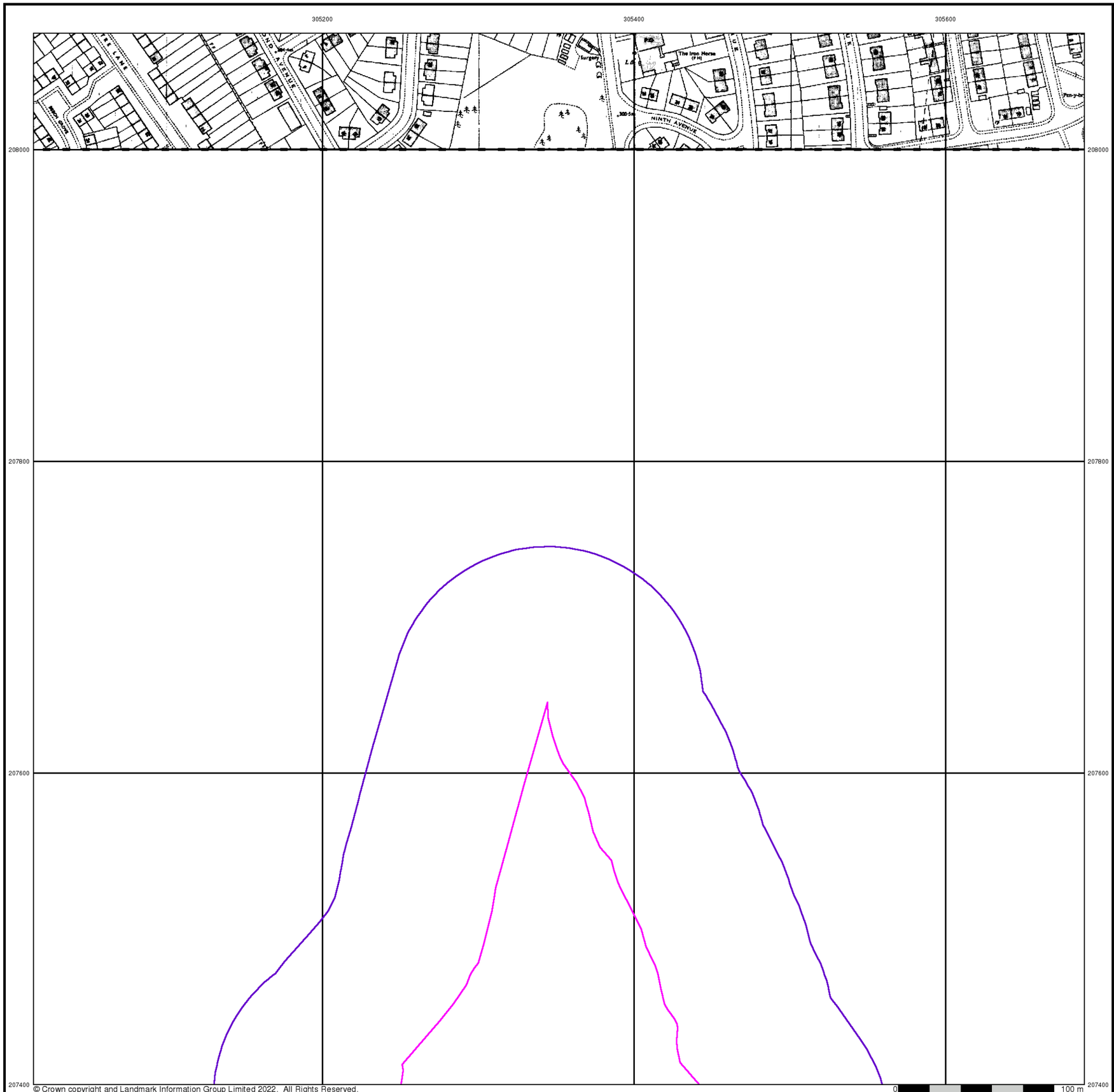

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Intégral Géotechnique

Ordnance Survey Plan

Published 1986

Source map scale - 1:2,500

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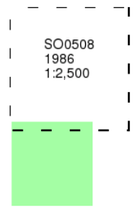
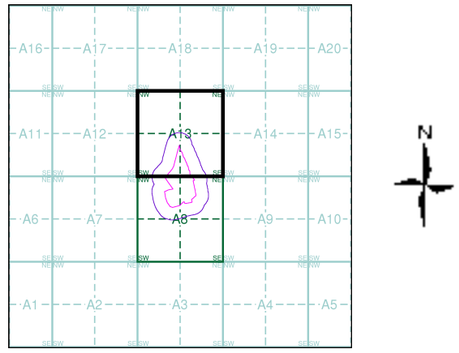


Historical Map - Segment A13



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
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Slice:	A
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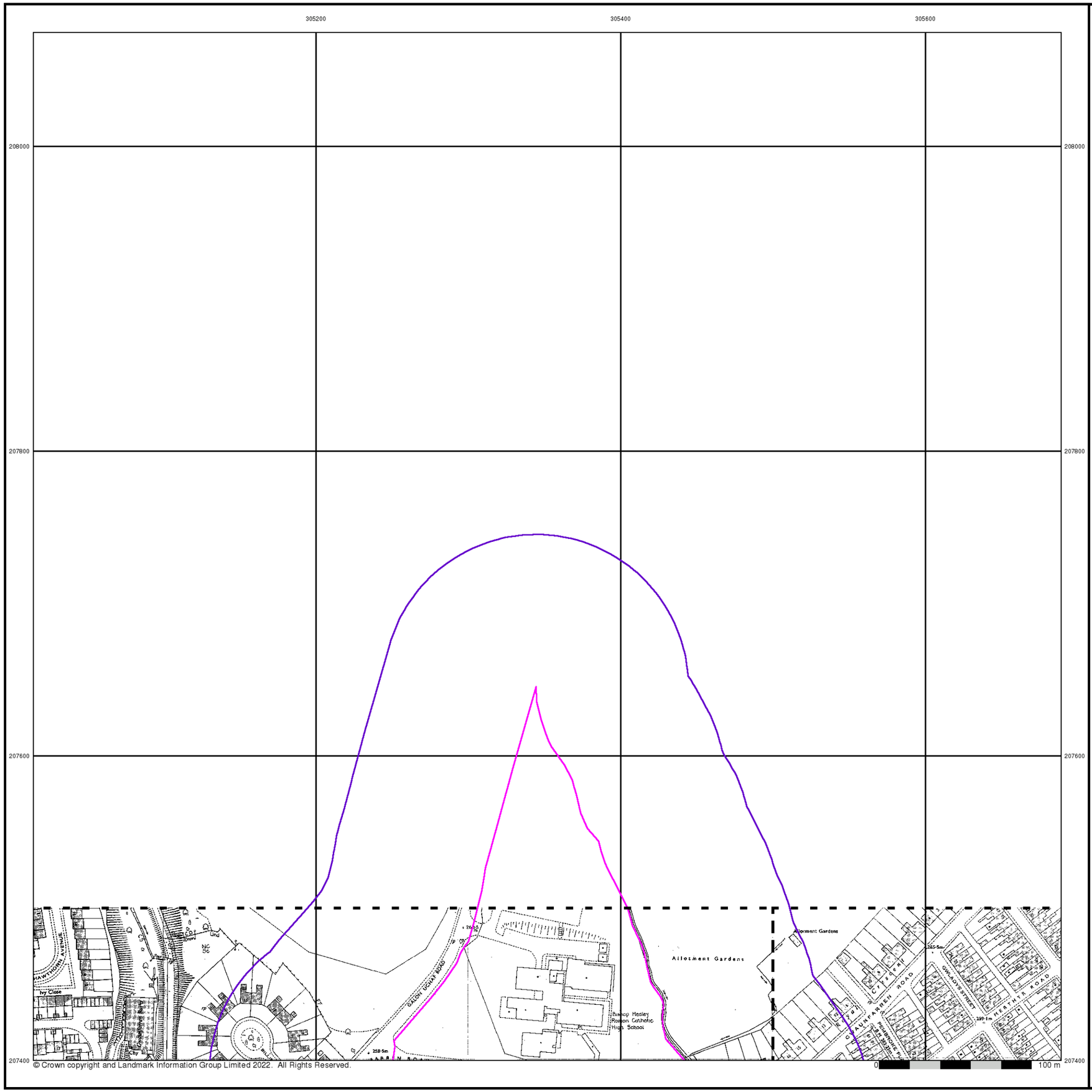

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Intégral Géotechnique

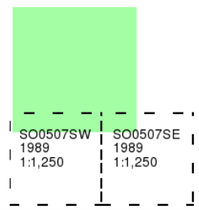
Additional SIMs

Published 1989

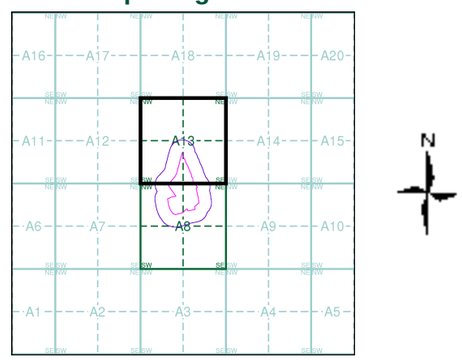
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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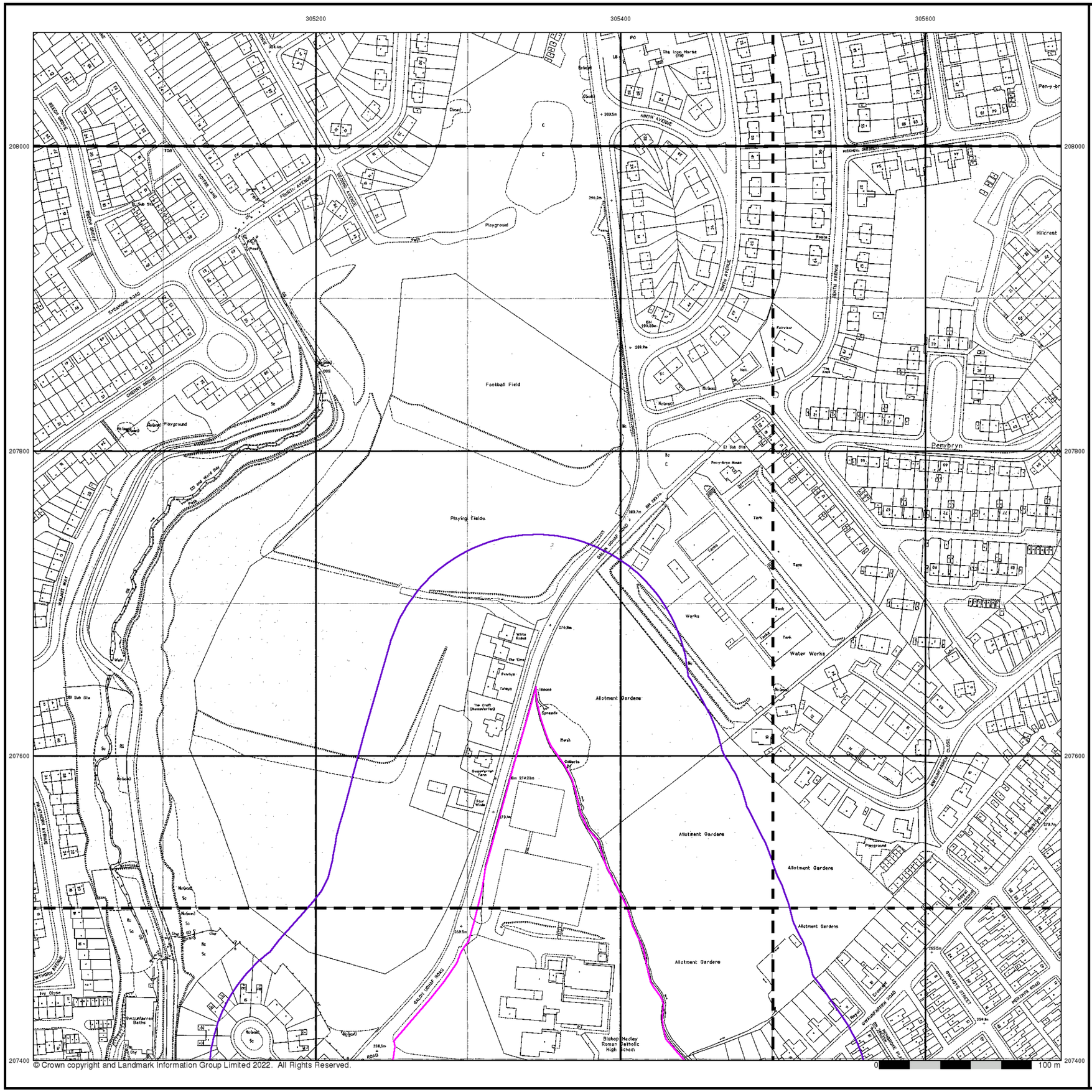

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Intégral Géotechnique

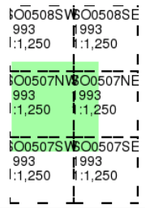
Large-Scale National Grid Data

Published 1993

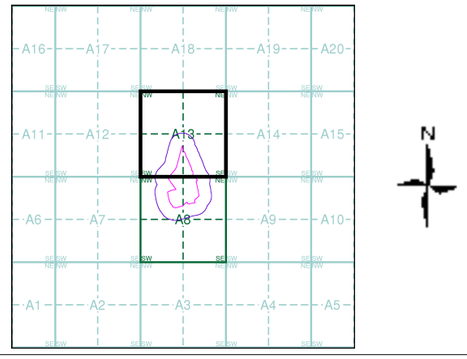
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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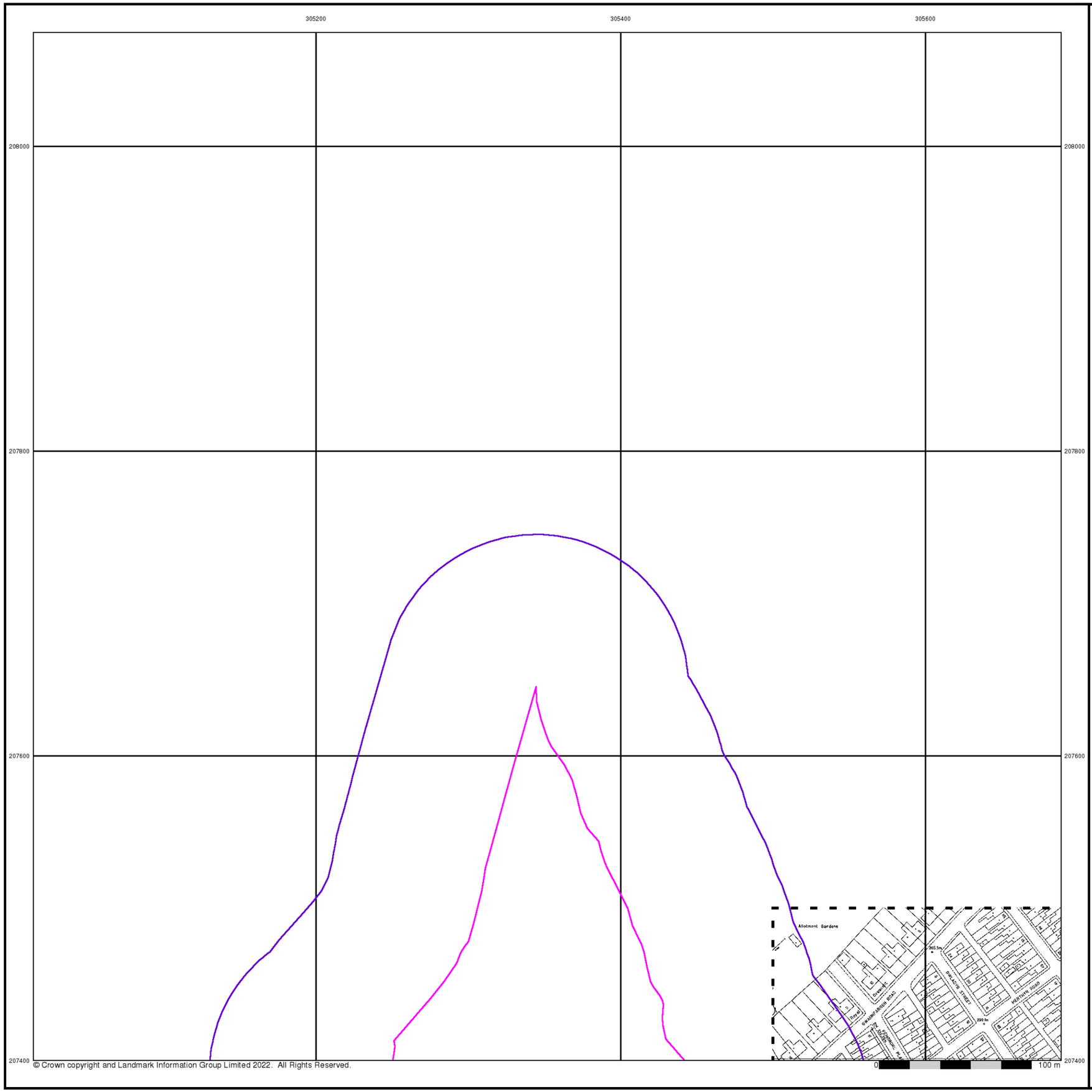

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Intégral Géotechnique

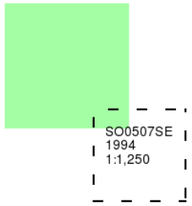
Large-Scale National Grid Data

Published 1994

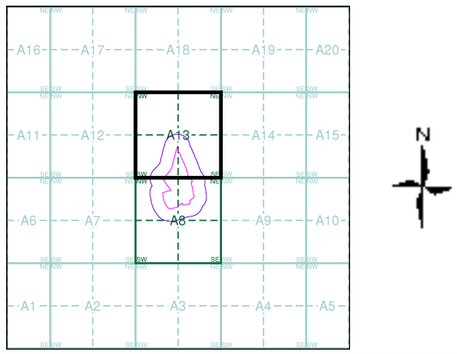
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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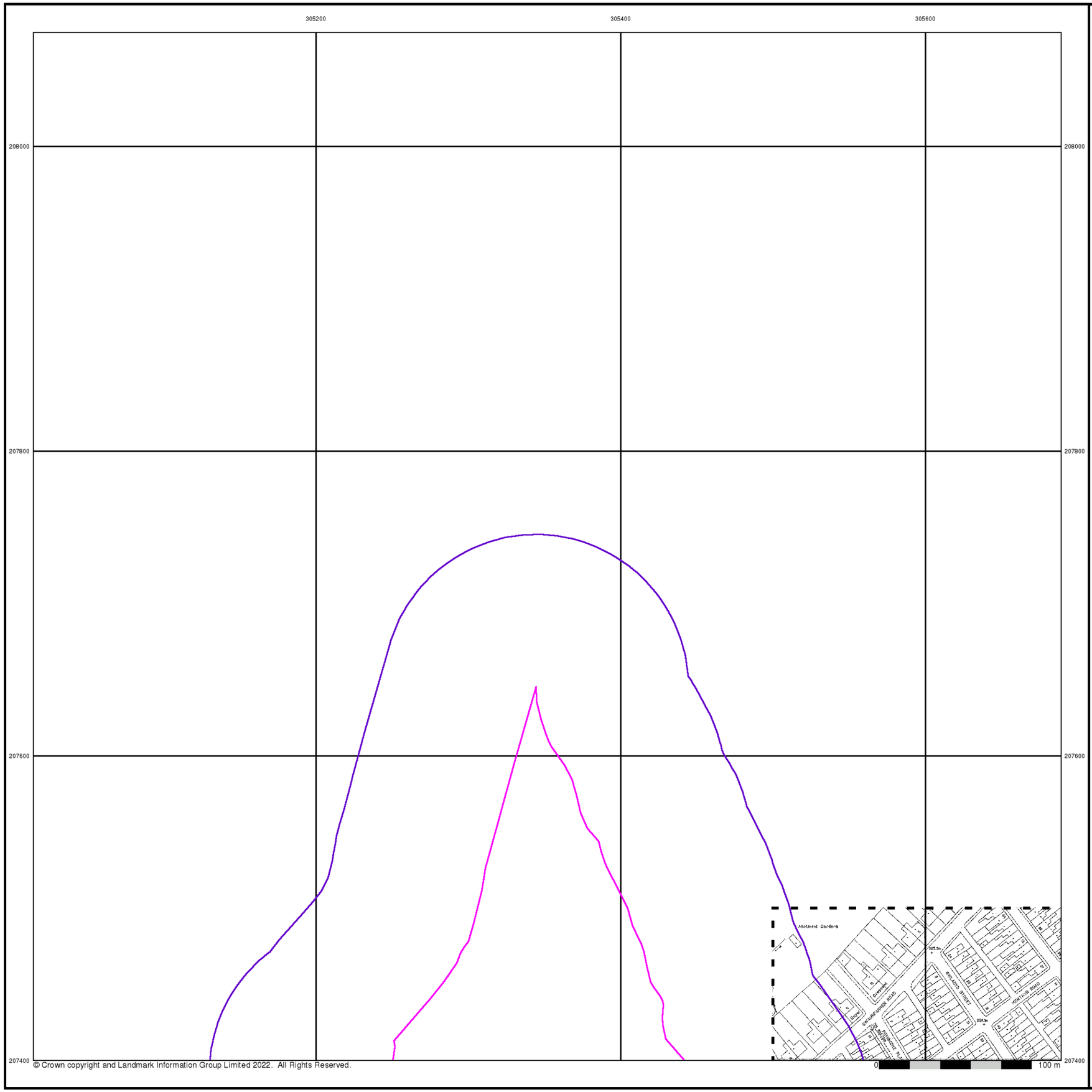

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Intégral Géotechnique

Large-Scale National Grid Data

Published 1995

Source map scale - 1:1,250

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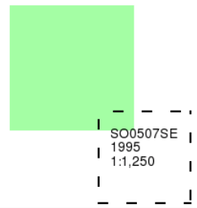
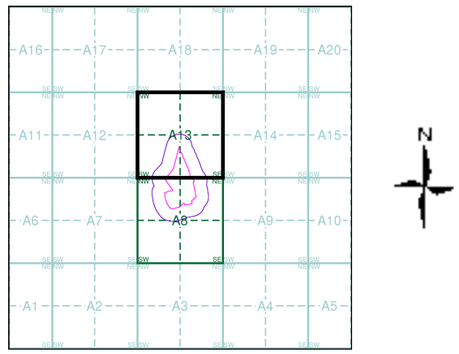


Historical Map - Segment A13



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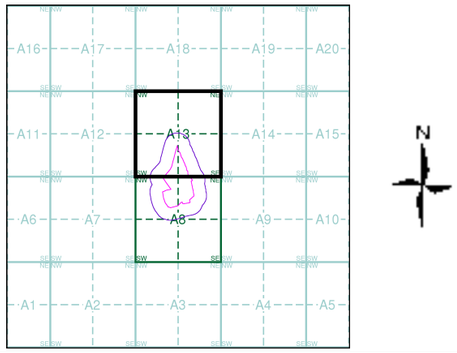
Historical Aerial Photography

Published 2001

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



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Envirocheck® Report:

Mining and Ground Stability Datasheet

Order Details:

Order Number:
299500301_1_1

Customer Reference:
14075/LP

National Grid Reference:
305350, 207380

Slice:
A

Site Area (Ha):
6.79

Search Buffer (m):
1000

Site Details:

Bishop Hedley School
Merthyr Tydfil
CF47 9AP

Client Details:

MR H Pritchard
Integral Geotechnique
Integral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX

Landmark
INFORMATION GROUP

Intégral Géotechnique

Contents

Report Section and Details	Page Number
Summary	**-**
The Summary section provides an overview of the data contained within the report, detailing the number of data set features or the existence of a data set in relation to the buffer selected. For ease of reference, the report is broken down into 4 sections of data; Mining and Natural Cavities Data, Historical Land Use Information (1:2,500), Historical Land Use Information (1:10,000) and Ground Stability Data (1:50,000).	
Mining and Natural Cavities Data	**1**
The Mining and Natural Cavities Data section features data sets related to the existence of mining areas and their potential hazards; and details of naturally formed cavities. Data sets within this section are not plotted, with the exception of BGS Recorded Mineral Sites and Potential Mining Areas which feature on the Historical Land Use Information (1:10,000) map.	
Historical Land Use Information (1:2,500)	**7**
The Historical Land Use Information (1:2,500) section contains data captured from analysis carried out by Landmark of 1:1,250 and 1:2,500 scale historical Ordnance Survey mapping, identifying areas where, historically, the land uses were potentially contaminative. For the purpose of this Envirocheck module, only historical data relating to mining and ground stability has been included and plotted on the corresponding Historical Land Use Information (1:2,500) map. This section also includes the Subterranean Features data set, which details various man-made and man-used underground spaces obtained from the Subterranea Britannica society.	
Historical Land Use Information (1:10,000)	**10**
The Historical Land Use (1:10,000) section covers data captured from the systematic analysis carried out by Landmark of 1:10, 560 and 1:10,000 scale historical Ordnance Survey mapping dating back to the mid-19th century, identifying potentially contaminative past industrial land uses. For the purpose of this Envirocheck module, only data relating to mining and ground stability has been included and plotted on the accompanying Historical Land Use Information (1:10,000) map.	
Ground Stability Data (1:50,000)	**14**
The Ground Stability (1:50,000) section includes the BGS Geosure data suite, reporting features to 250m and plotted onto 3 separate maps. Also reported is brine subsidence, brine mining and salt mining data sets, of which Brine Pumping and Salt Mining Related Features are plotted, and subsidence insurance claims and insurance investigations data, which is not plotted.	
Historical Map List	**16**
The Historical Map List section details the historical mapping that has been analysed for your site, in relation to the Historical Land Use Information sections.	
Data Currency	**18**
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Useful Contacts	**20**

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The brine subsidence data relating to the Driotwich area as provided in this report is derived from JPB studies and physical monitoring undertaken annually over more than 35 years. For more detailed interpretation contact enquiries@jpb.co.uk. JPB retain the copyright and intellectual rights to this data and accept no liability for any loss or damage, including in direct or consequential loss, arising from the use of this data.

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Report Version v53.0

Intégral Géotechnique

Summary

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Mining and Natural Cavities Data					
BGS Recorded Mineral Sites	pg 1			6	12
Coal Mining Affected Areas	pg 4	Yes	n/a	n/a	n/a
Man Made Mining Cavities					
Mining Instability	pg 4	Yes	n/a	n/a	n/a
Natural Cavities	pg 4				1
Non Coal Mining Areas of Great Britain	pg 4	Yes	Yes	n/a	n/a
Potential Mining Areas	pg 4	2	2	1	4
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Extractive Industries or Potential Excavations from 1893-1915 (100m)	pg 7		6	n/a	n/a
Extractive Industries or Potential Excavations from 1906-1937 (100m)	pg 8		4	n/a	n/a
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Subterranean Features (100m)				n/a	n/a
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Air Shafts	pg 10		1		4
Disturbed Ground					
General Quarrying	pg 10			2	2
Heap, unknown constituents	pg 10	1	2	3	4
Mineral Railway	pg 10		2		2
Mining & quarrying general					
Mining of coal & lignite	pg 11		3	2	2
Quarrying of sand & clay, operation of sand & gravel pits					
Former Marshes					
Potentially Infilled Land (Non-Water)	pg 11		4	1	7
Potentially Infilled Land (Water)	pg 12	1	8	6	27
Ground Stability Data (1:50,000)					
CBSCB Compensation District			n/a	n/a	n/a
Brine Pumping Related Features					
Brine Subsidence Solution Area					
Potential for Collapsible Ground Stability Hazards	pg 14	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 14	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 14	Yes	Yes	n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 14	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 15	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 15	Yes	Yes	n/a	n/a
Salt Mining Related Features					

Summary

Mining and Natural Cavities Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**BGS Recorded Mineral Sites** Site Name: Bradley Row Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125682 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	346	1	305797 207121
2	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Level Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125673 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	387	1	305665 206878
2	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Pit Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125678 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	409	1	305696 206874
2	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Level Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125679 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A9SW (SE)	423	1	305700 206859
3	**BGS Recorded Mineral Sites** Site Name: Pen-Y-Bryn Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125675 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A13NE (NE)	467	1	305679 207971
4	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Level Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125676 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	478	1	305683 206782

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**BGS Recorded Mineral Sites** Site Name: Tydfil'S Well Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 125653 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	503	1	304876 206850
6	**BGS Recorded Mineral Sites** Site Name: Penydarren Level Location: Incline Top, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 235654 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A8SE (SE)	521	1	305668 206725
7	**BGS Recorded Mineral Sites** Site Name: Incline Top Occs Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 2889 Type: Opencast **Status: Ceased** Operator: Wimpey Construction (Uk) Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Opencast Positional Accuracy: Approximate location provided by supplier	A9SW (SE)	580	1	306000 207000
8	**BGS Recorded Mineral Sites** Site Name: Pen-Yard Ironstone Workings Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90898 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	690	1	305885 206665
9	**BGS Recorded Mineral Sites** Site Name: Lodge Pit Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90897 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A4NW (SE)	735	1	305805 206555
10	**BGS Recorded Mineral Sites** Site Name: Tan-Y-Ffold Level Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90900 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A9SE (SE)	756	1	306130 206870

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**BGS Recorded Mineral Sites** Site Name: Thomas Town Location: Thomas Town, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 9029 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A3SE (S)	894	1	305375 206265
12	**BGS Recorded Mineral Sites** Site Name: Garw Pit Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90896 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	911	1	305779 206349
13	**BGS Recorded Mineral Sites** Site Name: Great White Tip Occs Location: Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 2888 Type: Tip **Status: Ceased** Operator: Celtic Energy Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Coal Measures Group Commodity: Coal - Opencast Positional Accuracy: Located by supplier to within 100m	A10NW (E)	936	1	306400 207100
14	**BGS Recorded Mineral Sites** Site Name: Dowlais Iron Workings Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90901 Type: Opencast **Status: Ceased** Operator: Dowlais Iron Co., Ltd. Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Iron Ore - Ironstone Positional Accuracy: Located by supplier to within 10m	A10NW (E)	974	1	306445 207155
15	**BGS Recorded Mineral Sites** Site Name: Pantyffyn Level Location: Thomas Town, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 235645 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A4SW (S)	979	1	305751 206266
16	**BGS Recorded Mineral Sites** Site Name: Pant-Y-Ffyn Coal Level Location: Dowlais, Merthyr Tydfil, Mid Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 90899 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: South Wales Lower Coal Measures Formation Commodity: Coal - Deep Positional Accuracy: Located by supplier to within 10m	A4SW (SE)	981	1	305839 206298

Mining and Natural Cavities Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A8NW (W)	0	2	305346 207381
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A8NW (W)	0	3	305346 207381
	Natural Cavities Cavity Type: Phreatic Cave, Sinkhole, Solution Pipe, Solution Widened Joint or Fissure, Swallow Hole Solid Geology Detail: Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Millstone Grit Group, Upper Carboniferous Limestone Superficial Geology Detail: Glacial sand	A17NE (NW)	919	4	304829 208414
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
17	**Potential Mining Areas** Name: Merthyr Tydfil Ceased Operation: Not Supplied Commodity: Coal and Ironstone Reference: Not Supplied Alternate Name/Mine: Not Supplied Custodian: Not Supplied	A8NW (W)	0	5	305346 207381
18	**Potential Mining Areas** Name: Gwaunfarren Ceased Operation: 1897 Commodity: Coal; Lower Four Feet Reference: 3622 Alternate Name/Mine: Not Supplied Custodian: Not Supplied	A8NW (W)	0	5	305346 207381

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**Potential Mining Areas** Name: Dowlais (Water Leveles) Ceased Operation: 1924 Commodity: Coal and Ironstone Reference: 8194 Alternate Name/Mine: Black Ball Alternate Name/Mine: Blaen Dowlais Alternate Name/Mine: Brewhouse Alternate Name/Mine: Buxton's Alternate Name/Mine: Carno Alternate Name/Mine: Coslet Alternate Name/Mine: Cwmcenol Alternate Name/Mine: Morgan's Alternate Name/Mine: Nos. 2, 4, 7 Alternate Name/Mine: Pant-Y-Wain Alternate Name/Mine: Pennydarren Alternate Name/Mine: Penyard Alternate Name/Mine: Pen-Yr-Heol Alternate Name/Mine: Price's Alternate Name/Mine: Rhas-Las Alternate Name/Mine: Tyla Dowlais Alternate Name/Mine: Vanwain Custodian: Not Supplied	A8NE (E)	138	5	305615 207298
20	**Potential Mining Areas** Name: Dowlais Ceased Operation: 1878 Commodity: Coal and Ironstone; Black Pin Soap; Three Coals and Clay; Upper Little; Lower Four Feet; Spotted; Red; Blue; Lumpy; Rosser Reference: 837 Alternate Name/Mine: Banwain Alternate Name/Mine: Black Ball Alternate Name/Mine: Blaen Rhas Alternate Name/Mine: Carno Alternate Name/Mine: Cwmcenol Alternate Name/Mine: Meadow Alternate Name/Mine: Nos. 1, 2 Alternate Name/Mine: Nos. 1, 2, 4, 6, 7 Alternate Name/Mine: Pant-Y-wain Alternate Name/Mine: Penrheol (Pen-Yr-heol) Alternate Name/Mine: Penydarren Alternate Name/Mine: Tyla Dowlais Custodian: Not Supplied	A8NE (E)	138	5	305615 207298
21	**Potential Mining Areas** Name: Lodge Ceased Operation: Not Supplied Commodity: Coal Reference: Not Supplied Alternate Name/Mine: Not Supplied Custodian: Not Supplied	A8SE (SE)	341	5	305606 206896

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	**Potential Mining Areas** Name: Dowlais Ceased Operation: 1917 Commodity: Coal; Rhas Las or Nine Feet Reference: 6768 Alternate Name/Mine: Brewhouse Alternate Name/Mine: Cwmbargoed Alternate Name/Mine: Fochriw Alternate Name/Mine: Nos. 1, 2 Alternate Name/Mine: Pencoedcae Alternate Name/Mine: Penydarren Alternate Name/Mine: Rhas Las Alternate Name/Mine: Rhas Las Old and New Alternate Name/Mine: Tunnel Custodian: Not Supplied	A9SW (SE)	643	5	306009 206887
23	**Potential Mining Areas** Name: Dowlais Ceased Operation: 1843 Commodity: Ironstone; Blue; Red; Spotted; Black Soap Reference: Not Supplied Alternate Name/Mine: Brewhouse Alternate Name/Mine: Coedcae-du Alternate Name/Mine: Deep Alternate Name/Mine: Pen-Yr-Heol Custodian: John and G.H. Geddes, 21 Young Street, Edinburgh.	A9SW (SE)	643	5	306009 206887
24	**Potential Mining Areas** Name: Garw Ceased Operation: Not Supplied Commodity: Coal Reference: Not Supplied Alternate Name/Mine: Not Supplied Custodian: Not Supplied	A3NE (S)	718	5	305598 206494
25	**Potential Mining Areas** Name: Dowlais Ceased Operation: 1914 Commodity: Coal; Big or Six Feet Reference: 6298 Alternate Name/Mine: Wagstaff's Custodian: Not Supplied	A10NW (E)	943	5	306419 207281

Historical Land Use Information (1:2,500)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	**Extractive Industries or Potential Excavations from 1855-1909** Use: Unspecified Deposited Material First Map Published Date: 1875 Last Map Published Date: Not Applicable	A8NW (SW)	0	-	305258 207293
27	**Extractive Industries or Potential Excavations from 1855-1909** Use: Filtering Cistern First Map Published Date: 1875 Last Map Published Date: Not Applicable	A8NE (S)	33	-	305375 207150
28	**Extractive Industries or Potential Excavations from 1855-1909** Use: Shaft (Coal) First Map Published Date: 1875 Last Map Published Date: Not Applicable	A8NE (E)	48	-	305505 207395
29	**Extractive Industries or Potential Excavations from 1855-1909** Use: Unspecified Deposited Material First Map Published Date: 1875 Last Map Published Date: Not Applicable	A8NW (S)	61	-	305344 207105
30	**Extractive Industries or Potential Excavations from 1855-1909** Use: Air Shaft First Map Published Date: 1875 Last Map Published Date: 1887	A13SE (N)	74	-	305356 207718
31	**Extractive Industries or Potential Excavations from 1855-1909** Use: Unspecified Disturbed Land First Map Published Date: 1875 Last Map Published Date: 1887	A13SW (NW)	76	-	305239 207606
32	**Extractive Industries or Potential Excavations from 1855-1909** Use: Pen-y-bryn Water Works First Map Published Date: 1875 Last Map Published Date: 1887	A13SE (NE)	78	-	305474 207614
33	**Extractive Industries or Potential Excavations from 1855-1909** Use: Old Level (Coal) First Map Published Date: 1875 Last Map Published Date: Not Applicable	A8NE (SE)	83	-	305539 207194
34	**Extractive Industries or Potential Excavations from 1893-1915** Use: Filtering Cistern First Map Published Date: 1900 Last Map Published Date: 1904	A8NE (S)	34	-	305376 207149
35	**Extractive Industries or Potential Excavations from 1893-1915** Use: Unspecified Pit First Map Published Date: 1900 Last Map Published Date: 1904	A13SW (NW)	48	-	305253 207492
36	**Extractive Industries or Potential Excavations from 1893-1915** Use: Unspecified Deposited Material First Map Published Date: 1900 Last Map Published Date: 1904	A13SW (NW)	57	-	305217 207461

Historical Land Use Information (1:2,500)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
37	**Extractive Industries or Potential Excavations from 1893-1915** Use: Unspecified Deposited Material First Map Published Date: 1900 Last Map Published Date: 1904	A8NE (E)	66	-	305539 207324
38	**Extractive Industries or Potential Excavations from 1893-1915** Use: Unspecified Pits First Map Published Date: 1900 Last Map Published Date: 1904	A13SW (NW)	76	-	305236 207604
39	**Extractive Industries or Potential Excavations from 1893-1915** Use: Pen-y-bryn Water Works (Merthyr Tydfil U.D. Council) First Map Published Date: 1900 Last Map Published Date: 1904	A13SE (NE)	79	-	305474 207612
40	**Extractive Industries or Potential Excavations from 1906-1937** Use: Unspecified Pit First Map Published Date: 1919 Last Map Published Date: Not Applicable	A13SW (NW)	46	-	305255 207494
41	**Extractive Industries or Potential Excavations from 1906-1937** Use: Unspecified Deposited Material First Map Published Date: 1919 Last Map Published Date: Not Applicable	A13SW (NW)	56	-	305217 207458
42	**Extractive Industries or Potential Excavations from 1906-1937** Use: Unspecified Pits First Map Published Date: 1919 Last Map Published Date: Not Applicable	A13SW (NW)	74	-	305238 207603
43	**Extractive Industries or Potential Excavations from 1906-1937** Use: Pen-y-bryn Water Works (Merthyr Tydfil Corporation) First Map Published Date: 1919 Last Map Published Date: 1919	A13SE (NE)	79	-	305476 207612
44	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Deposited Material First Map Published Date: 1957 Last Map Published Date: N/A	A8NW (SW)	0	-	305303 207293
45	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Deposited Material First Map Published Date: 1957 Last Map Published Date: N/A	A8NW (SW)	0	-	305264 207278
46	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Disturbed Land First Map Published Date: 1956 Last Map Published Date: 1964	A13SW (NW)	10	-	305267 207449
47	**Extractive Industries or Potential Excavations from 1950-1980** Use: Ponds First Map Published Date: 1957 Last Map Published Date: 1957	A13SW (NW)	29	-	305272 207494

Historical Land Use Information (1:2,500)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
48	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Pit First Map Published Date: 1957 Last Map Published Date: N/A	A13SW (NW)	48	-	305253 207494
49	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Deposited Material First Map Published Date: 1957 Last Map Published Date: N/A	A13SW (N)	53	-	305340 207698
50	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Deposited Material First Map Published Date: 1957 Last Map Published Date: 1957	A13SW (NW)	74	-	305213 207481
51	**Extractive Industries or Potential Excavations from 1950-1980** Use: Penybryn Water Works First Map Published Date: 1957 Last Map Published Date: 1957	A13SE (NE)	79	-	305472 207612
52	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Deposited Material First Map Published Date: 1957 Last Map Published Date: N/A	A13SW (N)	99	-	305249 207674
53	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Deposited Material First Map Published Date: 1957 Last Map Published Date: N/A	A13SW (NW)	99	-	305224 207615

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
54	**Air Shafts** Use: Not Supplied Date of Mapping: 1891	A13SE (N)	74	-	305366 207715
55	**Air Shafts** Use: Not Supplied Date of Mapping: 1885	A9SE (SE)	804	-	306154 206817
56	**Air Shafts** Use: Not Supplied Date of Mapping: 1885	A9SE (SE)	867	-	306225 206813
57	**Air Shafts** Use: Not Supplied Date of Mapping: 1885	A9SE (SE)	876	-	306184 206727
58	**Air Shafts** Use: Not Supplied Date of Mapping: 1885	A9SE (SE)	901	-	306288 206859
59	**General Quarrying** Use: Not Supplied Date of Mapping: 1891 - 1951	A13NE (NE)	315	-	305567 207868
60	**General Quarrying** Use: Not Supplied Date of Mapping: 1891	A13NE (NE)	326	-	305577 207873
61	**General Quarrying** Use: Not Supplied Date of Mapping: 1901	A7SE (SW)	502	-	304879 206849
62	**General Quarrying** Use: Not Supplied Date of Mapping: 1885	A3SE (S)	810	-	305371 206349
63	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1965	A8NE (S)	0	-	305366 207247
64	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1884	A13SW (NW)	75	-	305234 207601
65	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1885	A13SW (NW)	97	-	305181 207480
66	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1965	A13NE (NE)	400	-	305591 207960
67	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1992	A8SE (SE)	436	-	305676 206826
68	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1885	A3NW (S)	463	-	305260 206693
69	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1922 - 1965	A9SW (SE)	526	-	305743 206763
70	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1885	A14SE (E)	582	-	306033 207490
71	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1885 - 1992	A9NE (SE)	645	-	306094 207063
72	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1905 - 1965	A14NE (NE)	812	-	306090 207965
73	**Mineral Railway** Use: Not Supplied Date of Mapping: 1885	A8NW (SW)	41	-	305190 207168
74	**Mineral Railway** Use: Not Supplied Date of Mapping: 1884	A8NW (W)	67	-	305102 207386

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
75	**Mineral Railway** Use: Not Supplied Date of Mapping: 1901	A4SW (S)	970	-	305777 206285
76	**Mineral Railway** Use: Not Supplied Date of Mapping: 1885 - 1938	A4SW (S)	985	-	305763 206264
77	**Mining of coal & lignite** Use: Not Supplied Date of Mapping: 1885	A8NE (E)	45	-	305501 207395
78	**Mining of coal & lignite** Use: Not Supplied Date of Mapping: 1885 - 1901	A8NE (SE)	232	-	305664 207101
79	**Mining of coal & lignite** Use: Not Supplied Date of Mapping: 1891	A13NW (N)	244	-	305223 207857
80	**Mining of coal & lignite** Use: Not Supplied Date of Mapping: 1922 - 1938	A9SW (SE)	430	-	305702 206852
81	**Mining of coal & lignite** Use: Not Supplied Date of Mapping: 1922 - 1938	A8SE (SE)	466	-	305689 206799
82	**Mining of coal & lignite** Use: Not Supplied Date of Mapping: 1885	A9SE (SE)	646	-	306092 207050
83	**Mining of coal & lignite** Use: Not Supplied Date of Mapping: 1885	A9SE (SE)	931	-	306286 206789
84	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A8NE (E)	45	-	305501 207395
85	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A13SE (N)	74	-	305366 207715
86	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A8NE (SE)	232	-	305664 207101
87	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A13NW (N)	244	-	305223 207857
88	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A13NE (NE)	328	-	305576 207876
89	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A7SE (SW)	502	-	304879 206849
90	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	646	-	306092 207050
91	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	804	-	306154 206817
92	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A3SE (S)	810	-	305371 206349
93	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	876	-	306184 206727
94	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	901	-	306288 206859
95	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1992	A9SE (SE)	931	-	306286 206789

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
96	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A8NW (S)	0	-	305330 207171
97	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A8NW (W)	17	-	305226 207368
98	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A13SW (W)	137	-	305094 207401
99	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13SW (W)	149	-	305085 207423
100	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A13SW (W)	158	-	305083 207448
101	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A13SW (NW)	184	-	305078 207493
102	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A8SW (SW)	186	-	305117 207058
103	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A8SW (SW)	207	-	305161 206986
104	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A8NW (SW)	238	-	305036 207086
105	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A13SW (NW)	257	-	305077 207644
106	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A7NE (W)	292	-	304942 207221
107	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A7SE (SW)	326	-	305004 206975
108	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A7NE (SW)	348	-	304893 207179
109	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1951	A13NW (N)	356	-	305150 207943
110	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A7NE (SW)	376	-	304885 207093
111	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A18SW (N)	578	-	305084 208165
112	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A12SW (W)	621	-	304632 207558
113	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A14SE (E)	659	-	306090 207575
114	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A2NE (SW)	672	-	304809 206668
115	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A9NE (E)	675	-	306128 207074
116	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A3NW (S)	678	-	305189 206485

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
117	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A18SW (N)	696	-	305240 208333
118	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1905	A14NE (NE)	738	-	306100 207747
119	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A9SE (SE)	755	-	306192 207010
120	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A17SE (N)	757	-	305001 208319
121	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A12SW (NW)	764	-	304542 207723
122	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A2NE (SW)	772	-	304724 206617
123	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A12NW (NW)	774	-	304659 208005
124	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A9SE (SE)	780	-	306209 206981
125	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A17SE (NW)	802	-	304832 208261
126	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A19SW (NE)	804	-	305889 208236
127	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1951	A14NE (NE)	836	-	306140 207905
128	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A12NW (NW)	838	-	304572 207968
129	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A19SW (NE)	877	-	306008 208217
130	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A19SE (NE)	882	-	306110 208082
131	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A2SE (SW)	906	-	304820 206375
132	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A17NE (N)	927	-	304991 208502
133	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A9SE (SE)	938	-	306334 206869
134	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1885	A10NW (E)	940	-	306402 207091
135	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1951	A17SW (NW)	973	-	304606 208278
136	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A2NW (SW)	973	-	304425 206674
137	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A19NW (NE)	987	-	305955 208420

Ground Stability Data (1:50,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	CBSCB Compensation District The site does not fall within the brine compensation area.				
	Brine Subsidence Solution Area The site does not fall within the brine subsidence solution area.				
138	**Potential for Collapsible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
139	**Potential for Collapsible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
140	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	43	1	305233 207465
141	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NE (SE)	248	1	305666 207080
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
142	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NW (N)	0	1	305347 207385
143	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
144	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A8NW (S)	0	1	305310 207157
145	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	87	1	305166 207454
146	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A8SE (S)	202	1	305434 206986
147	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8SE (SE)	211	1	305601 207055
148	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	218	1	305202 207810
149	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
150	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A9NW (SE)	229	1	305702 207211
151	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A8NE (SE)	231	1	305647 207084
152	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A8NE (SE)	231	1	305677 207134

Ground Stability Data (1:50,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
153	**Potential for Running Sand Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
154	**Potential for Running Sand Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	127	1	305103 207397
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8NE (SE)	215	1	305644 207098
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	218	1	305384 207859
155	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A8NW (W)	0	1	305346 207381
156	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A7NE (W)	228	1	305000 207381
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	148	1	305100 207462
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A8SW (S)	217	1	305346 206942

Historical Map List

The following mapping has been analysed for Historical Land Use Information (1:2,500):

1:2,500	Mapsheet	Published Date
Glamorganshire	006_13	1875
Glamorganshire	012_01	1875
Glamorganshire	012_01	1875
Brecknockshire	046_13	1887
Glamorganshire	006_13	1900
Glamorganshire	012_01	1900
Glamorganshire	012_01	1900
Brecknockshire	046_13	1904
Brecknockshire	051_01	1904
Brecknockshire	051_01	1904
Brecknockshire	046_13	1919
Brecknockshire	051_01	1919
Brecknockshire	051_01	1919
Ordnance Survey Plan	SO0508	1964

Historical Map List

The following mapping has been analysed for Historical Land Use Information (1:10,000):

1:10,560	Mapsheet	Published Date
Monmouthshire	010_00	1884
Glamorganshire	012_00	1885
Monmouthshire	016_00	1885
Brecknockshire	051_NW	1889
Brecknockshire	046_SW	1891
Glamorganshire	012_NW	1901
Glamorganshire	006_SW	1905
Brecknockshire	046_SW	1905
Brecknockshire	051_NW	1905
Glamorganshire	006_SW	1922
Glamorganshire	012_NW	1922
Brecknockshire	046_00	1922
Brecknockshire	051_00	1922
Brecknockshire	051_NW	1938
Glamorganshire	006_SW	1951
Glamorganshire	012_NW	1951
Brecknockshire	046_SW	1951
Ordnance Survey Plan	SO00NE	1965
Ordnance Survey Plan	SO00NW	1965
1:10,000	**Mapsheet**	**Published Date**
Ordnance Survey Plan	SO00NE	1992
Ordnance Survey Plan	SO00NW	1992

Data Currency

Mining and Cavities Data	Version	Update Cycle
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2022	Bi-Annually
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Man Made Mining Cavities Stantec UK Ltd	December 2021	Bi-Annually
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Natural Cavities Stantec UK Ltd	December 2021	Bi-Annually
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Historical Land Use Information (1:2,500)	**Version**	**Update Cycle**
Subterranean Features Landmark Information Group Limited	June 2022	Bi-Annually
Ground Stability Data (1:50,000)	**Version**	**Update Cycle**
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Brine Subsidence Solution Area Johnson Poole & Bloomer	December 2020	Annual Rolling Update

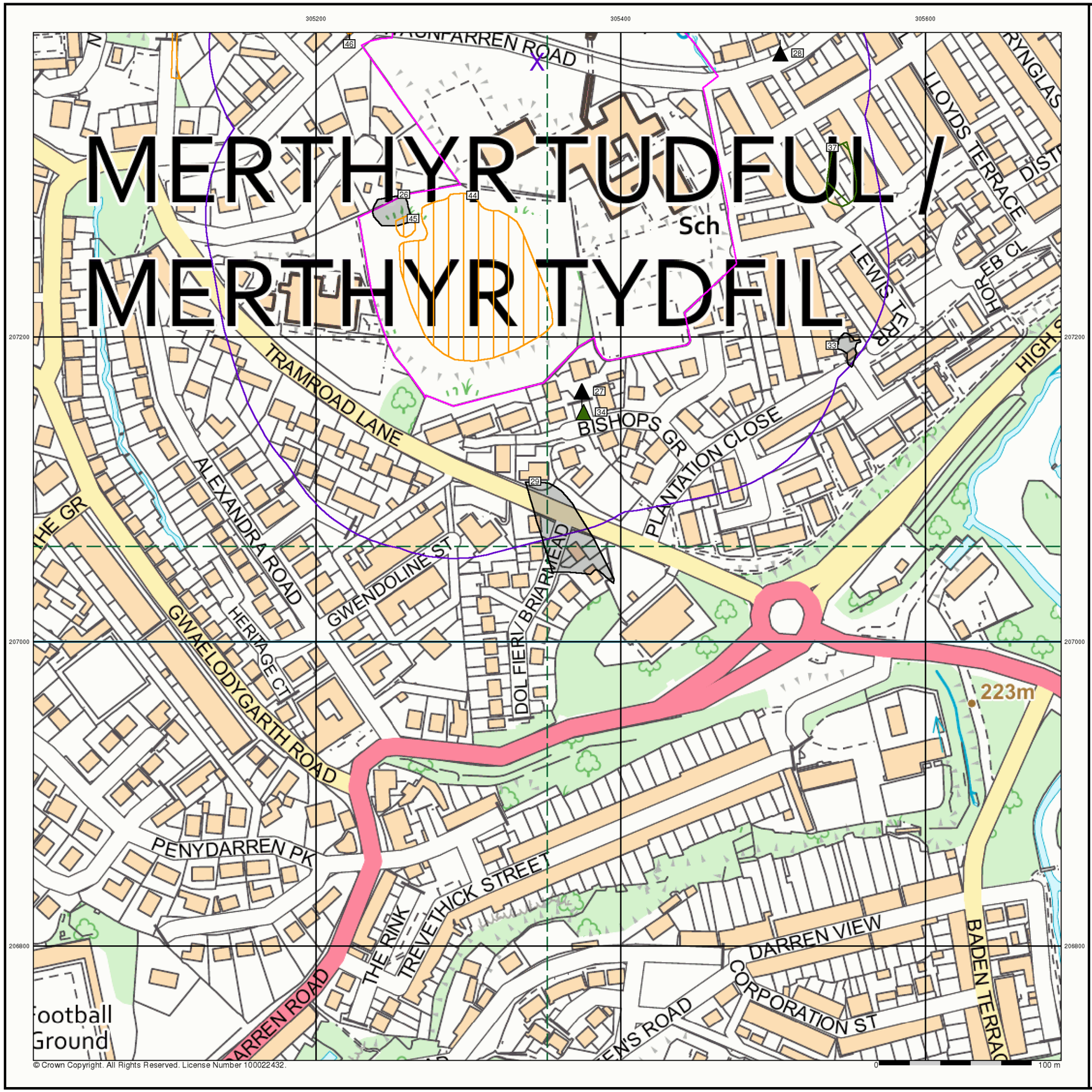
Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
British Geological Survey	
The Coal Authority	
Ove Arup	
Stantec UK Ltd	
Wardell Armstrong	
Johnson Poole & Bloomer	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**The Coal Authority - Property Searches** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
3	**Ove Arup & Partners** Central Square, Forth Street, Newcastle upon Tyne, Tyne and Wear, NE1 3PL	Telephone: 0191 261 6080 Fax: 0191 261 7879
4	**Stantec UK Ltd** Caversham Bridge House, Waterman Place, Reading, RG1 8DN	Telephone: 0118 950 0761 Email: pba.reading@stantec.com Website: www.stantec.com
5	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9960 Fax: 0844 844 9951 Email: customerservice@promap.co.uk Website: www.landmarkinfo.co.uk
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk



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Intégral Géotechnique

Historical Land Use Information (1:2,500)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID | Several of Type at Location

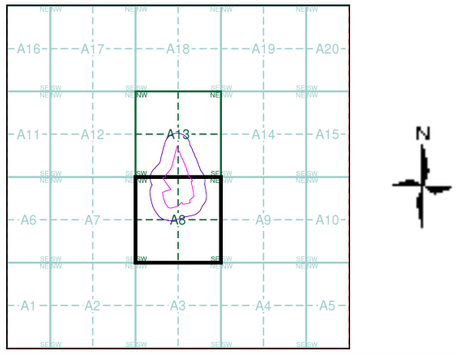
Potentially Contaminative Industrial Uses (Extractive Industries Activity)

	Point	Line	Polygon
Extractive Industries Activity from 1855 - 1909	▲	—	
Extractive Industries Activity from 1893 - 1915	▲	—	
Extractive Industries Activity from 1906 - 1937	▲	—	
Extractive Industries Activity from 1924 - 1949	▲	—	
Extractive Industries Activity from 1950 - 1980	▲	—	

Subterranean Features

	Point	Line	Polygon
Subterranean Features	▼	---	

Mining and Ground Stability - Segment A8



Order Details

Order Number: 299500301_1_1
Customer Ref: 14075/LP
National Grid Reference: 305350, 207380
Slice: A
Site Area (Ha): 6.79
Plot Buffer (m): 100

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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0 100 m

Intégral Géotechnique

Historical Land Use Information (1:2,500)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID

Several of Type at Location

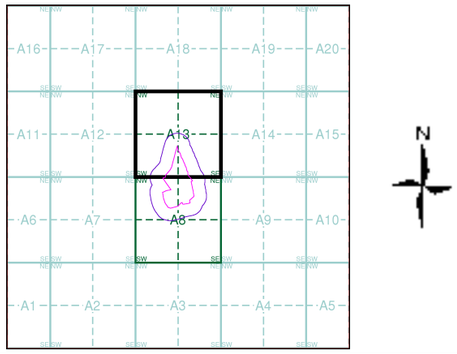
Potentially Contaminative Industrial Uses (Extractive Industries Activity)

	Point	Line	Polygon
Extractive Industries Activity from 1855 - 1909	▲	—	■
Extractive Industries Activity from 1893 - 1915	▲	—	■
Extractive Industries Activity from 1906 - 1937	▲	—	■
Extractive Industries Activity from 1924 - 1949	▲	—	■
Extractive Industries Activity from 1950 - 1980	▲	—	■

Subterranean Features

	Point	Line	Polygon
Subterranean Features	▼	- - -	■

Mining and Ground Stability - Segment A13



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Plot Buffer (m):	100

Site Details

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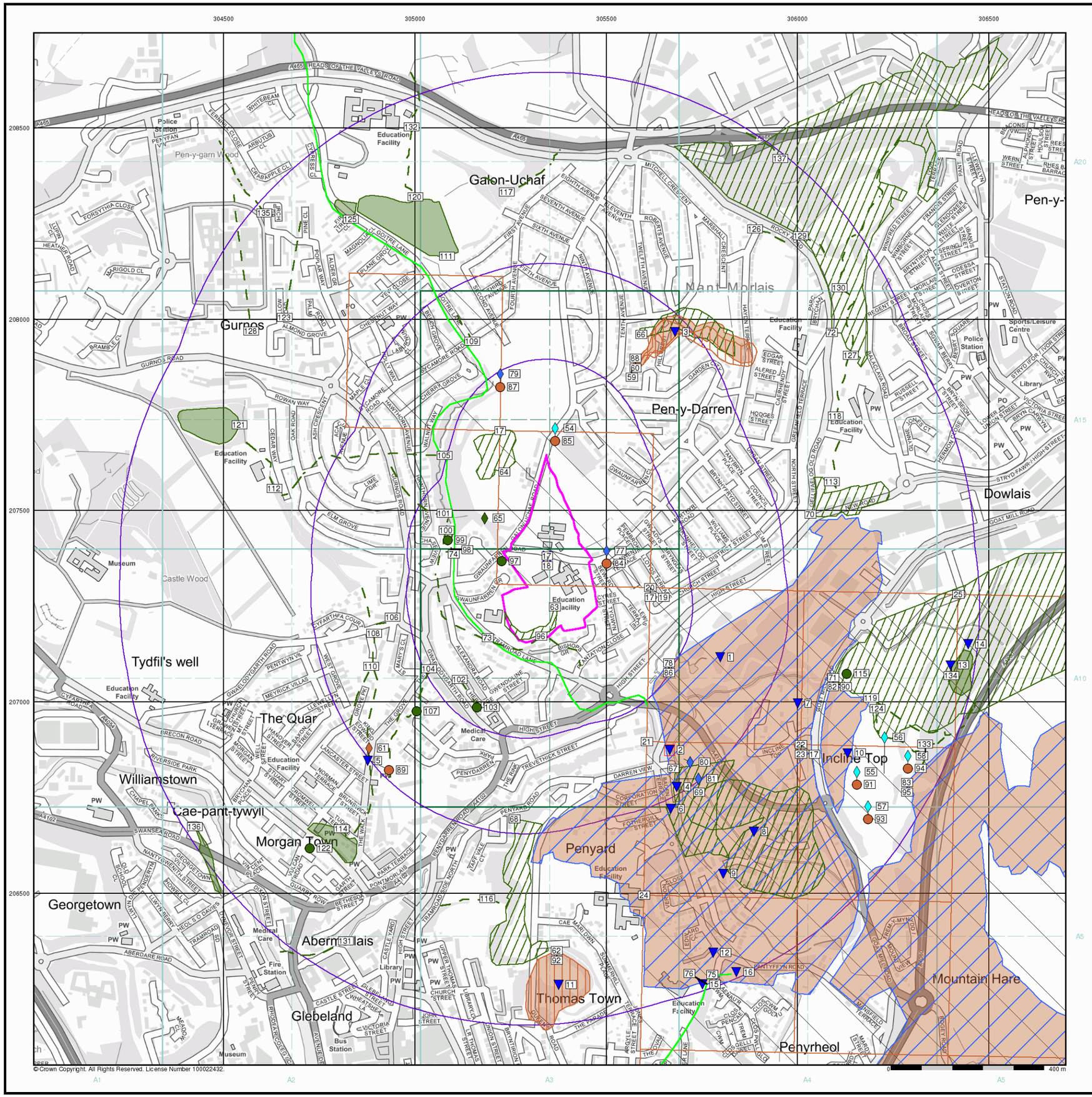


Intégral Géotechnique

Historical Land Use Information (1:10,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID

Several of Type at Location

Potentially Contaminative Industrial Uses (Past Land Uses - Mining)

	Point	Line	Polygon
Air Shafts			
Disturbed Ground			
General Quarrying			
Heap, unknown constituents			
Mineral Railway			
Mining and Quarrying General			
Mining of Coal & Lignite			
Quarrying of Sand and Clay, Operation of Sand and Gravel Pits			

Historical Land Use

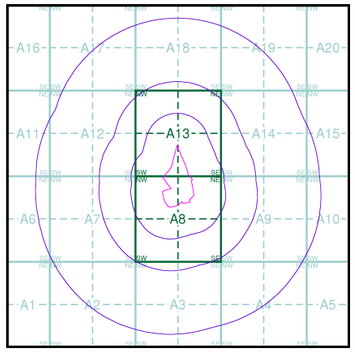
	Point	Line	Polygon
Potentially Infilled Land (Non-Water)			
Potentially Infilled Land (Water)			
Former Marsh			

Mining Data

Potential Mining Area

BGS Recorded Mineral Site

Mining and Ground Stability - Slice A



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

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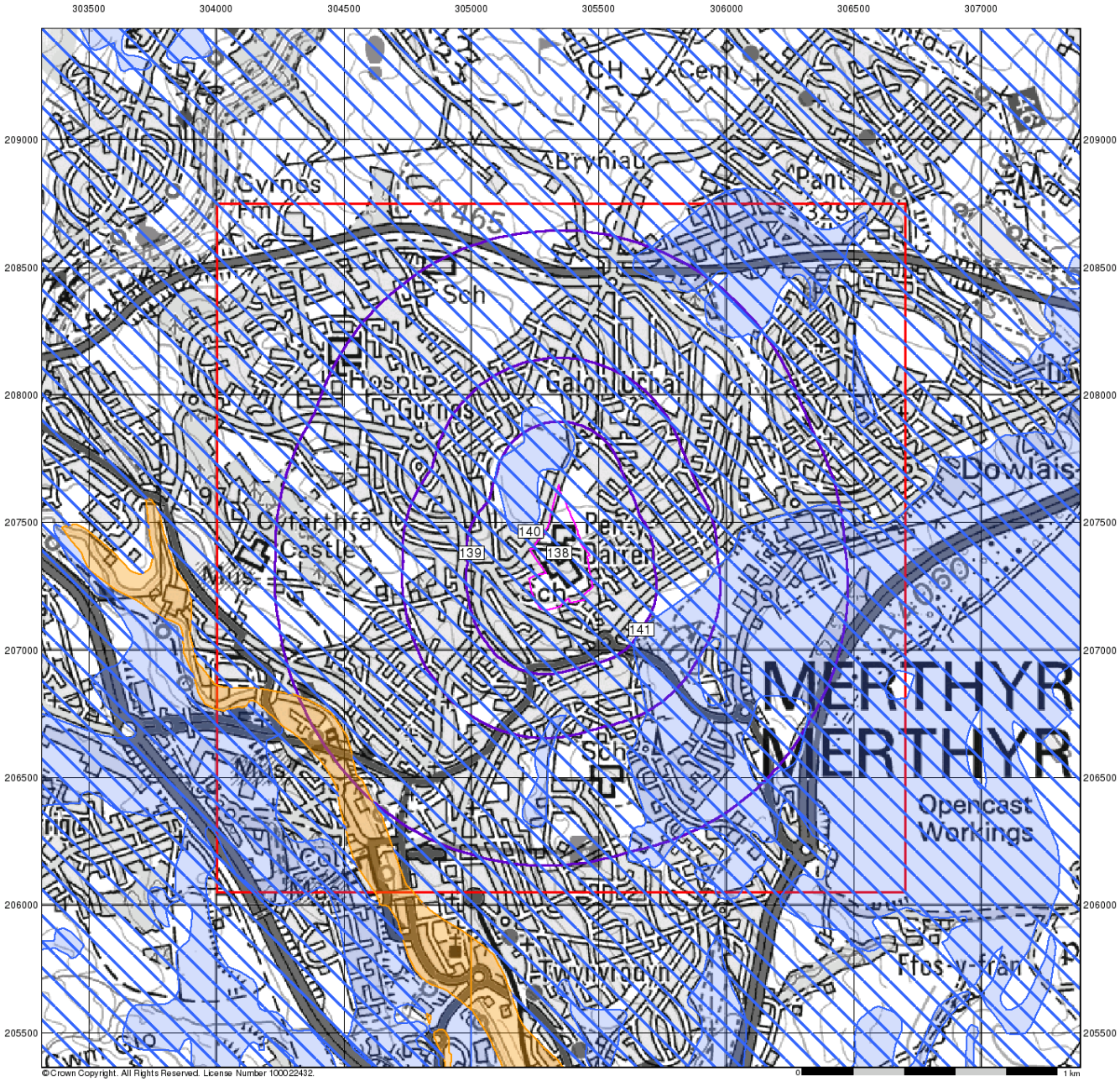


Intégral Géotechnique

Ground Stability Data (1:50,000)

General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Potential for Compressible Ground Stability Hazards

High
Low
Moderate
Very Low

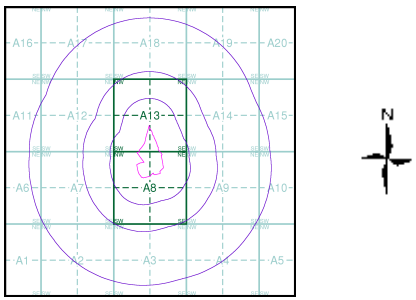
Potential for Collapsible Ground Stability Hazards

High
Low
Moderate
Very Low

Brine Pumping and Salt Mining

	Point	Polygon
Brine Pumping Related Feature		
Salt Mining Related Feature		

Mining and Ground Stability - Slice A



Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

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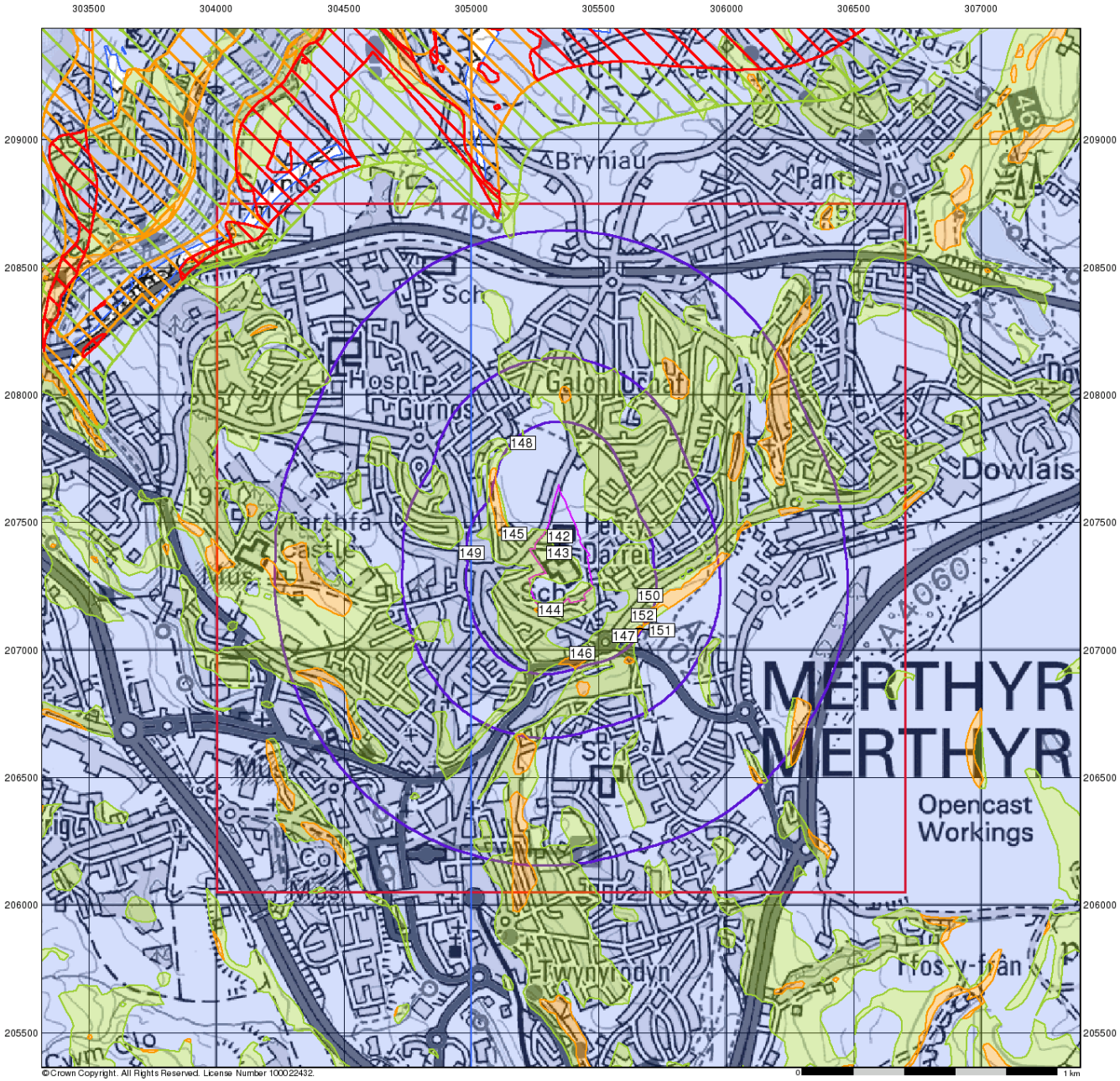


Intégral Géotechnique

Ground Stability Data (1:50,000)

General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

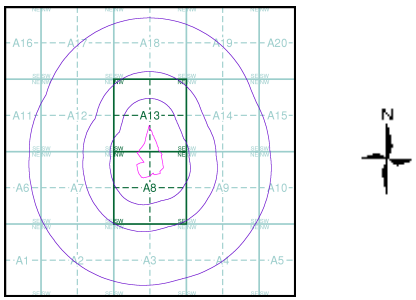
Potential for Landslide Ground Stability Hazards

High
Low
Moderate
Very Low

Potential for Ground Dissolution Stability Hazards

High
Low
Moderate
Very Low

Mining and Ground Stability - Slice A



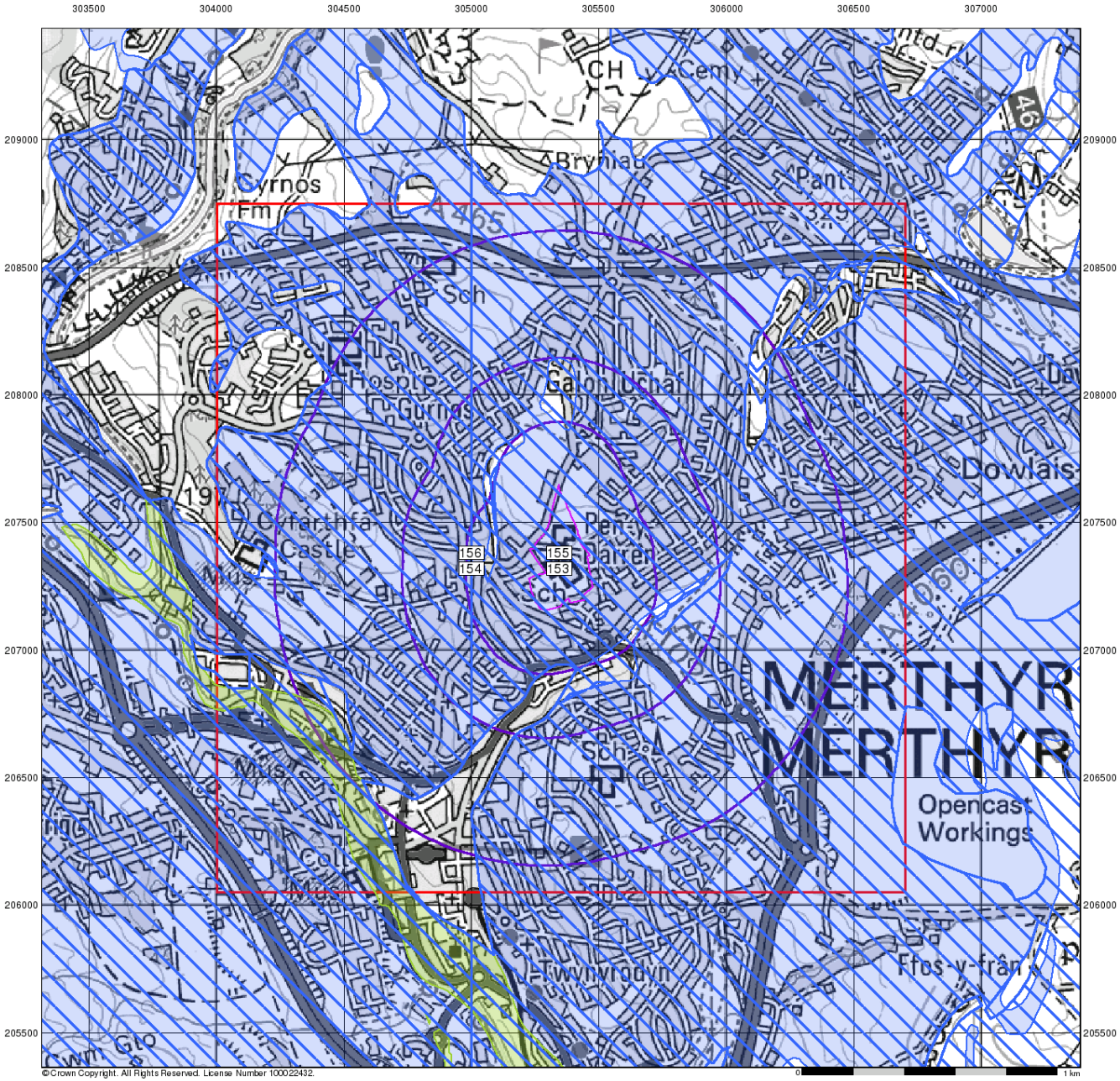
Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Intégral Géotechnique

Ground Stability Data (1:50,000)

General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

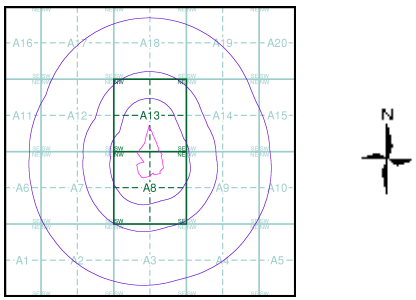
Potential for Running Sand Ground Stability Hazards

High
Low
Moderate
Very Low

Potential for Shrinking or Swelling Clay Ground Stability Hazards

High
Low
Moderate
Very Low

Mining and Ground Stability - Slice A



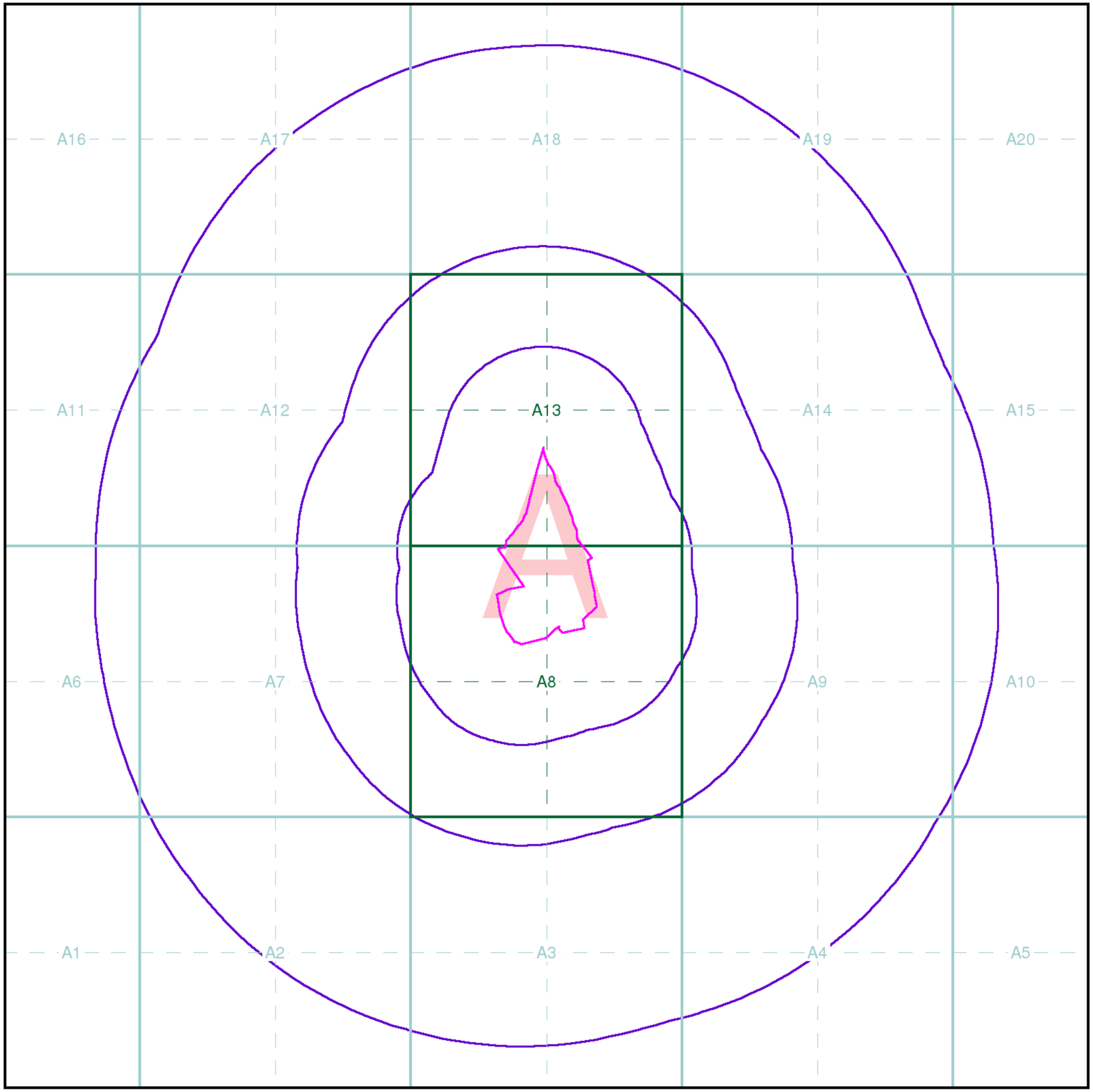
Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207380
Slice:	A
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details

Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Intégral Géotechnique

Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Map data

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Cyfoeth Naturiol Cymru
Natural Resources Wales

Envirocheck reports are compiled from 136 different sources of data.

Client Details
MR H Pritchard, Integral Geotechnique, Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX

Order Details

Order Number:	299500301_1_1
Customer Ref:	14075/LP
National Grid Reference:	305350, 207350
Site Area (Ha):	6.79
Search Buffer (m):	1000

Site Details
Bishop Hedley School, Merthyr Tydfil, CF47 9AP

Full Terms and Conditions can be found on the following link:
http://www.landmarkinfo.co.uk/Terms/Show/515

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

APPENDIX C

LANDMARK RADON INFORMATION MAP

Map Scale: 1:6,566
Page Size: 210 x 297 mm
Drawn By: Landmark Geodata
Commercial In Confidence
Copyright Public Health England- all rights reserved

Radon Information Map

Order Number: 310380431
Date:24/04/2023

Landmark Geodata

APPENDIX D

CONSULTANTS COAL MINING REPORT

The Coal Authority

Consultants

Coal Mining Report

Galon Uchaf Road
Galon Uchaf
Merthyr Tydfil
CF47 9AP

Date of enquiry:	**24 April 2023**
Date enquiry received:	**24 April 2023**
Issue date:	**24 April 2023**
Our reference:	**51003351192001**
Your reference:	**14075/LP**

Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

INTEGRAL GEOTECHNIQUE (WALES) LTD.

Enquiry address

Galon Uchaf Road
Galon Uchaf
Merthyr Tydfil
CF47 9AP

Approximate position of property

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How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	FIVE FOOT GELLIDEG	Coal	4BCQ	2	Beneath Property	2.3	South	157	1897
unnamed	FIVE FOOT GELLIDEG	Coal	4BCR	6	Beneath Property	2.3	South	157	1897
unnamed	GELLIDEG	Coal	4BCT	65	Beneath Property	14.4	North-East	195	1890

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

Distance to spine roadway (m)	Direction to spine roadway
Within	N/A
Within	N/A

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Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	305207-002	305353 207727		Coal	
Adit	305207-003	305194 207871		Coal	
Adit	305207-006	305242 207644		Coal	
Adit	305207-007	305234 207624		Coal	
Shaft	305207-008	305274 207610		Coal	
Shaft	305207-009	305398 207448		Coal	
Shaft	305207-010	305504 207388		Coal	
Adit	305207-011	305548 207188		Coal	
Adit	305207-015	305538 207342		Coal	
Shaft	305207-016	305486 207477		Coal	
Adit	305207-017	305293 207758		Coal	
Shaft	305207-020	305415 207571		Coal	
Shaft	305207-021	305538 207276		Coal	
Shaft	305207-022	305249 207285		Coal	
Adit	305207-023	305235 207478		Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

SWR3608	3622	SW2358
PO0	SWR2510	

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
GARW VEIN	Coal	Yes	Within	N/A	135

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Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property recorded.

Opencast mines

Please refer to the “Summary of findings” map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

Distance to site investigation (m)	Direction
6.1	West
Within	N/A
1.5	South-East

See Section 4 for further information.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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The Coal Authority

Summary of findings

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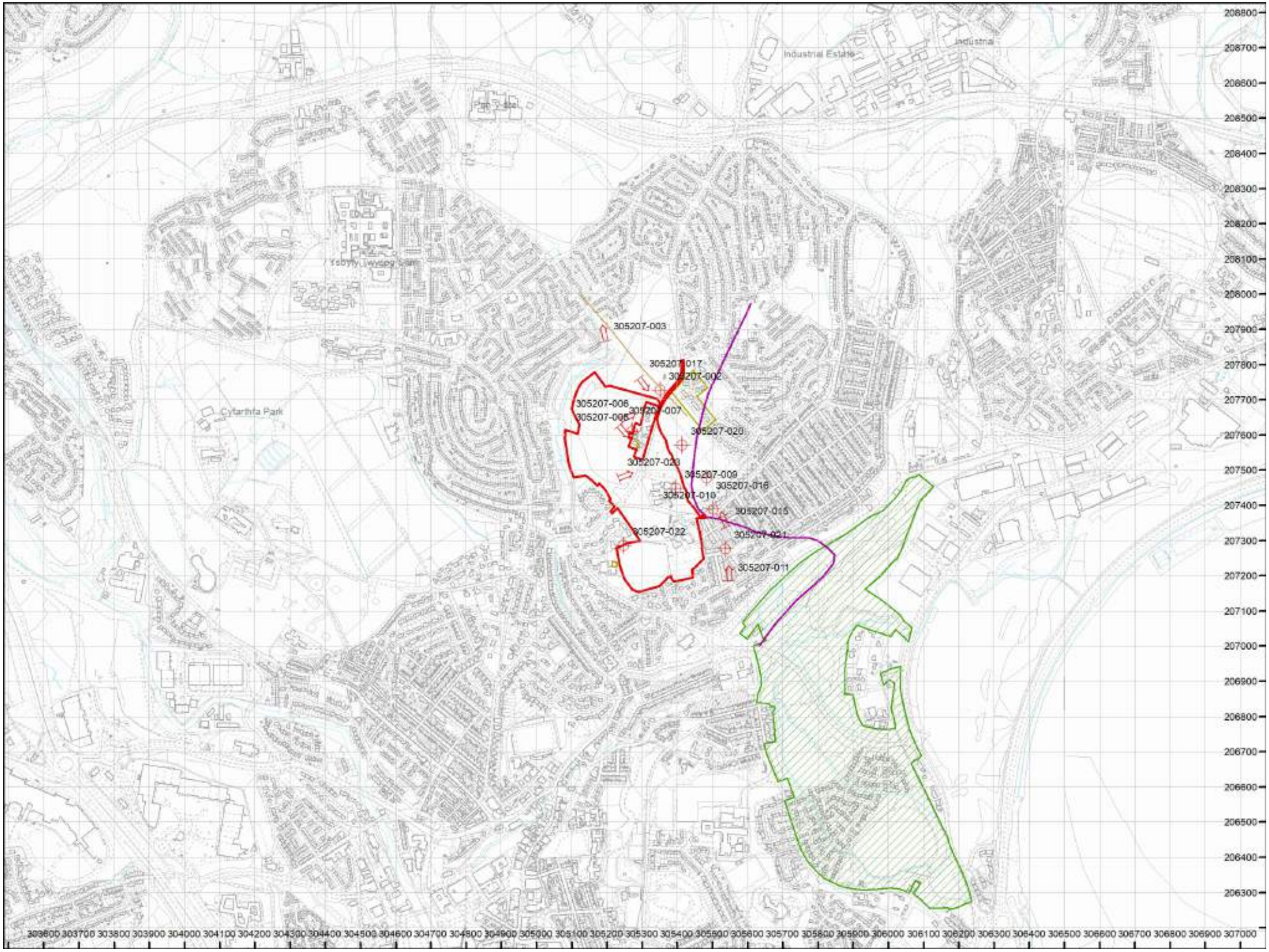
Map data

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

- Approximate position of the enquiry boundary shown
- Disused mine shaft
- Disused adit
- Outcrop (Proven)
- Geological faults
- Unlicensed opencast site
- Site investigations

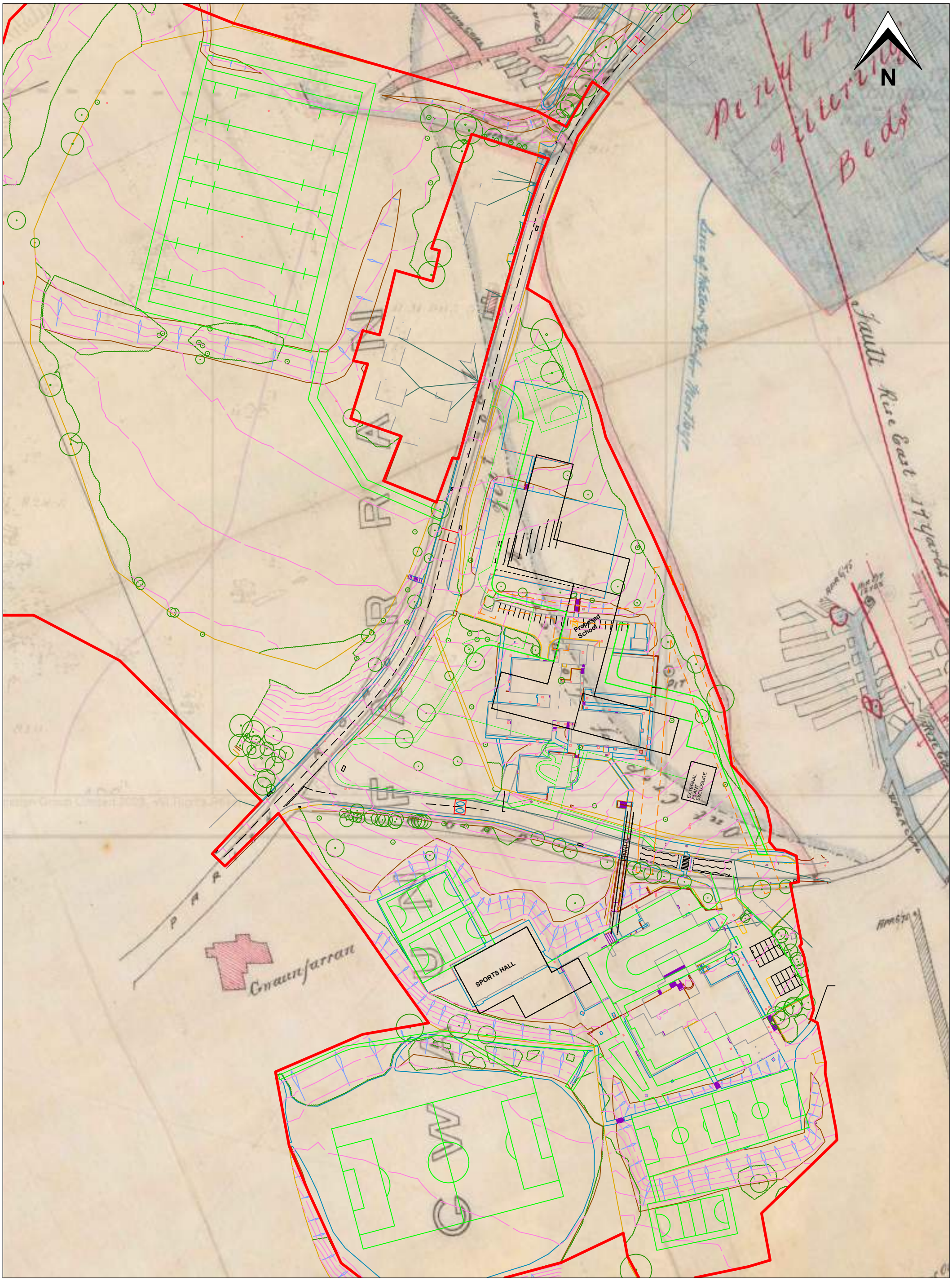


How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

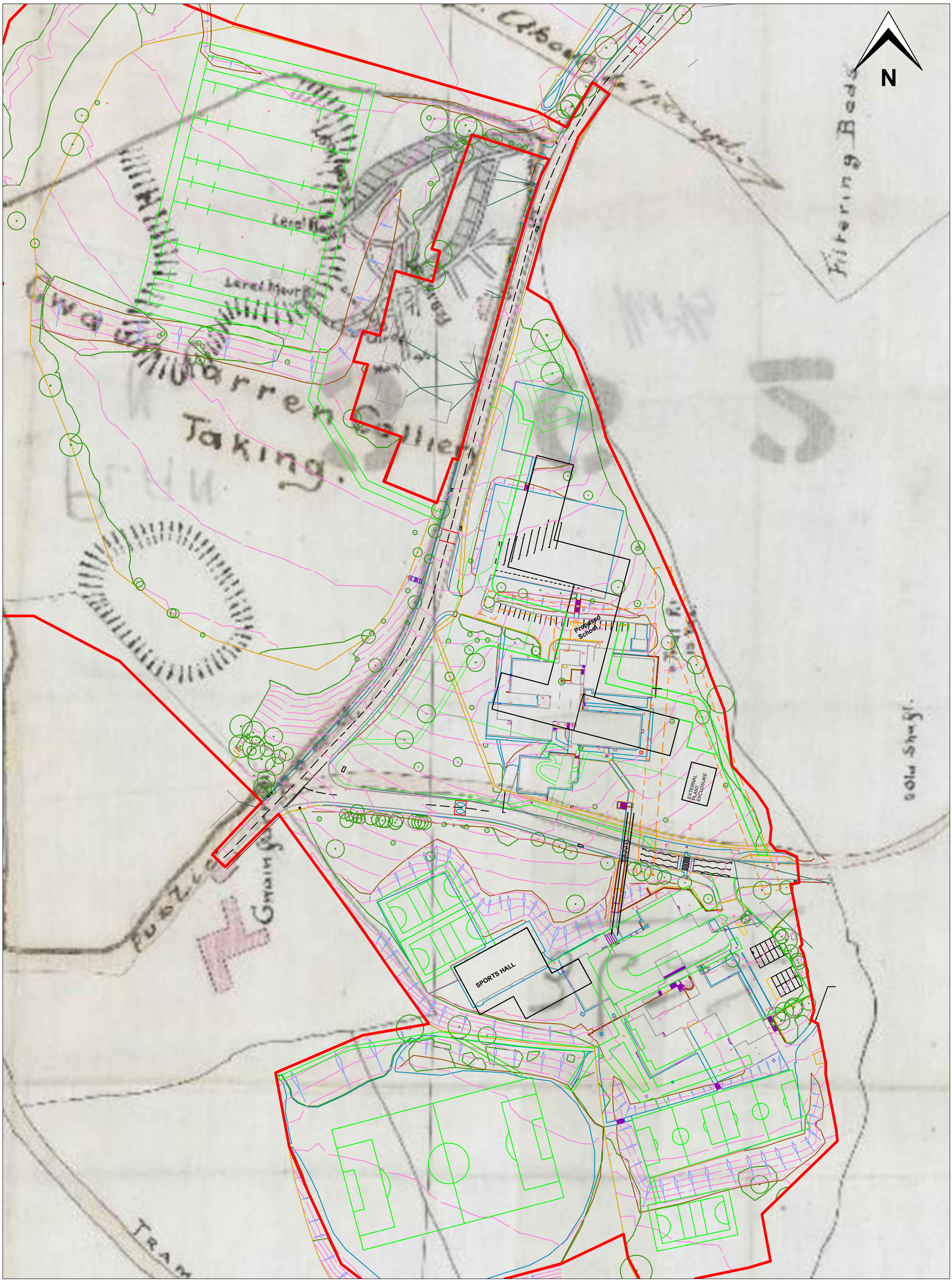
APPENDIX E

GEOREFERENCED MINE ABANDONMENT PLANS



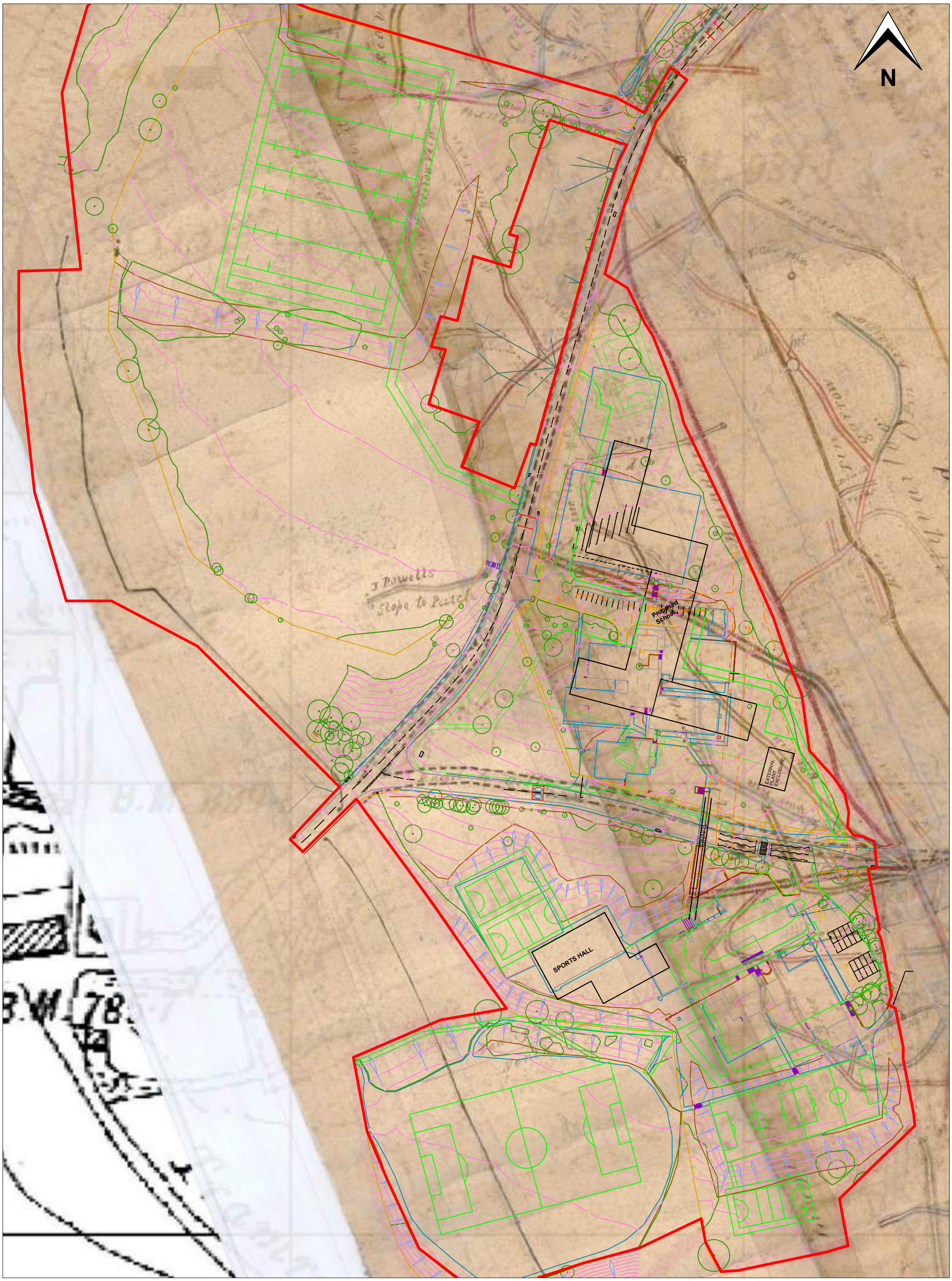
Appendix E(1): Georeferenced Mine Abandonment Plan - Recorded Coal Workings in Five Foot Gellideg (Ab Plan SW2358)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:1,500 at A3		



Appendix E(1): Georeferenced Mine Abandonment Plan - Recorded Coal Workings in Five Foot Gellideg (Ab Plan 3622)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:1,500 at A3		



Appendix E(3): Georeferenced Mine Abandonment Plan - Recorded Ironstone Workings

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:1,500 at A3		

APPENDIX F

TRIAL PIT AND TRIAL TRENCH LOGS

Intégral Géotechnique
Intégral House, 7 Beddau Way
Castlegate Business Park
Caerphilly CF83 2AX
Tel. 029 20807991
Fax. 029 20862176
mail@integralgeotec.com

Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA101** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305340.00mE - 207589.00mN	**Dimensions** 2.50m
Date Excavated: 22/08/2022	Level:	Depth : 2.00m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft dark brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.30			MADE GROUND: Firm light brown mottled yellow and orange slightly gravelly CLAY with low cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse sub-angular and sub-rounded sandstone. [Reworked Material]
0.50	B					
			0.70			Firm brownish grey slightly sandy very gravelly CLAY with low cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to rounded sandstone, siltstone and mudstone.
1.50	B					
			2.00			End of Trialpit at 2.00 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

Intégral Géotechnique
Intégral House, 7 Beddau Way
Castlegate Business Park
Caerphilly CF83 2AX
Tel. 029 20807991
Fax. 029 20862176
mail@integralgeotec.com

Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA102** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305318.00mE - 207536.00mN	**Dimensions** 2.30m
Date Excavated: 22/08/2022	Level:	Depth : 2.00m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			Grass over soft light brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.90			MADE GROUND: Firm light brown mottled yellow and orange slightly sandy slightly gravelly CLAY with low cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse sub-angular to sub-rounded sandstone. [Reworked Material] *... Slow progress of excavation below 0.3m bgl.*
2.00	B		2.00			Firm to stiff, stiff brownish grey mottled orange and yellow slightly sandy gravelly CLAY with low to medium cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone and mudstone. End of Trialpit at 2.00 m

1 2 3 4 5

Remarks:
1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

Intégral Géotechnique
Intégral House, 7 Beddau Way
Castlegate Business Park
Caerphilly CF83 2AX
Tel. 029 20807991
Fax. 029 20862176
mail@integralgeotec.com

Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA103** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305372.00mE - 207538.00mN	**Dimensions** 2.30m × 0.70m, Depth : 2.00m
Date Excavated: 22/08/2022	Level:	

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft light brown slightly sandy slightly gravelly SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded sandstone. [Topsoil]
			0.15			MADE GROUND: Firm to stiff brownish grey mottled orange and yellow slightly sandy gravelly CLAY low cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Reworked Material]
			0.50			MADE GROUND: Firm locally soft dark grey gravelly CLAY. Gravel is fine to coarse angular to sub-rounded sandstone, mudstone and coal. [Reworked Material]
1.00	B		1.00			Firm grey mottled brown gravelly CLAY with medium cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse sub-angular and sub-rounded of sandstone and mudstone.
			2.00			End of Trialpit at 2.00 m

1 2 3 4 5

Remarks:

1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

Intégral Géotechnique
Intégral House, 7 Beddau Way
Castlegate Business Park
Caerphilly CF83 2AX
Tel. 029 20807991
Fax. 029 20862176
mail@integralgeotec.com

Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA106** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305388.00mE - 207503.00mN	**Dimensions** 2.40m × 0.70m, Depth : 2.30m
Date Excavated: 22/08/2022	Level:	

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft light brown slightly sandy slightly gravelly SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded sandstone. [Topsoil]
			0.40			MADE GROUND: Firm to stiff brownish grey mottled yellow and orange gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded sandstone, siltstone and mudstone. Gravel is fine to coarse sub-angular and sub-rounded sandstone, siltstone, and mudstone. Inclusions of plastic, wood and ceramic.
			1.10			MADE GROUND: Soft, soft to firm dark grey mottled light brown and orange gravelly CLAY with low cobble and boulder content of sub-angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone and siltstone. [Reworked Material]
2.00	B					
			2.30			End of Trialpit at 2.30 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.3m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA107** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305293.00mE - 207455.00mN	**Dimensions** 1.90m × 0.70m, Depth : 2.00m
Date Excavated: 23/08/2022	Level:	

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			Grass over soft light brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.50			MADE GROUND: Firm to stiff brownish grey mottled orange very gravelly CLAY with high cobble and boulder content of angular to sub-rounded of sandstone and mudstone. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone, siltstone with fine and medium gravel sized lithorelicts of mudstone. [Reworked Material]
						Firm grey gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone and mudstone lithorelicts.
						... slow progress of excavation below 0.85m bgl due to frequent cobbles and boulders.
2.00	B		2.00			End of Trialpit at 2.00 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA109** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305273.00mE - 207412.00mN	**Dimensions** 2.10m
Date Excavated: 23/08/2022	Level:	Depth : 2.30m; 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft light brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.30			Firm to stiff brownish grey mottled orange very gravelly CLAY with high cobble and boulder content of sub-angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			0.70			Firm dark grey gravelly CLAY low to medium cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
						... locally soft below 1.8m bgl.
2.00	B					
			2.30			End of Trialpit at 2.30 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.3m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA110** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305302.00mE - 207428.00mN	**Dimensions** 1.90m × 0.70m
Date Excavated: 23/08/2022	Level:	Depth : 2.10m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft light brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.25			Firm to stiff brownish grey mottled orange very gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			0.50			Firm grey gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
1.50	B					
			2.10			End of Trialpit at 2.10 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.1m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA111** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305312.00mE - 207407.00mN	**Dimensions** 1.80m × 0.70m
Date Excavated: 23/08/2022	Level:	Depth : 2.40m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.10	ES					Grass over soft light brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.30			Firm to stiff brownish grey mottled orange very gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			0.60			Firm grey gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
2.00	B					
			2.40			End of Trialpit at 2.40 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.4m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA201** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305265.00mE - 207378.00mN	**Dimensions** 2.00m
Date Excavated: 24/08/2022	Level:	Depth : 2.00m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft light brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.30			Firm to stiff greyish brown gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			0.70			Firm locally soft brown and grey very gravelly CLAY low cobble content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone and fine fragments of coal.
2.00	B		2.00			End of Trialpit at 2.00 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA202** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305327.00mE - 207373.00mN	**Dimensions** 2.40m × 0.70m
Date Excavated: 24/08/2022	Level:	Depth : 2.10m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						MADE GROUND: Grass over soft light brown slightly sandy very gravelly CLAY/SILT. Gravel is fine to coarse sub-angular and sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone and coal fragments. Inclusions of metal and vitreous clay.
			0.55			Firm brown and grey slightly mottled brown and yellow silty slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			0.75			Firm dark brown and grey silty gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
1.00	B					
			2.10			End of Trialpit at 2.10 m

1 2 3 4 5

Remarks:
1. Soil infiltration testing undertaken in pit.
2. Excavation refused at 2.1m bgl due to boulder at base of trial pit.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA203** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305363.00mE - 207369.00mN	**Dimensions** 2.10m
Date Excavated: 24/08/2022	Level:	Depth : 2.30m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft light brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.30			Firm to stiff brownish grey gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			0.60			Firm locally soft brown and grey very gravelly CLAY with low to medium cobble and boulder content of sub-angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone and fine coal fragments.
1.50	B					
			2.30			End of Trialpit at 2.30 m

1 2 3 4 5

Remarks:
1. Trial pit terminated at 2.3m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA204** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305288.00mE - 207362.00mN	**Dimensions** 1.90m × 0.70m
Date Excavated: 24/08/2022	Level:	Depth : 2.10m

Samples & In-situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
						Grass over soft greyish brown slightly sandy slightly gravelly SILT with frequent roots and rootlets and low cobble and boulder content of sub-angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, and mudstone. [Topsoil]
			0.30			MADE GROUND: Firm light brown slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. Inclusions of glass and plastic.
			0.80			Firm brownish grey mottled orangish brown silty slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			1.30			Firm to stiff dark grey silty gravelly CLAY. Gravel is fine to coarse angular to rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts and fine coal fragments.
			2.10			End of Trialpit at 2.10 m

Remarks:
1. Trial pit terminated at 2.1m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA205** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305296.00mE - 207314.00mN	**Dimensions** 1.80m × 0.70m
Date Excavated: 26/08/2022	Level:	Depth : 2.00m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.30			MADE GROUND: Grass over soft to firm brown slightly sandy CLAY/SILT with occasional roots and rootlets and low cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone and fragments of brick.
						MADE GROUND: Firm locally soft brownish grey slightly silty gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded sandstone and brick. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone, brick, concrete and vesicular slag. Inclusions of metal and wood.
1.50	B		1.50			Soft greyish brown slightly silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
2.00	B		2.00			End of Trialpit at 2.00 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: 1. Minor seepage encountered at 1.8m bgl.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA206** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305326.00mE - 207344.00mN	**Dimensions** 1.40m × 0.70m
Date Excavated: 26/08/2022	Level:	Depth : 1.90m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft light brown slightly sandy gravelly CLAY/SILT with frequent roots and rootlets and low cobble and boulder content of sub-angular to sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded sandstone. [Topsoil]
			0.20			MADE GROUND: Medium dense greyish brown silty sandy GRAVEL with low cobble and boulder content of sub-angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, vitreous and vesicular slag, bituminous material and concrete. Inclusions of metal, plastic and glass.
			0.75			Firm greyish brown and grey slightly sandy gravelly CLAY with high cobble and boulder content of sub-angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			1.90			End of Trialpit at 1.90 m

1 2 3 4 5

Remarks:
1. Trial pit terminated at 1.9m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA207** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305413.00mE - 207283.00mN	**Dimensions** 1.80m × 0.70m, Depth : 2.00m
Date Excavated: 25/08/2022	Level:	

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			MADE GROUND: Grass over soft light brown gravelly CLAY/SILT. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone, vesicular and vitreous slag. Inclusions of metal.
			1.10			MADE GROUND: Medium dense light brown and grey silty slightly sandy GRAVEL. Gravel is fine to coarse angular to sub-rounded sandstone, concrete, vesicular and vitreous slag and brick. Inclusions of ceramic pottery, plastic, metal, and rebar.
			2.00			MADE GROUND: Firm greyish brown slightly silty very gravelly CLAY low cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded sandstone siltstone and mudstone. Inclusions of wood and fabric material.
						End of Trialpit at 2.00 m

1
2
3
4
5

Remarks:
1. Vitrified clay pipe broken at 1.85m bgl (to pipe crown) - unmarked service.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA208** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305461.00mE - 207287.00mN	**Dimensions** 1.90m × 0.70m
Date Excavated: 25/08/2022	Level:	Depth : 2.20m

Samples & In-situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
						MADE GROUND: Grass over soft light brown gravelly CLAY/SILT. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, and mudstone, slag, concrete and vitreous clay.
			1.20			Firm greyish brown slightly sandy gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			2.20			End of Trialpit at 2.20 m

1 2 3 4 5

Remarks:
1. Trial pit terminated at 2.2m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA209** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305393.00mE - 207262.00mN	**Dimensions** 1.90m
Date Excavated: 26/08/2022	Level:	Depth : 2.00m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						MADE GROUND: Grass over soft light brown gravelly SILT. Gravel is fine to coarse angular to sub-rounded of sandstone, brick and concrete. Inclusions of plastic and glass.
			0.30			MADE GROUND: Firm brown slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone, brick, concrete, vesicular and vitreous slag. Inclusions of metal, plastic, fabric material, and ceramic.
			0.90			MADE GROUND: Firm dark brownish grey gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded sandstone and brick. Inclusions of wood, fabric material and metal.
1.50	B					
			2.00			End of Trialpit at 2.00 m

1 2 3 4 5

Remarks:
1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA210** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305428.00mE - 207237.00mN	**Dimensions** 1.80m × 0.70m
Date Excavated: 25/08/2022	Level:	Depth : 2.00m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft dark brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.25			MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY/SILT. Gravel is fine to coarse angular to sub-rounded sandstone and mudstone, brick, vesicular and vitreous slag. Inclusions of glass, plastic, and ceramic pottery.
			0.90			MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone. [Reworked Material]
			2.00			End of Trialpit at 2.00 m

1
2
3
4
5

Remarks:
1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA211** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305463.00mE - 207262.00mN	**Dimensions** 1.70m × 0.70m, Depth : 2.10m
Date Excavated: 25/08/2022	Level:	

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over soft light brown slightly sandy SILT with frequent roots and rootlets. [Topsoil]
			0.25			MADE GROUND: Firm brown sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, and mudstone, vesicular and vitreous slag and concrete. Inclusions of plastic, glass and wood.
			0.95			MADE GROUND: Firm greyish brown slightly sandy gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone. [Reworked Material]
2.10	B		2.10			End of Trialpit at 2.10 m

1 2 3 4 5

Remarks:
1. Trial pit terminated at 2.1m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA212** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305407.00mE - 207212.00mN	**Dimensions** 2.20m
Date Excavated: 25/08/2022	Level:	Depth : 2.00m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			MADE GROUND: Grass over loose to medium dense orange and grey slightly silty sandy GRAVEL of fine to coarse angular to sub-rounded sandstone and limestone.
			1.30			MADE GROUND: Soft to firm dark grey and black slightly sandy very gravelly CLAY. Gravel is fine to medium angular to sub-rounded of sandstone, brick, concrete, bituminous material and vesicular and vitreous slag. Inclusions of wood, ceramic and fabric.
1.50	B					Firm brownish grey slightly silty very gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
			2.00			End of Trialpit at 2.00 m

1 2 3 4 5

Remarks:
1. Trial pit terminated at 2.0m bgl for soil infiltration testing.

Groundwater: 1. Minor seepage encountered at 2.0m bgl.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**SA213** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305432.00mE - 207219.00mN	**Dimensions** 2.00m × 0.70m, Depth : 2.40m
Date Excavated: 25/08/2022	Level:	

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						MADE GROUND: Grass over loose to medium dense orange and grey slightly silty sandy GRAVEL. Gravel is fine to coarse angular to sub-rounded of sandstone and limestone.
			0.20			MADE GROUND: Soft to firm dark grey and black slightly sandy very gravelly CLAY. Gravel is fine and medium of sandstone, brick and vesicular slag.
			0.35			Firm brownish grey slightly silty very gravelly CLAY with high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
1.00	B					
			2.40			End of Trialpit at 2.40 m

1 2 3 4 5

Remarks:
1. Trial pit terminated at 2.4m bgl for soil infiltration testing.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**TP141** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305359.00mE - 207556.00mN	**Dimensions** 2.60m × 0.70m
Date Excavated: 22/08/2022	Level:	Depth : 2.50m

Samples & In-situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
						Grass over soft light brown slightly sandy slightly gravelly SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone. [Topsoil]
			0.30			MADE GROUND: Firm to stiff brownish grey locally orange and yellow slightly sandy gravelly CLAY with medium cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Reworked Material]
			1.00			MADE GROUND: Firm locally soft dark grey gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone and coal. [Reworked Material]
			1.25			Firm grey mottled brown gravelly CLAY. Gravel is fine to coarse sub-angular and sub-rounded sandstone, siltstone and mudstone.
						...frequent cobbles and boulders below 2.1m bgl.
			2.50			End of Trialpit at 2.50 m

1 2 3 4 5

Remarks:

1. Excavation refused at 2.5m bgl due to boulder at base of trial pit.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075**	**TP245** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	OTJ	1:25

Equipment: JCB 3CX	Coordinates: 305312.00mE - 207352.00mN	**Dimensions** 2.60m × 0.70m
Date Excavated: 26/08/2022	Level:	Depth : 2.40m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.30	ES		0.40			MADE GROUND: Grass over soft sandy gravelly CLAY/SILT. Gravel is fine to coarse angular to sub-rounded of sandstone, concrete and vesicular and vitreous slag. Inclusions of metal.
			1.10			Firm brown silty gravelly CLAY with low cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone.
1.50	B		2.40			Medium dense brownish grey silty GRAVEL high cobble and boulder content of sub-angular and sub-rounded of sandstone. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, mudstone with fine and medium gravel sized lithorelicts of mudstone.
						End of Trialpit at 2.40 m

1
2
3
4
5

Remarks:

1. Excavation terminated at 2.4m bgl due to toe of embankment being undercut.

Groundwater: No groundwater encountered.

Stability: Stable with local instability associated with cobble and boulder removal.

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP09** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	AF	1:25

Equipment: JCB 3CX	Coordinates:	**Dimensions** 2.40m
Date Excavated: 22/06/2021	Level:	Depth : 3.40m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over firm to stiff brown friable slightly gravelly sandy organic clayey SILT with abundant rootlets. (TOPSOIL)
			0.20			(Medium dense) dark grey ashy silty very sandy angular to subrounded fine to coarse GRAVEL of slag/clinker, sandstone masonary, concrete and brick with frequent fragments of slate, metal and timber with medium subangular sandstone masonry and brick cobble content and with low subangular sandstone masonry boulder content. Large pocket of firm brown slightly sandy slightly gravelly silty clay in N face of pit below 2.40m. (MADE GROUND-LANDFILL WASTE)
0.50	ES					
1.50 - 1.60	B					
			3.40			End of Trialpit at 3.40 m

1
2
3
4
5

Remarks:
1. Machine excavated trial pit GL - 3.40m.
2. Terminated due to constant collapse.

Groundwater: Groundwater not encountered

Stability: Unstable below 0.20m

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP10** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	AF	1:25

Equipment: JCB 3CX	Coordinates:	**Dimensions** 2.50m
Date Excavated: 21/06/2021	Level:	Depth : 4.00m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.18			Grass over firm to stiff brown friable slightly gravelly sandy organic clayey SILT with abundant rootlets. (TOPSOIL)
1.50	ES					(Loose to medium dense) dark grey black locally dark brown very ashy silty angular to subangular fine to coarse SAND and GRAVEL of slag/clinker and coke, with abundant domestic refuse comprising plastic, glass, cloth, card, paper, ceramic, brick, concrete, timber and metal with low locally medium angular to subrounded sandstone, slag and brick cobble content and low angular to rounded sandstone boulder content. (MADE GROUND - LANDFILL WASTE)
3.00	ES					
			4.00			End of Trialpit at 4.00 m

1 2 3 4 5

Remarks:
1. Machine excavated trial pit GL - 4.00m.

Groundwater: Groundwater not encountered

Stability: Slight spalling below 0.20m

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP11** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	AF	1:25

Equipment: JCB 3CX	Coordinates:	**Dimensions** 2.40m
Date Excavated: 21/06/2021	Level:	Depth : 3.60m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over firm to stiff brown friable slightly gravelly sandy organic clayey SILT with abundant rootlets. (TOPSOIL)
			0.18			(Loose to medium dense) dark grey black locally dark brown very ashy silty angular to subangular fine to coarse SAND and GRAVEL of slag/clinker and coke, with abundant domestic refuse comprising plastic, glass, card, paper, cloth, ceramic, brick, concrete, timber and metal with low angular sandstone and brick cobble content. (MADE GROUND - LANDFILL WASTE)
0.50	ES					
			1.10			Firm locally stiff brownish grey locally mottled white slightly gravelly slightly sandy locally sandy silty CLAY with low subrounded sandstone cobble content and subrounded sandstone boulder content. Gravel is angular to subrounded fine to coarse of predominantly sandstone, with rare gravel size fragments of coke, slag, cloth and glass (MADE GROUND-LANDFILL WASTE)
1.50 - 1.60	B					
			2.70			Firm grey locally mottled brown slightly gravelly slightly sandy silty CLAY with low locally medium angular to rounded sandstone cobble content and subrounded sandstone boulder content. Gravel is angular to subrounded fine to coarse of predominantly sandstone (GLACIAL TILL)
2.90 - 3.00	B					
			3.60			End of Trialpit at 3.60 m

1 2 3 4 5

Remarks:
1. Machine excavated trial pit GL - 3.60m.

Groundwater: Groundwater not encountered

Stability: Slight spalling above 1.10m

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP12** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	AF	1:25

Equipment: JCB 3CX

Coordinates:

Date Excavated: 22/06/2021

Level:

Dimensions

Depth : 3.60m

2.40m

0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			Grass over firm to stiff brown friable slightly gravelly sandy organic clayey SILT with abundant rootlets. (TOPSOIL)
0.75	ES		1.20			(Loose to medium dense) dark grey black locally dark brown very ashy silty angular to subangular fine to coarse SAND and GRAVEL of slag/clinker and coke, with occasional domestic refuse comprising plastic, glass, card, paper, cloth, ceramic, brick, concrete, timber and metal with low locally medium angular to subrounded sandstone, slag and brick cobble content and low angular to rounded sandstone boulder content. (MADE GROUND - LANDFILL WASTE)
1.70 - 1.80	B		2.30			Firm locally stiff grey and greyish brown locally mottled white slightly gravelly slightly sandy locally sandy silty CLAY with low subrounded sandstone cobble content and low subrounded sandstone boulder content. Gravel is angular to subrounded fine to coarse of predominantly sandstone, with rare gravel size fragments of coke, slag and glass (MADE GROUND-LANDFILL WASTE)
2.50 - 2.60	B		3.60			Firm to stiff becoming stiff light brownish grey mottled orangish brown and brown slightly gravelly slightly sandy silty CLAY with low locally medium angular to rounded sandstone cobble content and subrounded sandstone boulder content. Gravel is angular to subrounded fine to coarse of predominantly sandstone (GLACIAL TILL)
						End of Trialpit at 3.60 m

1 2 3 4 5

Remarks:

1. Machine excavated trial pit GL - 3.60m.

Groundwater: Groundwater not encountered

Stability: Slight spalling above 2.30m

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP13** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	AF	1:25

Equipment: JCB 3CX	Coordinates:	**Dimensions** 2.50m
Date Excavated: 24/06/2021	Level:	Depth : 2.50m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Grass over firm brown friable slightly gravelly sandy organic clayey SILT with abundant rootlets. (TOPSOIL)
			0.20			(Loose to medium dense) dark grey black ashy slightly silty sandy subangular to subrounded fine to coarse GRAVEL of predominantly coke/clinker, with occasional fragments of burnt shale, sandstone and brick. (MADE GROUND)
			0.35			Stiff brownish grey mottled brown slightly gravelly slightly sandy silty CLAY with low locally medium angular to rounded sandstone cobble content and low subrounded sandstone boulder content. Gravel is angular to subrounded fine to coarse of predominantly sandstone, with occasional siltstone and coal. (Possible MADE GROUND)
0.80	ES					
			1.05			Firm to stiff becoming stiff brown mottled grey slightly gravelly slightly sandy silty CLAY with medium subangular to well rounded sandstone cobble content and low rounded sandstone boulder content. Gravel is angular to subrounded fine to coarse of predominantly sandstone, occasional siltstone. (GLACIAL TILL)
2.40 - 2.50	B					
			2.50			End of Trialpit at 2.50 m

1 2 3 4 5

Remarks:
1. Machine excavated trial pit GL - 2.50m.
2. Soakaway testing carried out.

Groundwater: Groundwater not encountered

Stability: Stable

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP14** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	JJ	1:25

Equipment: JCB 4CX	Coordinates:	**Dimensions** 2.80m
Date Excavated: 23/06/2021	Level:	Depth : 2.50m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			Grass over soft to firm brown sandy SILT/CLAY with rootlets (TOPSOIL).
0.50	ES		2.50			MADE GROUND: (Loose) black slightly silty very sandy fine to coarse GRAVEL of angular and sub-angular ash and clinker. With frequent glass, metal, brick, plastic, black bag waste etc (MADE GROUND - LANDFILL WASTE). - organic odour noted. End of Trialpit at 2.50 m

1
2
3
4
5

Remarks:
1. Machine excavated trial pit GL - 2.5m.
2. Terminated due to constant collapse.
3. Soakaway test undertaken.

Groundwater: Groundwater not encountered

Stability: Unstable

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP15** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	JJ	1:25

Equipment: JCB 4CX	Coordinates:	**Dimensions** 3.00m
Date Excavated: 23/06/2021	Level:	Depth : 3.50m, 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.10	ES		0.15			Grass over soft to firm brown sandy SILT/CLAY with rootlets (TOPSOIL).
0.50	ES					(Loose) black slightly silty very sandy fine to coarse GRAVEL of angular and sub-angular ash and clinker. With frequent glass, metal, brick, plastic, black bag waste etc (MADE GROUND - LANDFILL WASTE). - suspected fragments of ACM encountered at 2.0m bgl. - organic odour noted.
2.00	ES					
			3.50			End of Trialpit at 3.50 m

1
2
3
4
5

Remarks:
1. Machine excavated trial pit GL - 3.5m.
2. Terminated due to constant collapse.

Groundwater: Groundwater not encountered

Stability: Unstable

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP16/TT09** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	JJ	1:25

Equipment: JCB 4CX	Coordinates:	**Dimensions** 16.00m
Date Excavated: 23/06/2021	Level:	Depth : 4.00m; 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			Grass over soft to firm brown sandy SILT/CLAY with rootlets (TOPSOIL).
0.80	ES					(Loose) black slightly silty very sandy fine to coarse GRAVEL of angular and sub-angular ash and clinker. With frequent glass, metal, brick, plastic, black bag waste etc (MADE GROUND - LANDFILL WASTE).
			4.00			End of Trialpit at 4.00 m

1
2
3
4
5

Remarks:
1. Machine excavated trial pit GL - 4.0m.
2. Trench trench to potentially expose adit 305207-032.

Groundwater: Groundwater not encountered

Stability: Unstable

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TP17** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	JJ	1:25

Equipment: JCB 4CX	Coordinates:	**Dimensions** 2.80m
Date Excavated: 23/06/2021	Level:	Depth : 2.30m; 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.10	ES					Grass over soft to firm brown sandy SILT/CLAY with rootlets (TOPSOIL).
			0.20			(Loose) black slightly silty very sandy fine to coarse GRAVEL of angular and sub-angular ash and clinker. With frequent glass, metal, brick, plastic, black bag waste etc (MADE GROUND - LANDFILL WASTE).
0.50	ES					- suspected fragment of ACM encountered at 1.0m bgl.
1.00	ES					
			1.60			Firm grey brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular of sandstone [possible natural strata].
1.70	D					
			2.30			End of Trialpit at 2.30 m

1 2 3 4 5

Remarks:
1. Machine excavated trial pit GL - 2.30m.
2. Terminated due to constant collapse.
3. Soakaway test undertaken.

Groundwater: Minor seepage at 1.6m

Stability: Unstable

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TT02** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	GNS	1:25

Equipment: JCB 3CX	Coordinates: 305256.00mE - 207647.00mN	**Dimensions** 10.00m
Date Excavated: 21/06/2021	Level:	Depth : 4.40m, 0.60m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Firm brown silty sandy slightly gravelly organic rich clay (TOPSOIL).
			0.20			
0.30	ES					Loose dark grey and black slightly silty slightly sandy gravel. Gravel is fine to coarse angular and tabular mudstone and rare coal and clinker (MADE GROUND).
			0.55			
1.50	B					Firm to stiff dark grey, grey mottled red brown and yellow brown slightly silty slightly sandy slightly gravelly clay with occasional cobbles and boulders (0.3m x 0.4m) of subrounded sandstone and limestone. Gravel is fine to coarse angular and subangular mudstone and subrounded sandstone and rare ash and brick (MADE GROUND).
			2.00			Firm to stiff mid brown slightly silty slightly sandy slightly gravelly to gravelly CLAY with frequent cobbles and boulders (0.4m x 0.4m) of subrounded sandstone. Gravel is fine to coarse subrounded and subangular sandstone and rare coal. - Slow progress of excavation.
			4.40			End of Trialpit at 4.40 m

1 2 3 4 5

Remarks:
1. Trial trench excavated to potentially expose adit 305207-006.

Groundwater: Groundwater not encountered

Stability: Stable in the short term

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TT05** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	GNS	1:25

Equipment: JCB 3CX	Coordinates: 305242.00mE - 207644.00mN	**Dimensions** 14.00m
Date Excavated: 21/06/2021	Level:	Depth : 4.50m, 0.60m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.10			Firm brown silty sandy organic rich clay (TOPSOIL).
0.50	ES					Firm grey, dark grey and brown slightly silty slightly sandy gravelly clay with frequent cobbles and occasional boulders (0.25m x 0.3m) of blocky sandstone, timber and brick (MADE GROUND -LANDFILL WASTE).
1.20	ES		1.10			Loose grey and dark grey slightly silty slightly sandy gravel with frequent cobbles and occasional boulders (0.25m x 0.3m) of blocky sandstone, whole glass bottles, timber, rag, cloth, plastic, metal, newspaper and rubber. Gravel is fine to coarse angular and subangular vesicular slag, clinker, glass, brick, timber, rubber, slate, mudstone, plastic, bone, metal and ceramic (MADE GROUND-LANDFILL WASTE).
			4.50			End of Trialpit at 4.50 m

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Remarks:
1. Trial trench excavated to potentially expose adit 305207-006.

Groundwater: No groundwater encountered

Stability: Trial pit sides highly unstable leading to over break to ground level

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TT06** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	GNS	1:25

Equipment: JCB 3CX	Coordinates: 305240.00mE - 207613.00mN	**Dimensions** 14.00m
Date Excavated: 21/06/2021	Level:	Depth : 4.20m, 0.60m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.10			Loose brown slightly clayey silty organic rich sand with frequent rootlets (TOPSOIL).
0.60	ES		1.40			Loose dark grey and brown clayey slightly silty sandy gravel with frequent cobbles and boulders (0.4m x 0.5m) of blocky sandstone and occasional plastic sheet. Gravel is fine to coarse angular and subangular sandstone, coal and ash with occasional plastic, timber, brick, ceramic, clinker and vesicular slag (MADE GROUND-LANDFILL WASTE).
			4.20			Firm brown, dark brown and grey silty sandy slightly gravelly to gravelly clay with frequent cobbles and boulders (0.3m x 1.0m) of timber, metal pipe, whole bottles, rag, plastic and carpet with occasional boulder sized pockets of pale green silt (MADE GROUND-LANDFILL WASTE).
						End of Trialpit at 4.20 m

1 2 3 4 5

Remarks:
1. Trial trench excavated to potentially expose adit 305207-007

Groundwater: No groundwater encountered

Stability: Stable in the short term

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TT07** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	GNS	1:25

Equipment: JCB 3CX	Coordinates: 305234.00mE - 207624.00mN	**Dimensions** 8.00m
Date Excavated: 24/06/2021	Level:	Depth : 4.50m, 0.60m

Samples & In-situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
			0.15			Loose brown slightly clayey silty organic rich sand with frequent rootlets (TOPSOIL).
0.40	ES		0.90			Firm grey, dark grey and brown, slightly silty gravelly clay with frequent cobbles of brick, and whole bottles. Gravel is fine to coarse angular and subangular ash, clinker, brick, glass and metal (MADE GROUND-LANDFILL WASTE).
1.00	ES		4.50			Loose dark grey and black silty sandy gravel with frequent cobbles and occasional boulders (0.4m x 0.4m) of brick, tarmac, glass bottles, plastic and rag. Gravel is fine to coarse angular and subangular ash, clinker, brick, vesicular slag, metal, plastic, bone, wood, timber, rubber, newspaper and ceramic (MADE GROUND-LANDFILL WASTE).
						End of Trialpit at 4.50 m

1 2 3 4 5

Remarks:
1. Trial trench excavated to potentially expose adit 305207-007.

Groundwater: No groundwater recorded

Stability: Stable in the short term

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TT08** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	JJ	1:25

Equipment: JCB 4CX	Coordinates:	**Dimensions** 12.00m
Date Excavated: 23/06/2021	Level:	Depth : 4.00m; 0.70m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			Grass over soft to firm brown sandy SILT/CLAY with rootlets (TOPSOIL).
			4.00			(Loose) black slightly silty very sandy fine to coarse GRAVEL of angular and sub-angular ash and clinker. With frequent glass, metal, brick, plastic, black bag waste etc (MADE GROUND - LANDFILL WASTE). End of Trialpit at 4.00 m

1 2 3 4 5

Remarks:
1. Trench trench excavated to potentially expose adit 305207-023

Groundwater: Groundwater not encountered

Stability: Unstable

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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Project Name:	Project No.:	Trial Pit No.:
Bishop Hedley School Campus	**14075A**	**TT10** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Merthyr Tydfil	Willmott Dixon Construction Ltd	LW	1:25

Equipment: JCB 3CX	Coordinates: 305274.00mE - 207610.00mN	**Dimensions** 16.00m
Date Excavated: 21/06/2021	Level:	Depth : 1.50m; 8.00m

Samples & In-situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
			0.15			Grass over firm brown friable slightly gravelly sandy organic clayey SILT with abundant rootlets.
			1.00			(Loose to medium dense) dark grey black ashy silty locally clayey very sandy subangular to subrounded fine to coarse GRAVEL locally SAND and GRAVEL of predominantly coke/clinker, with occasional fragments of burnt shale, sandstone and brick. Low angular to rounded brick and sandstone cobble content (MADE GROUND).
			1.50			Stiff locally firm to stiff brown mottled grey slightly gravelly slightly sandy silty CLAY with medium subangular to well rounded sandstone cobble content and low rounded sandstone boulder content. Gravel is angular to subrounded fine to coarse of predominantly sandstone, occasional siltstone. (GLACIAL TILL)
						End of Trialpit at 1.50 m

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Remarks:
1. Trial trench to potentially expose shaft 305207-008.

Groundwater: Groundwater not encountered

Stability: Relatively Stable

Key:
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

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APPENDIX G

WINDOWLESS SAMPLE BOREHOLE LOGS

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **SA108** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305317.00mE 207445.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86mm	Depth of Casing:	Dates 24/08/2022 -	Logged By: OTJ

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.10			Grass over soft greyish brown slightly sandy gravelly SILT with frequent roots and rootlets. Gravel is fine to coarse sub-angular and sub-rounded of sandstone, siltstone and mudstone. [Topsoil]
								MADE GROUND: Firm to stiff greyish brown mottled orange sandy gravelly friable/fissured CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Reworked Material]
					2.00			End of Borehole at 2.00 m

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Remarks:

1. Borehole terminated at 2.0m bgl for falling head percolation testing.
2. Falling head percolation testing undertaken in borehole.
3. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **SA112** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305372.00mE 207403.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86mm	Depth of Casing:	Dates 23/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Grass over soft brown slightly sandy gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Topsoil]
					0.20			MADE GROUND: Firm to stiff greyish brown slightly silty slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of vesicular slag, mudstone, siltstone and sandstone.
					0.80			Firm to stiff greyish brown mottled orange silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of coal fragments, mudstone, siltstone and sandstone with fine and medium gravel sized lithorelicts of mudstone.
					2.00			End of Borehole at 2.00 m

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4
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Remarks:

1. Borehole terminated at 2.0m bgl for falling head percolation testing.
2. Falling head percolation testing undertaken in borehole.
3. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**SA113** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305405.00mE 207448.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86mm	Depth of Casing:	Dates 23/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Grass over soft brown slightly sandy gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular and sub-angular of sandstone, siltstone and mudstone. [Topsoil]
					0.30			MADE GROUND: Firm orange brown mottled yellow and orange silty slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone, and mudstone with fine and medium gravel sized lithorelicts of mudstone. [Reworked Material]
		1.00	C	N=12 (2,3/3,3,3,3)				
		1.70	C	50 (1,12/50 for 95mm)	1.70			End of Borehole at 1.70 m

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4
5

Remarks:

1. Refusal of windowless sampler at 1.7m bgl.
2. Falling head percolation testing undertaken in borehole.
3. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **SA114** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305422.00mE 207386.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102mm	Depth of Casing:	Dates 23/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.20			Grass over soft greyish brown silty gravelly CLAY with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone and sandstone. [Topsoil]
					0.70			MADE GROUND: Firm, firm to stiff greyish brown slightly silty slightly sandy gravelly CLAY. Gravel is fine to coarse angular and sub-angular of mudstone, siltstone and sandstone. [Reworked Material]
								End of Borehole at 0.70 m

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2
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4
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Remarks:

1. Refusal of windowless sampler at 0.7m bgl.
2. Falling head percolation testing undertaken in borehole.
3. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS171** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305350.00mE 207550.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102mm	Depth of Casing:	Dates 22/08/2022 -	Logged By: OTJ

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.05	ES		0.10			Tarmac/asphalt
		0.40	ES					MADE GROUND: Compact greyish brown, red, grey and black silty sandy slightly clayey GRAVEL. Gravel is fine to coarse angular to sub-rounded of vesicular slag, bituminous material, concrete, coal and mudstone. (Sub-Base)
					0.70			MADE GROUND: Firm greyish brown mottled brownish orange silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of fine ash, mudstone, siltstone, coal and sandstone. [Reworked Material]
		1.00	C	N=12 (2,1/2,4,3,3)				
		2.00	C	N=50 (2,3/50 for 255mm)	2.00			End of Borehole at 2.00 m

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3
4
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Remarks:

1. Refusal of windowless sampler at 2.0m bgl.
2. No groundwater encountered.
3. Installation of ground gas monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS172** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305318.00mE 207532.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86+76+66+56mm		22/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
		0.20 0.20	B ES		0.15			Grass over soft brown slightly sandy gravelly SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Topsoil] MADE GROUND: Stiff greyish brown mottled grey and orange silty gravelly friable CLAY with low cobble content of angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, quartz, mudstone, siltstone and coal. (Reworked Material]	
		1.00	C	N=21 (7,5/4,5,6,6)	1.00			Stiff greyish brown mottled grey and orange silty gravelly CLAY with low cobble content of angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, quartz, mudstone, siltstone and coal fragments with fine and medium gravel sized lithorelicts of mudstone.	1
		2.00	C	N=18 (4,4/4,5,4,5)					2
		3.00	C	N=31 (5,6/10,6,6,9)					3
		4.00	C	N=30 (5,6/6,8,8,8)					4
		4.80	C	N=50 (10,7/50 for 245mm)	4.80			End of Borehole at 4.80 m	5

Remarks:

1. Refusal of windowless sampler at 4.8m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS173** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305354.00mE 207510.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86+76+66mm	Depth of Casing:	Dates 22/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.05	ES					Tarmac/asphalt
					0.15			MADE GROUND: Medium dense black sandy slightly clayey GRAVEL. Gravel is fine to coarse angular and sub-angular of vitreous and vesicular slag, bituminous material, mudstone, siltstone and sandstone. ... poor recovery within sampler between ground level and 1.0m
		1.00	C	N=8 (1,1/1,2,3,2)	0.80			MADE GROUND: Soft to firm greyish brown silty gravelly CLAY. Gravel is fine to coarse angular and sub-angular of sandstone, siltstone, mudstone and concrete.
		2.00	C	N=17 (3,2/3,4,5,5)	2.10			MADE GROUND: Firm to stiff orangish brown, brown and grey gravelly fissured CLAY/SILT. Gravel is fine to coarse angular and sub-angular of mudstone, siltstone and sandstone with fine and medium gravel sized lithorelicts of mudstone. [Reworked Material]
		3.00	C	N=28 (5,6/7,5,8,8)	3.00			MADE GROUND: Stiff grey and brown mottled orange silty gravelly CLAY. Gravel is fine to coarse angular and sub-rounded of mudstone, sandstone and vesicular slag with fine and medium gravel sized lithorelicts of mudstone. [Reworked Material]
		3.50	C	50 (2,24/50 for 30mm)	3.50			End of Borehole at 3.50 m

1 2 3 4 5

Remarks:

1. Refusal of windowless sampler at 3.5m bgl.
2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **WS174** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305379.00mE 207508.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86+76+66+56mm	Depth of Casing:	Dates 22/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Grass over soft black gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Topsoil]
		0.30	ES		0.25			MADE GROUND: Medium dense red, brown and grey silty slightly sandy slightly clayey GRAVEL. Gravel is fine to coarse angular to sub-rounded of vesicular slag, bituminous material, coal and sandstone.
		1.00	C	N=7 (2,2/2,1,2,2)	0.80			MADE GROUND: Soft becoming very soft greyish brown mottled black silty slightly gravelly peaty CLAY. Gravel is fine to coarse angular and sub-angular of mudstone, siltstone, and sandstone. [Reworked Material]
		2.00	C	N=3 (1,0/1,0,1,1)				
		3.00	C	N=17 (2,2/3,4,5,5)	3.00			MADE GROUND: Stiff greyish brown mottled black silty slightly gravelly peaty CLAY. Gravel is fine to coarse angular and sub-angular of mudstone, siltstone, and sandstone. [Reworked Material]
		4.00	C	N=17 (2,2/3,4,5,5)	4.00			Firm to stiff, locally soft to firm reddish brown silty slightly gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone with fine and medium gravel sized lithorelicts of mudstone.
	4.50	4.70	C	50 (20,23/50 for 125mm)	4.70			End of Borehole at 4.70 m

Remarks:

1. Refusal of windowless sampler at 4.7m bgl.
2. Water strike at 4.5m bgl.
3. Installation of ground gas monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS175** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305337.00mE 207496.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86+76+66mm	Depth of Casing:	Dates 22/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
					0.10			Tarmac/asphalt	
		0.40	ES		0.50			MADE GROUND: Loose to medium dense grey and black sandy slightly clayey GRAVEL. Gravel is fine to coarse angular to sub-rounded of concrete, bituminous material, vesicular slag, sandstone, siltstone and mudstone.	
		1.00	C	N=17 (8,8/4,4,4,5)				MADE GROUND: Stiff grey mottled green and orange silty slightly gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, and mudstone. [Reworked Material]	1
		2.00	C	N=25 (5,3/4,5,6,10)				*...poor recovery between 2.0 and 3.0m bgl.*	2
		3.00	C	N=42 (10,8/8,10,11,13)					3
		4.00	C	N=50 (7,6/50 for 255mm)	4.00			End of Borehole at 4.00 m	4
									5

Remarks:

1. Refusal of windowless sampler at 4.0m bgl.
2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS176** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305376.00mE 207488.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86+76+66+56mm	Depth of Casing:	Dates 22/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.20			Grass over soft blackish brown gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone and sandstone. [Topsoil]
		1.00	C	N=12 (4,3/4,3,3,2)				MADE GROUND: Firm brown mottled orange silty gravelly friable fissured CLAY. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone and sandstone. [Reworked Material]
		1.80	B		1.80			MADE GROUND: Soft becoming firm greyish brown silty gravelly peaty CLAY. Gravel is fine to coarse angular to sub-rounded of vitreous slag, coal, mudstone, siltstone and sandstone. [Reworked Material]
		2.00	C	N=6 (2,2/2,1,1,2)				
	3.00	3.00	C	N=13 (2,2/2,3,4,4)				
					3.50			Stiff orange brown and greyish brown slightly silty slightly gravelly CLAY with local coarse gravel sized pockets of sand. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone.
		4.00	C	N=24 (2,4/4,5,7,8)				
		4.60	C	50 (3,22/50 for 105mm)	4.60			End of Borehole at 4.60 m

Remarks:

1. Refusal of windowless sampler at 4.6m bgl.
2. Water strike at 3.0m bgl.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS177** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305291.00mE 207451.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86mm		24/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.15	B		0.15			Grass over soft brown gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular and sub-angular of sandstone and mudstone. [Topsoil]
		0.40	ES					Firm to stiff, stiff greyish brown mottled orange slightly sandy silty gravelly friable CLAY with medium cobble content of sub-angular and sub-rounded limestone and sandstone. Gravel is fine to coarse sub-angular and sub-rounded of sandstone and mudstone.
		1.00	B					
		1.00	C	N=22 (4,4/5,3,6,8)				
		1.60	C	50 (7,8/50 for 170mm)	1.60			End of Borehole at 1.60 m

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Remarks:

1. Refusal of windowless sampler at 1.6m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS178** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305335.00mE 207464.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86mm		24/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.20			Grass over soft blackish brown slightly sandy gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular and sub-angular of sandstone, siltstone and mudstone. [Topsoil]
		1.00	C	N=23 (4,4/6,5,6,6)	1.50			MADE GROUND: Firm to stiff, stiff greyish brown mottled orange slightly sandy slightly silty gravelly friable CLAY with low cobble content of angular sandstone. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone, sandstone and coal. [Reworked Material]
		2.00	C	50 (20,24/50 for 95mm)	2.00			Stiff grey slightly silty gravelly friable CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone and mudstone with fine and medium gravel sized lithorelicts of mudstone.
								End of Borehole at 2.00 m

Remarks:

1. Refusal of windowless sampler at 2.0m bgl.
2. No groundwater encountered.
3. Installation of ground gas monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **WS179** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305394.00mE 207471.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing: 116mm	Level:	Scale 1:25
Diameter of Boring: 102+86mm	Depth of Casing: 1.00m	Dates 23/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Grass over soft blackish brown slightly sandy gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Topsoil]
					0.30			MADE GROUND: Loose to medium dense sandy GRAVEL. Gravel is fine to coarse angular and sub-angular of vitreous and vesicular slag and sandstone.
					0.80			MADE GROUND: Soft to firm greyish brown mottled orange silty slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Reworked Material]
		1.00	C	N=8 (3,2/2,1,3,2)				
	1.30 ▼							
		1.80	ES		1.80			MADE GROUND: Loose to medium dense black sandy slightly clayey GRAVEL. Gravel is fine to coarse angular and sub-angular of sandstone, mudstone and shale.
		2.00	C	N=26 (5,4/3,5,6,12)	2.00			End of Borehole at 2.00 m

Remarks:

1. Refusal of windowless sampler at 2.0m bgl.
2. Water strike at 1.3m bgl.
3. Borehole collapsing - unable to advance casing beyond 1.0m bgl. Borehole abandoned.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **WS180** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305374.00mE 207444.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86+76+66mm	Depth of Casing:	Dates 23/08/2022 -	Logged By: OTJ

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Grass over soft blackish brown slightly sandy gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse of mudstone, siltstone, and sandstone. [Topsoil]
					0.20			MADE GROUND: Stiff brown and greyish brown mottled orange slightly silty gravelly friable CLAY. Gravel is fine to coarse angular and sub-angular of sandstone, siltstone and mudstone. [Reworked Material]
		1.00	C	N=34 (3,6/6,10,10,8)				
		2.00	C	N=33 (5,5/7,6,10,10)				
					2.50			Stiff reddish brown silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone and sandstone with fine and medium gravel sized lithorelicts of mudstone.
		3.00	C	N=33 (6,7/6,10,9,8)				
		3.50	C	50 (22,24/50 for 95mm)	3.50			End of Borehole at 3.50 m

Remarks:

1. Refusal of windowless sampler at 3.5m bgl.
2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS181** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305408.00mE 207430.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86mm	Depth of Casing:	Dates 23/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.20			Grass over soft brown gravelly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone. [Topsoil]
		1.00 1.00	B C	N=13 (2,2/2,3,4,4)				MADE GROUND: Firm brown and greyish brown mottled orange silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone and sandstone. [Reworked Material]
		2.00	C	N=50 (3,3/50 for 285mm)	2.00			End of Borehole at 2.00 m

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Remarks:

1. Refusal of windowless sampler at 2.0m bgl.
2. No groundwater encountered.
3. Installation of ground gas monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS182** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305365.00mE 207406.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86+76mm		23/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.10	ES		0.20			Grass over soft brown slightly sandy gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Topsoil]
					0.80			MADE GROUND: Firm to stiff greyish brown slightly silty slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of vesicular slag, mudstone, siltstone and sandstone.
		1.00	C	N=13 (4,2/4,3,3,3)				Firm to stiff greyish brown mottled orange silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of coal, mudstone, siltstone and sandstone with fine gravel sized lithorelicts of mudstone.
		2.00	C	N=22 (3,4/5,4,7,6)				
		2.80	C	50 (7,24/50 for 115mm)	2.80			End of Borehole at 2.80 m

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Remarks:

1. Refusal of windowless sampler at 2.8m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS183** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305365.00mE 207472.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86+76+66mm	Depth of Casing:	Dates 23/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.07			Tarmac/asphalt
					0.40			MADE GROUND: Loose black, grey and green gravelly slightly clayey SAND with low cobble content of sub-angular concrete. Gravel is fine to coarse angular and sub-angular of bituminous material, brick, concrete and sandstone (Sub-Base).
		0.50	ES		0.80			MADE GROUND: Medium dense brown and black slightly clayey GRAVEL. Gravel is fine to coarse angular and sub-angular of sandstone, vesicular and vitreous slag and limestone.
		1.00	C	N=17 (4,3/3,4,4,6)				MADE GROUND: Stiff, locally firm to stiff yellowish brown mottled blueish grey silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone and coal. [Reworked Material]
		2.00	C	N=16 (3,4/4,4,4,4)	2.30			Stiff reddish brown silty gravelly CLAY with low cobble content of sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone with fine and medium gravel sized lithorelicts of mudstone.
		3.00	C	N=22 (3,4/5,5,6,6)				
		3.60	C	50 (10,12/50 for 190mm)	3.60			End of Borehole at 3.60 m

Remarks:

1. Refusal of windowless sampler at 3.6m bgl.
2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS184** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305420.00mE 207395.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86mm	Depth of Casing:	Dates 23/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.20			Grass over soft greyish brown slightly sandy gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular and sub-angular of sandstone and mudstone. [Topsoil]
		0.30	ES					MADE GROUND: Firm greyish brown mottled orange gravelly CLAY with low cobble content of sub-angular sandstone and concrete. Gravel is fine to coarse angular and sub-rounded of concrete, sandstone, siltstone, mudstone and coal.
		1.00	C	N=5 (2,1/0,2,1,2)	0.95			MADE GROUND: Soft greyish brown mottled orange silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, and mudstone. [Reworked Material]
		1.50	C	50 (2,4/50 for 10mm)	1.50			End of Borehole at 1.50 m

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Remarks:

1. Refusal of windowless sampler at 1.5m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **WS185** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305316.00mE 207432.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102mm	Depth of Casing:	Dates 24/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.10			Grass over soft black and greyish brown silty slightly sandy slightly gravelly CLAY with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of mudstone and sandstone. [Topsoil]
								MADE GROUND: Firm greyish brown mottled orange silty gravelly friable CLAY with high cobble content of angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Reworked Material]
		0.70	C	50 (0 for 0mm/50 for 10mm)	0.70			End of Borehole at 0.70 m

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Remarks:

1. Refusal of windowless sampler at 0.7m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS186** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305339.00mE 207444.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86mm	Depth of Casing:	Dates 24/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.20			Grass over soft blackish brown silty gravelly CLAY with frequent roots and rootlets. Gravel is fine to coarse angular and sub-angular of sandstone, siltstone and mudstone. [Topsoil]
		1.00	C	N=39 (4,5/8,12,9,10)				Firm to stiff, stiff greyish brown mottled orange slightly silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, and mudstone with fine and medium gravel sized lithorelicts of mudstone.
		2.00	C	N=50 (5,5/50 for 275mm)	2.00			End of Borehole at 2.00 m

1 2 3 4 5

Remarks:

1. Refusal of windowless sampler at 2.0m bgl.
2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS187** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305375.00mE 207528.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86+76+66mm	Depth of Casing:	Dates 22/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.15			Grass over loose black gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone and sandstone. [Topsoil]
								MADE GROUND: Soft to firm greyish brown silty gravelly CLAY with low cobble content of sub-angular concrete and vesicular slag. Gravel is fine to coarse angular to sub-rounded of concrete, sandstone, siltstone and mudstone.
		1.00	C	N=8 (1,1/1,2,3,2)	1.00			MADE GROUND: Soft to firm becoming stiff greyish brown mottled orange silty gravelly CLAY with low cobble content of angular concrete. Gravel is fine to coarse angular to sub-angular of sandstone, siltstone, and mudstone. [Reworked Material]
		1.50	B					
		2.00	C	N=18 (8,7/3,4,4,7)				
		2.70	B		2.70			MADE GROUND: Stiff reddish brown silty slightly gravelly CLAY with medium cobble content of sub-angular mudstone and concrete. Gravel is fine to coarse angular and sub-angular of sandstone, siltstone and mudstone. [Reworked Material]
		3.00	C	N=18 (3,3/3,3,7,5)				
		3.70	C	50 (22,24/50 for 135mm)	3.70			End of Borehole at 3.70 m

Remarks:

1. Refusal of windowless sampler at 3.7m bgl.
2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS271** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305256.00mE 207383.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86mm		24/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.20	B		0.20			Grass over soft brown slightly sandy very slightly gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone and sandstone. [Topsoil]
		1.00	C	N=24 (3,4/5,5,7,7)	1.00			Firm to stiff grey mottled orange friable CLAY with low cobble content of sub-angular sandstone. Gravel is fine to coarse angular and sub-rounded of sandstone, siltstone and mudstone.
		2.00	C	N=50 (9,12/50 for 235mm)	2.00			Stiff greyish brown slightly silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone with fine and medium gravel sized lithorelicts of mudstone.
								End of Borehole at 2.00 m

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Remarks:

1. Refusal of windowless sampler at 2.0m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS272** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305339.00mE 207371.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86mm		24/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.20	ES		0.10			Grass over soft brown slightly sandy slightly gravelly SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone and mudstone. [Topsoil]
					0.40			MADE GROUND: Loose to medium dense brown and orange sandy slightly clayey GRAVEL with low cobble content of angular brick. Gravel is fine to coarse angular to sub-rounded of brick, vesicular slag, sandstone, siltstone and mudstone.
								Firm to stiff black and greyish brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone and coal fragments.
					0.80			Stiff greyish brown silty gravelly fissured CLAY. Gravel is fine to coarse angular to sub-rounded sandstone, siltstone and mudstone.
		1.00	C	N=19 (5,4/4,4,6,5)				
		2.00	C	N=50 (9,8/50 for 255mm)	2.00			End of Borehole at 2.00 m

1 2 3 4 5

Remarks:

1. Refusal of windowless sampler at 2.0m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS273** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305387.00mE 207346.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102mm	Depth of Casing:	Dates 25/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.07			Tarmac/asphalt
		0.20	ES		0.15			MADE GROUND: Loose grey coarse GRAVEL of angular limestone (Sub-Base).
					0.40			MADE GROUND: Loose to medium dense grey and black sandy clayey GRAVEL. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone, vitreous and vesicular slag and bituminous material.
								MADE GROUND: Firm to stiff greyish brown slightly silty gravelly CLAY with medium cobble content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone and vesicular and vitreous slag.
		1.00	C	50 (3,7/50 for 85mm)	1.00			End of Borehole at 1.00 m

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Remarks:

1. Refusal of windowless sampler at 1.0m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS274** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305299.00mE 207345.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86+76mm		26/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.05	ES		0.04			Tarmac/asphalt
		0.15	ES		0.20			MADE GROUND: Loose black sandy slightly clayey GRAVEL. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone, vesicular and vitreous slag and bituminous material.
		1.00	C	N=10 (1,2/2,3,3,2)				MADE GROUND: Soft to firm, firm brownish grey and greyish brown silty gravelly CLAY with low cobble content of sub-angular concrete and sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone, vitreous slag, coal and fine ash.
					1.30			Stiff greyish brown mottled orange silty gravelly CLAY with low cobble content of sub-angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone with fine and medium gravel sized lithorelicts of mudstone.
		2.00	C	N=34 (5,7/9,8,9,8)				
		2.90	C	50 (13,10/50 for 95mm)	2.90			End of Borehole at 2.90 m

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Remarks:

1. Refusal of windowless sampler at 2.9m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **WS275** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305343.00mE 207309.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86mm	Depth of Casing:	Dates 26/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.10	ES		0.20			Grass over soft brown gravelly slightly clayey SILT with frequent roots and rootlets. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Topsoil]
		1.00	C	N=34 (4,9/16,8,7,3)				MADE GROUND: Stiff to very stiff greyish brown silty gravelly CLAY with low cobble content of angular and sub-angular sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone, mudstone, vesicular slag, bituminous material and quartz.
		1.60	C	50 (2,2/50 for 10mm)	1.60			End of Borehole at 1.60 m

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Remarks:

1. Refusal of windowless sampler at 1.6m bgl.
2. No groundwater encountered.
3. Installation of ground gas monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS277** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305403.00mE 207312.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86mm		25/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.05			Concrete paving slab
					0.09			Concrete
								MADE GROUND: Loose black and brown sandy slightly clayey GRAVEL. Gravel is fine to coarse angular to sub-rounded of sandstone, bituminous material, vesicular and vitreous slag and concrete. Inclusions of wood.
					0.70			MADE GROUND: Medium dense grey sandy GRAVEL. Gravel is fine to coarse angular of concrete.
		0.80	ES					
		1.00	C	N=6 (1,0/0,1,1,4)	0.95			Soft grey and greyish brown slightly silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of mudstone, siltstone and sandstone.
		2.00	C	N=50 (12,10/50 for 285mm)	2.00			End of Borehole at 2.00 m

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Remarks:

1. Refusal of windowless sampler at 2.0m bgl.
2. No groundwater encountered.
3. Installation of ground water and ground gas monitoring well within borehole.
4. Borehole collapsed to 1.5m bgl upon removal of sampling equipment.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS278** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305452.00mE 207308.00mN	WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102+86+76mm	Depth of Casing:	Dates 25/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
								Tarmac/asphalt
		0.20	ES		0.16			MADE GROUND: Loose brownish grey and black slightly sandy clayey GRAVEL. Gravel is fine to coarse angular and sub-angular of bituminous material, vesicular slag, brick, sandstone and mudstone.
					0.50			MADE GROUND: Soft to firm, becoming firm to stiff greyish brown and grey slightly sandy very gravelly CLAY. Gravel is fine to coarse angular of bituminous material, vitreous and vesicular slag, brick and sandstone.
		1.00	C	N=9 (5,3/2,2,3,2)				
		2.00	C	N=17 (3,4/5,4,4,4)				
					2.20			MADE GROUND: Soft to firm greyish brown slightly silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone.
		2.90	C	50 (6,12/50 for 95mm)	2.90			End of Borehole at 2.90 m

Remarks:

1. Refusal of windowless sampler at 2.9m bgl.
2. No groundwater encountered.
3. Installation of ground gas monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS279** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305423.00mE 207260.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86+76+66mm		25/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.10			Tarmac/asphalt
		0.20	ES		0.30			MADE GROUND: Loose brown and black sandy clayey GRAVEL. Gravel is fine to coarse angular and sub-angular of mudstone and sandstone. (Sub-Base)
		1.00	C	N=4 (1,1/1,1,1,1)				MADE GROUND: Soft greyish brown and orange brown silty gravelly CLAY with low cobble content of sub-angular and sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Reworked Material]
					1.60			Firm becoming stiff orangish brown slightly silty slightly gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone with fine and medium gravel sized lithorelicts of mudstone.
		2.00	C	N=10 (2,2/2,2,3,3)				
		3.00	C	N=22 (2,2/3,3,6,10)				
		4.00	C	50 (7,7/50 for 265mm)	4.00			End of Borehole at 4.00 m

Remarks:

1. Refusal of windowless sampler at 4.0m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075**	**WS280** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd	305419.00mE 207219.00mN	WLS

Equipment:	Diameter of Casing:	Level:	Scale
DART 346			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
102+86mm		25/08/2022 -	FG

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.05	ES		0.10			MADE GROUND: Grass over loose orange slightly gravelly SAND with occasional roots and rootlets. Gravel is fine to coarse sub-angular of sandstone.
					0.20			MADE GROUND: Loose grey and black sandy slightly clayey GRAVEL. Gravel is fine to coarse angular and sub-angular of vesicular slag and sandstone.
								MADE GROUND: Firm greyish brown mottled orange slightly silty slightly gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone. [Reworked Material]
					0.90			Firm to stiff , stiff orange/brown mottled grey silty gravelly CLAY. Gravel is fine to coarse angular to sub-rounded of sandstone, siltstone and mudstone with fine gravel sized lithorelicts of mudstone.
		1.00	C	N=16 (3,3/4,3,4,5)				
		1.50	C	50 (2,5/50 for 10mm)	1.50			End of Borehole at 1.50 m

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Remarks:

1. Refusal of windowless sampler at 1.5m bgl.
2. No groundwater encountered.
3. Installation of ground water level monitoring well within borehole.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075**	Borehole No.: **WS281** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates: 305451.00mE 207333.00mN	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 102mm	Depth of Casing:	Dates 25/08/2022 -	Logged By: FG

Well	Water Strikes	Samples & In situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.05	ES		0.09			Tarmac/asphalt
					0.20			MADE GROUND: Loose black slightly sandy clayey GRAVEL. Gravel is fine to coarse angular of vitreous and vesicular slag, mudstone, siltstone and sandstone.
		0.30	ES					MADE GROUND: Loose grey sandy slightly clayey GRAVEL. Gravel is fine to coarse angular of vitreous and vesicular slag and bituminous material.
		0.50	C	50 (24,24/50 for 10mm)	0.50			End of Borehole at 0.50 m

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Remarks:

1. Refusal of windowless sampler at 0.5m bgl.
2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name:	Project No.:	Borehole No.:
Bishop Hedley School Campus	**14075A**	**WS08** Sheet 1 of 1

Location:	Client:	Coordinates:	Hole Type:
Merthyr Tydfil	Willmott Dixon Construction Ltd		WLS

Equipment:	Diameter of Casing:	Level:	Scale
Competitor Dart			1:25

Diameter of Boring:	Depth of Casing:	Dates	Logged By:
101mm		27/05/2021 -	GNS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
					0.10			Soft brown silty slightly sandy organic rich clay (TOPSOIL).	
		0.20	ES					Very loose and loose dark grey black brown and orange brown silty slightly sandy gravel with occasional cobbles of concrete, mudstone, sandstone, glass and occasional brick. Gravel is fine to coarse angular and subangular burnt shale, mudstone, ash, clinker, glass and occasional brick (MADE GROUND).	
		1.00	C	N=2 (1,1/0,1,0,1)					1
		2.00	C	N=6 (1,2/2,1,2,1)					2
	2.40				2.40			Soft and soft to firm dark grey and brown slightly sandy slightly gravelly clay. Gravel is fine to coarse subangular and subrounded mudstone and siltstone and rare angular brick and ash (MADE GROUND)	
		3.00	C	N=3 (1,0/1,1,0,1)					3
		4.00	C	N=6 (1,2/1,2,1,2)					4
					4.50			Loose grey and orange brown slightly sandy gravel. Gravel is fine to coarse tabular and subangular mudstone and rare coal (MADE GROUND).	
		5.00	C	N=9 (1,2/2,2,3,2)	5.00			End of Borehole at 5.00 m	5

Remarks:

1. Windowless sample borehole to 5m.
2. Groundwater encountered at 2.4m.
3. Gas monitoring well installed.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075A**	Borehole No.: **WS09** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates:	Hole Type: WLS
Equipment: Competitor Dart	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101mm	Depth of Casing:	Dates 27/05/2021 -	Logged By: GNS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
					0.10			Soft brown silty slightly sandy organic rich clay (TOPSOIL).	
		0.30	ES		0.70			Loose dark grey and black slightly silty slightly sandy gravel with occasional cobbles of mudstone. Gravel is fine to coarse angular and subangular mudstone, ash, clinker, ceramic, glass and timber (MADE GROUND).	
		1.00	C	N=8 (1,0/1,2,3,2)	1.90			Soft grey and brown slightly silty slightly gravelly clay. Gravel is fine to coarse subangular mudstone, ash and clinker and angular brick (MADE GROUND).	1
		2.00	C	N=4 (3,2/2,1,1,0)				Very loose and loose brown and orange brown and red brown slightly silty sandy gravel. Gravel is fine to coarse angular and subangular ash, clinker, burnt shale, brick, glass and ceramic (MADE GROUND).	2
		3.00	C	N=2 (1,2/0,0,1,1)					3
		4.00	C	N=4 (1,1/1,1,1,1)					4
		5.00	C	N=10 (1,2/2,3,2,3)	5.00			End of Borehole at 5.00 m	5

Remarks:

1. Windowless sample borehole to 5m.
2. No recovery between 4.0m and 5.0m depth.
3. Groundwater not encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075A**	Borehole No.: **WS10** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates:	Hole Type: WLS
Equipment: Comeptitor Dart	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101mm	Depth of Casing:	Dates 28/05/2021 -	Logged By: GNS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
					0.10			Soft brown silty slightly sandy organic rich clay (TOPSOIL).	
								Very loose and loose dark grey and red brown slightly silty slightly sandy gravel. Gravel is fine to coarse angular and subangular ash, clinker, slag, brick and burnt shale (MADE GROUND).	
		0.50	ES						
		1.00	C	N=4 (1,1/1,0,1,2)					1
		2.00	C	N=7 (1,2/2,1,2,2)					2
		3.00	C	N=4 (1,1/1,0,1,2)					3
		4.00	C	N=7 (1,2/2,2,1,2)					4
		5.00	C	N=4 (1,2/1,1,1,1)	5.00			End of Borehole at 5.00 m	5

Remarks:

1. Windowless sample borehole to 5m.
2. Hole collapsed back to 2.5m after drilling.
3. Groundwater not encountered.
4. Gas monitoring well installed.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075A**	Borehole No.: **WS11** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates:	Hole Type: WLS
Equipment: Competitor Dart	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101mm	Depth of Casing:	Dates 27/05/2021 -	Logged By: GNS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
					0.20			Soft brown silty slightly sandy organic rich clay (TOPSOIL).	
		0.60	ES					Very loose and loose dark grey black slightly silty slightly sandy gravel with occasional cobbles of mudstone. Gravel is fine to coarse angular and subangular ash, clinker, vesicular slag, glass, burnt brick and burnt shale (MADE GROUND).	
		1.00	C	N=6 (1,1/1,2,2,1)					1
		2.00	C	N=5 (2,2/1,1,1,2)					2
		3.00	C	N=5 (1,1/2,1,1,1)					3
		4.00	C	N=4 (2,2/1,1,1,1)					4
		5.00	C	N=9 (1,2/2,3,2,2)	5.00			End of Borehole at 5.00 m	5

Remarks:

1. Windowless sample borehole to 5m.
2. Groundwater not encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075A**	Borehole No.: **WS12** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates:	Hole Type: WLS
Equipment: Comeptitor Dart	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101mm	Depth of Casing:	Dates 28/05/2021 -	Logged By: GNS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
					0.15			Soft dark brown silty slightly sandy slightly gravelly organic rich clay. Gravel is fine and medium subrounded sandstone and rare subangular coal (TOPSOIL).	
								Loose dark grey and black slightly silty very slightly sandy gravel. Gravel is fine to coarse angular to subrounded burnt shale, mudstone, ash, clinker, vesicular slag and rare brick and timber (MADE GROUND).	
		1.00	ES						1
		1.00	C	N=5 (1,1/2,1,1,1)					
		2.00	C	N=4 (1,0/1,1,1,1)					2
		3.00	C	N=7 (1,0/1,2,2,2)					3
		4.00	C	N=7 (1,0/1,1,2,3)					4
		5.00	C	N=5 (2,1/0,1,2,2)	5.00			End of Borehole at 5.00 m	5

Remarks:

1. Windowless sample borehole to 5m.
2. Groundwater not encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075A**	Borehole No.: **WS13** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates:	Hole Type: WLS
Equipment: Competitor Dart	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101mm	Depth of Casing:	Dates 28/05/2021 -	Logged By: GNS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
					0.15			Soft dark brown silty slightly sandy slightly gravelly organic rich clay. Gravel is fine and medium subrounded sandstone and rare subangular coal (TOPSOIL).	
		0.50	ES					Very loose and loose dark grey and black slightly silty very slightly sandy gravel. Gravel is fine to coarse angular to subrounded burnt shale, mudstone, ash, clinker, vesicular slag and rarely brick and timber (MADE GROUND).	
		1.00	C	N=6 (1,1/2,2,1,1)					1
		2.00	C	N=3 (1,1/0,1,1,1)					2
		3.00	C	N=5 (1,1/2,2,1,0)					3
		4.00	C	N=7 (1,1/1,2,2,2)					4
		5.00	C	N=5 (1,0/1,1,2,1)	5.00			End of Borehole at 5.00 m	5

Remarks:

1. Windowless sample borehole to 5m.
2. Groundwater not encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075A**	Borehole No.: **WS14** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates:	Hole Type: WLS
Equipment: Competitor Dart	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101mm	Depth of Casing:	Dates 28/05/2021 -	Logged By: GNS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
		0.20	ES		0.15			Soft dark brown silty slightly sandy slightly gravelly organic rich clay. Gravel is fine and medium subrounded sandstone and rare subangular coal (TOPSOIL).	
								Very loose and loose dark grey and black slightly silty very slightly sandy gravel. Gravel is fine to coarse angular to subrounded burnt shale, mudstone, ash, clinker, vesicular slag and rarely brick and timber (MADE GROUND).	
		1.00	C	N=5 (2,2/2,1,1,1)					1
		2.00	C	N=4 (1,0/1,1,1,1)					2
		3.00	C	N=3 (1,1/0,1,1,1)					3
					3.40			Loose grey silty slightly sandy gravel. Gravel is fine to coarse angular and subangular mudstone and coal (MADE GROUND).	
		4.00	C	N=5 (1,1/2,1,1,1)					4
		5.00	C	N=5 (1,1/0,1,1,3)	5.00			End of Borehole at 5.00 m	5

Remarks:

1. Windowless sample borehole to 5m.
2. Groundwater not encountered.
3. Gas monitoring well installed.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Bishop Hedley School Campus**		Project No.: **14075A**	Borehole No.: **WS15** Sheet 1 of 1
Location: Merthyr Tydfil	Client: Willmott Dixon Construction Ltd	Coordinates:	Hole Type: WLS
Equipment: Competitor Dart	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101mm	Depth of Casing:	Dates 28/05/2021 -	Logged By: GNS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	
					0.20			Soft dark brown silty slightly sandy slightly gravelly organic rich clay. Gravel is fine and medium subrounded sandstone and rare subangular coal (TOPSOIL).	
								Loose dark grey and black slightly silty very slightly sandy gravel. Gravel is fine to coarse angular to subrounded burnt shale, mudstone, ash, clinker, vesicular slag and rarely brick and timber (MADE GROUND).	
		1.00	C	N=5 (1,1/2,1,1,1)					1
		2.00	C	N=4 (2,2/1,1,1,1)					2
	2.50								
		3.00	C	N=7 (1,0/1,2,2,2)					3
		4.00	C	N=7 (1,0/1,1,2,3)					4
		5.00	C	N=5 (2,1/0,1,2,2)	5.00			End of Borehole at 5.00 m	5

Remarks:

1. Windowless sample borehole to 5m.
2. Groundwater encountered at 2.5m.
3. Gas monitoring well installed.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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APPENDIX H

CBR/TRL PROBE RESULTS

South Wales Ground Testing - In situ CBR by DCP Probe

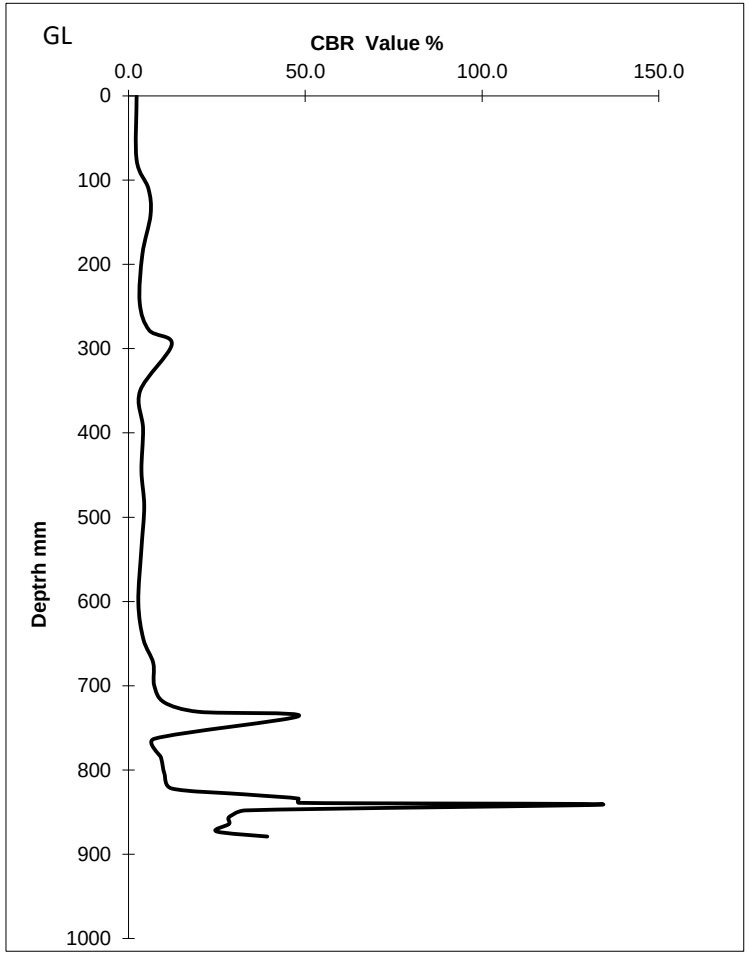
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.3			0				
2.3	76	111	76				
5.6	34	145	110				
6.2	31	176	141				
3.9	47	223	188				
3.2	57	280	245				
5.8	33	313	278				
12.2	17	330	295				
3.3	55	385	350				
4.1	45	430	395				
3.7	50	480	445				
4.4	42	522	487				
3.7	50	572	537				
2.8	64	636	601				
4.2	44	680	645				
7.0	28	708	673				
7.3	27	735	700				
10.2	20	755	720				
19.9	11	766	731				
48.1	5	771	736				
7.3	27	798	763				
9.2	22	820	785				
10.2	20	840	805				
12.2	17	857	822				
33.0	7	864	829				
48.1	5	869	834				
48.1	5	874	839				
134.3	2	876	841				
33.0	7	883	848				
28.4	8	891	856				
28.4	8	899	864				
24.9	9	908	873				
39.3	6	914	879				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 63 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 22.08.22

Reference: DCP 121

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

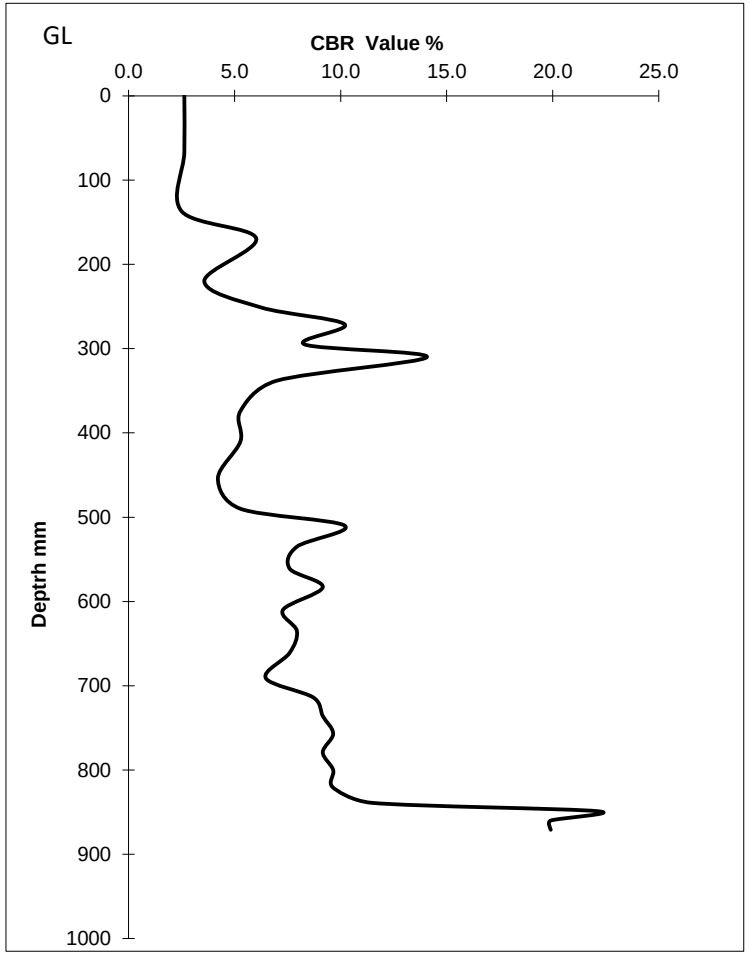
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.6			0				
2.6	67	102	67				
2.5	70	172	137				
6.0	32	204	169				
3.6	51	255	220				
6.2	31	286	251				
10.2	20	306	271				
8.3	24	330	295				
14.1	15	345	310				
7.0	28	373	338				
5.3	36	409	374				
5.3	36	445	410				
4.2	44	489	454				
5.3	36	525	490				
10.2	20	545	510				
7.9	25	570	535				
7.6	26	596	561				
9.2	22	618	583				
7.3	27	645	610				
7.9	25	670	635				
7.6	26	696	661				
6.5	30	726	691				
8.7	23	749	714				
9.2	22	771	736				
9.6	21	792	757				
9.2	22	814	779				
9.6	21	835	800				
9.6	21	856	821				
11.5	18	874	839				
22.2	10	884	849				
19.9	11	895	860				
19.9	11	906	871				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 50 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 22.08.22

Reference: DCP 122

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

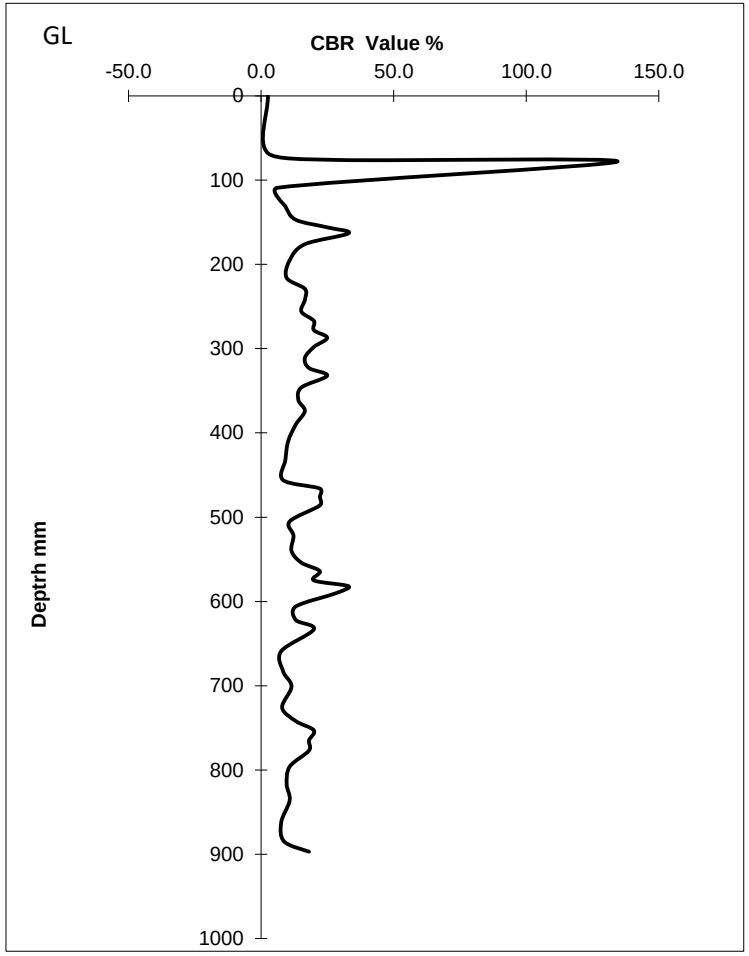
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.6			0				
2.6	68	96	68				
28.4	8	104	76	11.5	18	729	701
134.3	2	106	78	7.9	25	754	726
6.2	31	137	109	13.1	16	770	742
9.2	22	159	131	19.9	11	781	753
13.1	16	175	147	18.1	12	793	765
24.9	9	184	156	18.1	12	805	777
33.0	7	191	163	10.8	19	824	796
16.5	13	204	176	9.6	21	845	817
10.8	19	223	195	10.8	19	864	836
9.6	21	244	216	7.6	26	890	862
16.5	13	257	229	8.7	23	913	885
16.5	13	270	242	18.1	12	925	897
15.2	14	284	256				
19.9	11	295	267				
19.9	11	306	278				
24.9	9	315	287				
19.9	11	326	298				
16.5	13	339	311				
18.1	12	351	323				
24.9	9	360	332				
15.2	14	374	346				
14.1	15	389	361				
16.5	13	402	374				
13.1	16	418	390				
10.2	20	438	410				
9.2	22	460	432				
8.3	24	484	456				
22.2	10	494	466				
22.2	10	504	476				
22.2	10	514	486				
10.8	19	533	505				
12.2	17	550	522				
11.5	18	568	540				
15.2	14	582	554				
22.2	10	592	564				
19.9	11	603	575				
33.0	7	610	582				
28.4	8	618	590				
13.1	16	634	606				
13.1	16	650	622				
19.9	11	661	633				
7.6	26	687	659				
8.3	24	711	683				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 28 (mm)

Zero Reading test start 92 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 22.08.22

Reference: DCP 123

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

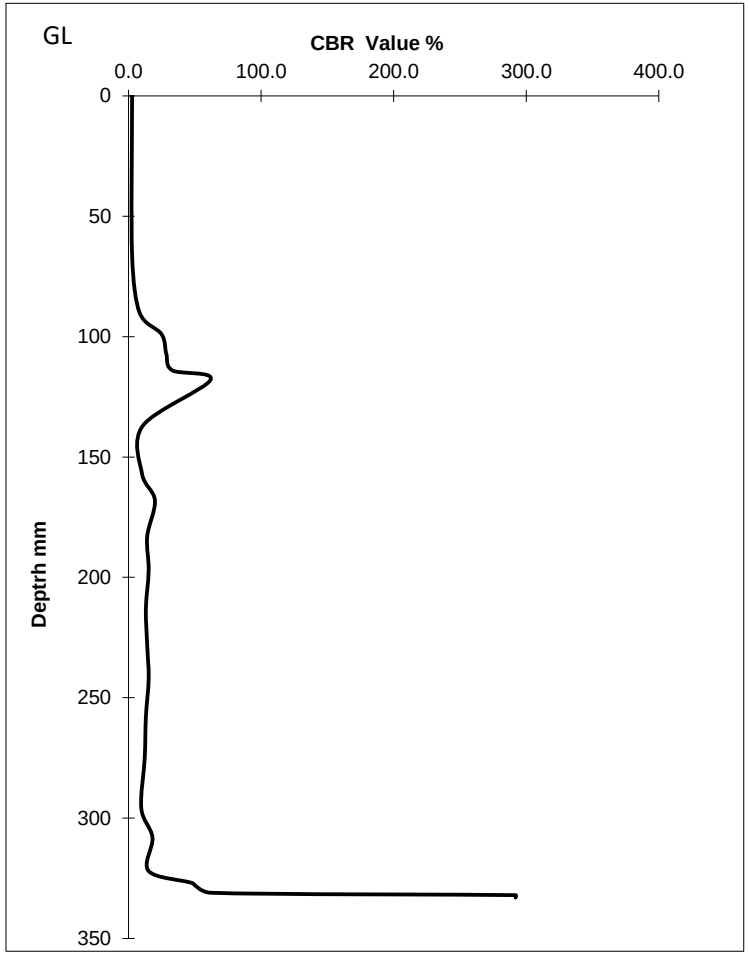
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.7			0				
2.7	66	94	66				
8.3	24	118	90				
24.9	9	127	99				
28.4	8	135	107				
33.0	7	142	114				
61.8	4	146	118				
10.8	19	165	137				
10.2	20	185	157				
19.9	11	196	168				
14.1	15	211	183				
15.2	14	225	197				
13.1	16	241	213				
14.1	15	256	228				
15.2	14	270	242				
13.1	16	286	258				
12.2	17	303	275				
9.6	21	324	296				
18.1	12	336	308				
15.2	14	350	322				
48.1	5	355	327				
61.8	4	359	331				
292.0	1	360	332				
292.0	1	361	333				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 28 (mm)

Zero Reading test start 65 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 124

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

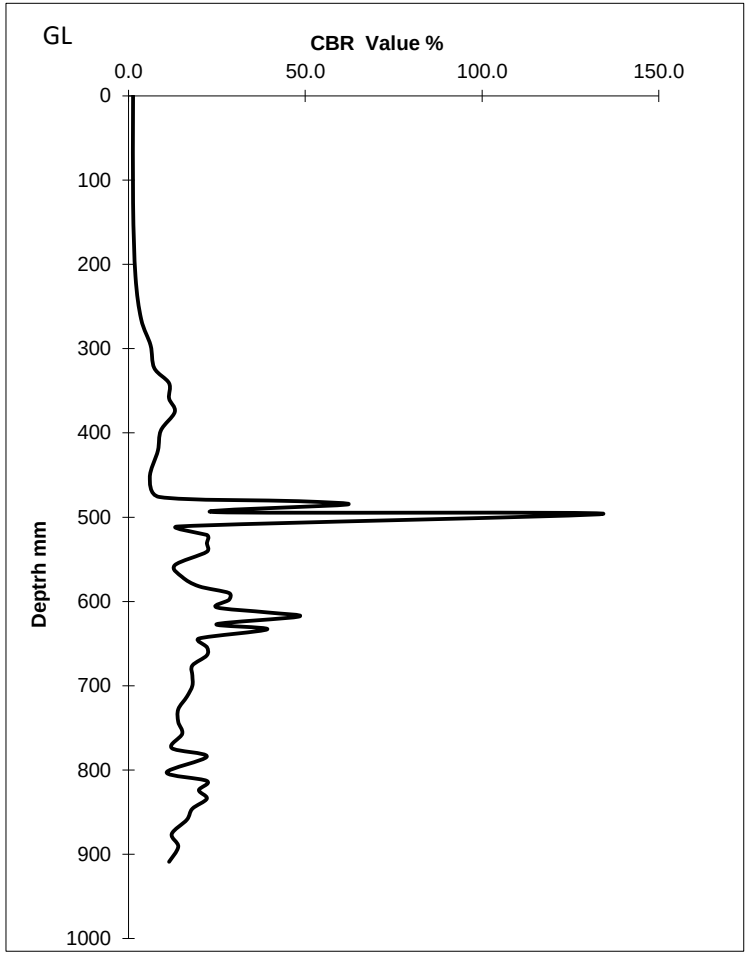
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
1.3			0				
1.3	127	155	127				
2.0	87	242	214	19.9	11	852	824
3.6	51	293	265	22.2	10	862	834
6.2	31	324	296	18.1	12	874	846
7.3	27	351	323	16.5	13	887	859
11.5	18	369	341	12.2	17	904	876
11.5	18	387	359	14.1	15	919	891
13.1	16	403	375	11.5	18	937	909
9.2	22	425	397				
8.3	24	449	421				
6.0	32	481	453				
8.7	23	504	476				
48.1	5	509	481				
61.8	4	513	485				
24.9	9	522	494				
134.3	2	524	496				
14.1	15	539	511				
22.2	10	549	521				
22.2	10	559	531				
22.2	10	569	541				
13.1	16	585	557				
15.2	14	599	571				
19.9	11	610	582				
28.4	8	618	590				
28.4	8	626	598				
24.9	9	635	607				
39.3	6	641	613				
48.1	5	646	618				
24.9	9	655	627				
39.3	6	661	633				
19.9	11	672	644				
22.2	10	682	654				
22.2	10	692	664				
18.1	12	704	676				
18.1	12	716	688				
18.1	12	728	700				
16.5	13	741	713				
14.1	15	756	728				
14.1	15	771	743				
15.2	14	785	757				
12.2	17	802	774				
22.2	10	812	784				
10.8	19	831	803				
22.2	10	841	813				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 28 (mm)

Zero Reading test start 85 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 22.08.22

Reference: DCP 125

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

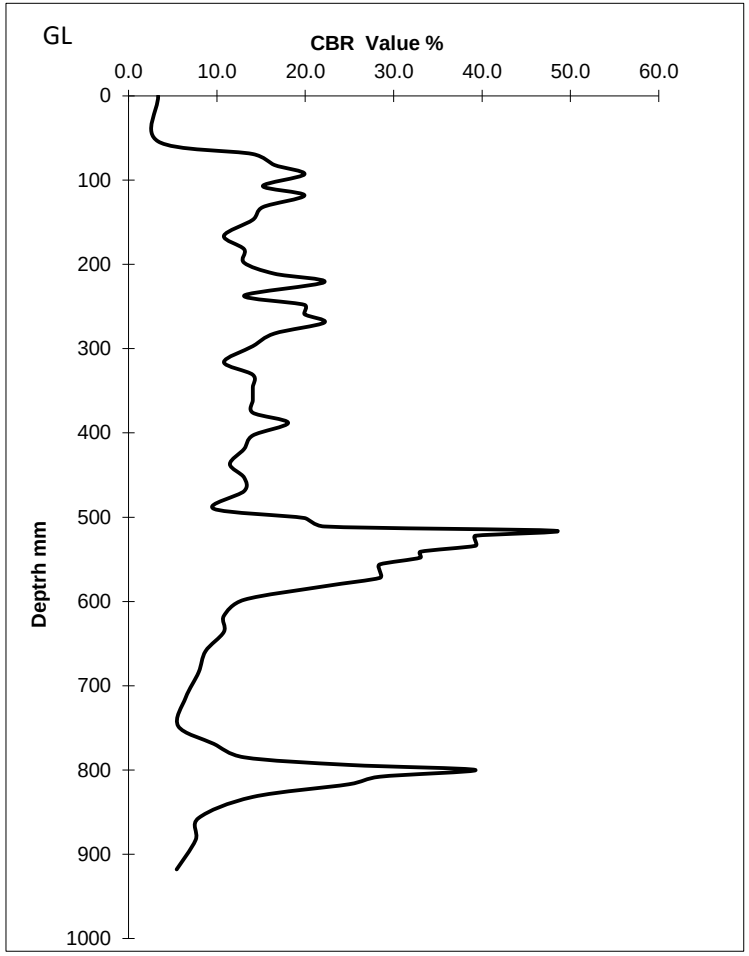
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
3.4			0				
3.4	54	82	54				
14.1	15	97	69	10.8	19	645	617
16.5	13	110	82	10.8	19	664	636
19.9	11	121	93	8.7	23	687	659
15.2	14	135	107	7.9	25	712	684
19.9	11	146	118	6.5	30	742	714
15.2	14	160	132	5.6	34	776	748
14.1	15	175	147	9.6	21	797	769
10.8	19	194	166	13.1	16	813	785
13.1	16	210	182	24.9	9	822	794
13.1	16	226	198	39.3	6	828	800
16.5	13	239	211	28.4	8	836	808
22.2	10	249	221	24.9	9	845	817
13.1	16	265	237	14.1	15	860	832
19.9	11	276	248	7.9	25	885	857
19.9	11	287	259	7.6	26	911	883
22.2	10	297	269	5.4	35	946	918
16.5	13	310	282				
14.1	15	325	297				
10.8	19	344	316				
14.1	15	359	331				
14.1	15	374	346				
14.1	15	389	361				
14.1	15	404	376				
18.1	12	416	388				
14.1	15	431	403				
13.1	16	447	419				
11.5	18	465	437				
13.1	16	481	453				
13.1	16	497	469				
9.6	21	518	490				
19.9	11	529	501				
22.2	10	539	511				
48.1	5	544	516				
39.3	6	550	522				
39.3	6	556	528				
39.3	6	562	534				
33.0	7	569	541				
33.0	7	576	548				
28.4	8	584	556				
28.4	8	592	564				
28.4	8	600	572				
22.2	10	610	582				
13.1	16	626	598				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 28 (mm)

Zero Reading test start 55 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 22.08.22

Reference: DCP 126

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

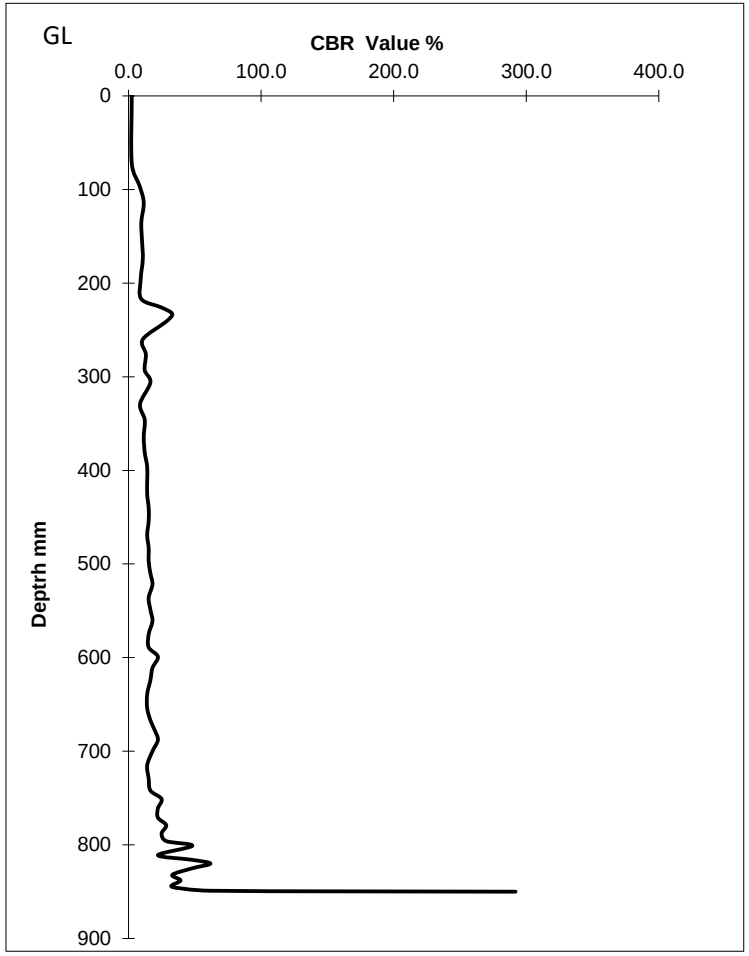
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.4			0				
2.4	72	107	72				
8.3	24	131	96	15.2	14	764	729
11.5	18	149	114	16.5	13	777	742
9.6	21	170	135	24.9	9	786	751
10.2	20	190	155	22.2	10	796	761
10.8	19	209	174	22.2	10	806	771
9.2	22	231	196	28.4	8	814	779
9.6	21	252	217	24.9	9	823	788
24.9	9	261	226	28.4	8	831	796
33.0	7	268	233	48.1	5	836	801
28.4	8	276	241	22.2	10	846	811
10.8	19	295	260	48.1	5	851	816
13.1	16	311	276	61.8	4	855	820
12.2	17	328	293	48.1	5	860	825
16.5	13	341	306	33.0	7	867	832
8.7	23	364	329	39.3	6	873	838
12.2	17	381	346	33.0	7	880	845
11.5	18	399	364	61.8	4	884	849
12.2	17	416	381	292.0	1	885	850
14.1	15	431	396				
14.1	15	446	411				
14.1	15	461	426				
15.2	14	475	440				
15.2	14	489	454				
14.1	15	504	469				
15.2	14	518	483				
15.2	14	532	497				
16.5	13	545	510				
18.1	12	557	522				
15.2	14	571	536				
16.5	13	584	549				
18.1	12	596	561				
15.2	14	610	575				
15.2	14	624	589				
22.2	10	634	599				
18.1	12	646	611				
16.5	13	659	624				
14.1	15	674	639				
14.1	15	689	654				
16.5	13	702	667				
19.9	11	713	678				
22.2	10	723	688				
18.1	12	735	700				
14.1	15	750	715				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 74 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 23.08.22

Reference: DCP 127

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

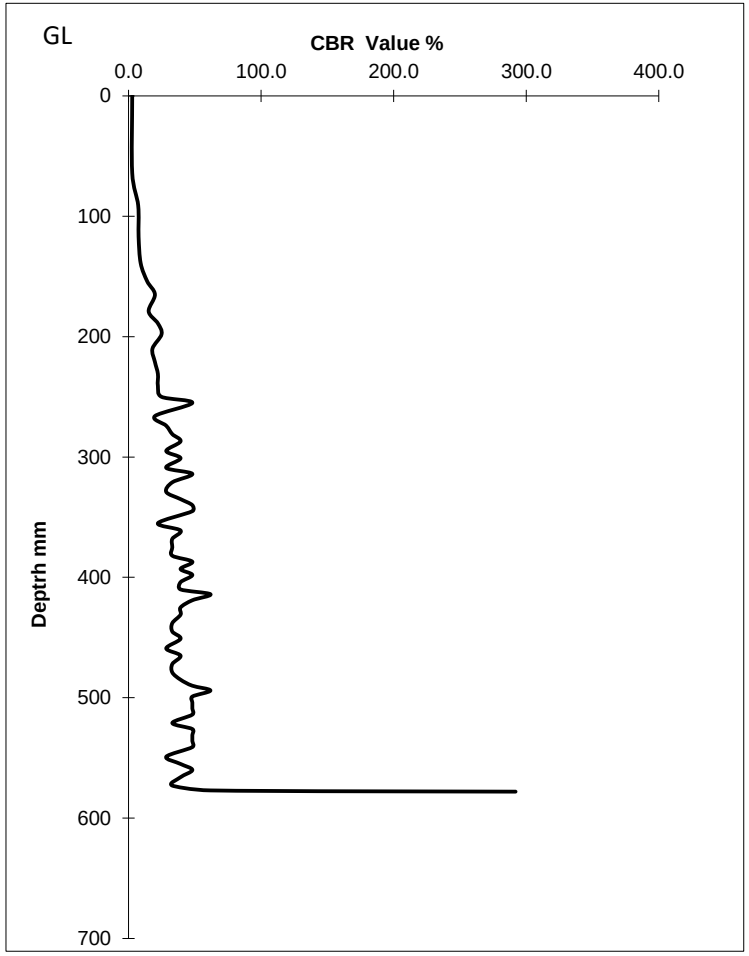
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.8			0				
2.8	64	99	64				
7.3	27	126	91	39.3	6	486	451
7.6	26	152	117	28.4	8	494	459
9.2	22	174	139	39.3	6	500	465
14.1	15	189	154	33.0	7	507	472
19.9	11	200	165	33.0	7	514	479
15.2	14	214	179	39.3	6	520	485
22.2	10	224	189	48.1	5	525	490
24.9	9	233	198	61.8	4	529	494
18.1	12	245	210	48.1	5	534	499
19.9	11	256	221	48.1	5	539	504
22.2	10	266	231	48.1	5	544	509
22.2	10	276	241	48.1	5	549	514
24.9	9	285	250	33.0	7	556	521
48.1	5	290	255	48.1	5	561	526
19.9	11	301	266	48.1	5	566	531
28.4	8	309	274	48.1	5	571	536
33.0	7	316	281	48.1	5	576	541
39.3	6	322	287	28.4	8	584	549
28.4	8	330	295	39.3	6	590	555
39.3	6	336	301	48.1	5	595	560
28.4	8	344	309	39.3	6	601	566
48.1	5	349	314	33.0	7	608	573
33.0	7	356	321	61.8	4	612	577
28.4	8	364	329	292.0	1	613	578
39.3	6	370	335				
48.1	5	375	340				
48.1	5	380	345				
22.2	10	390	355				
39.3	6	396	361				
33.0	7	403	368				
33.0	7	410	375				
33.0	7	417	382				
48.1	5	422	387				
39.3	6	428	393				
48.1	5	433	398				
39.3	6	439	404				
39.3	6	445	410				
61.8	4	449	414				
48.1	5	454	419				
39.3	6	460	425				
39.3	6	466	431				
33.0	7	473	438				
33.0	7	480	445				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 60 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 23.08.22

Reference: DCP 128

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

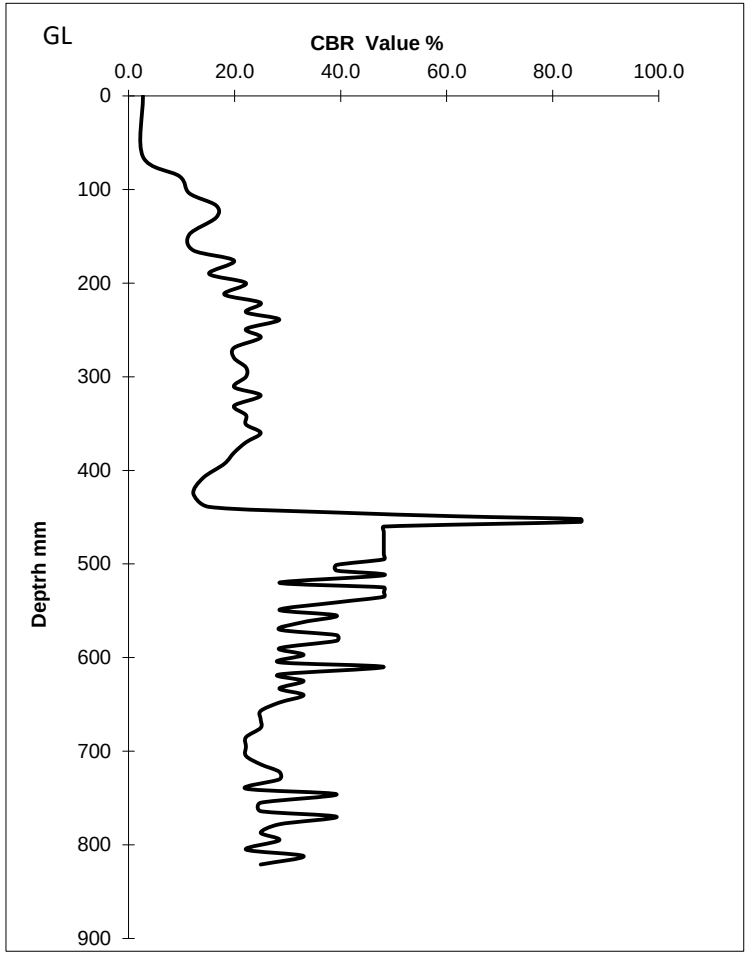
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.7			0				
2.7	65	100	65				
9.6	21	121	86	39.3	6	536	501
11.5	18	139	104	39.3	6	542	507
16.5	13	152	117	48.1	5	547	512
16.5	13	165	130	28.4	8	555	520
11.5	18	183	148	48.1	5	560	525
12.2	17	200	165	48.1	5	565	530
19.9	11	211	176	48.1	5	570	535
15.2	14	225	190	39.3	6	576	541
22.2	10	235	200	28.4	8	584	549
18.1	12	247	212	39.3	6	590	555
24.9	9	256	221	33.0	7	597	562
22.2	10	266	231	28.4	8	605	570
28.4	8	274	239	39.3	6	611	576
22.2	10	284	249	39.3	6	617	582
24.9	9	293	258	28.4	8	625	590
19.9	11	304	269	33.0	7	632	597
19.9	11	315	280	28.4	8	640	605
22.2	10	325	290	48.1	5	645	610
22.2	10	335	300	28.4	8	653	618
19.9	11	346	311	33.0	7	660	625
24.9	9	355	320	28.4	8	668	633
19.9	11	366	331	33.0	7	675	640
22.2	10	376	341	28.4	8	683	648
22.2	10	386	351	24.9	9	692	657
24.9	9	395	360	24.9	9	701	666
22.2	10	405	370	24.9	9	710	675
19.9	11	416	381	22.2	10	720	685
18.1	12	428	393	22.2	10	730	695
14.1	15	443	408	22.2	10	740	705
12.2	17	460	425	24.9	9	749	714
15.2	14	474	439	28.4	8	757	722
39.3	6	480	445	28.4	8	765	730
61.8	4	484	449	22.2	10	775	740
85.3	3	487	452	39.3	6	781	746
85.3	3	490	455	24.9	9	790	755
48.1	5	495	460	24.9	9	799	764
48.1	5	500	465	39.3	6	805	770
48.1	5	505	470	28.4	8	813	778
48.1	5	510	475	24.9	9	822	787
48.1	5	515	480	28.4	8	830	795
48.1	5	520	485	22.2	10	840	805
48.1	5	525	490	33.0	7	847	812
48.1	5	530	495	24.9	9	856	821

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 65 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 23.08.22

Reference: DCP 129

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

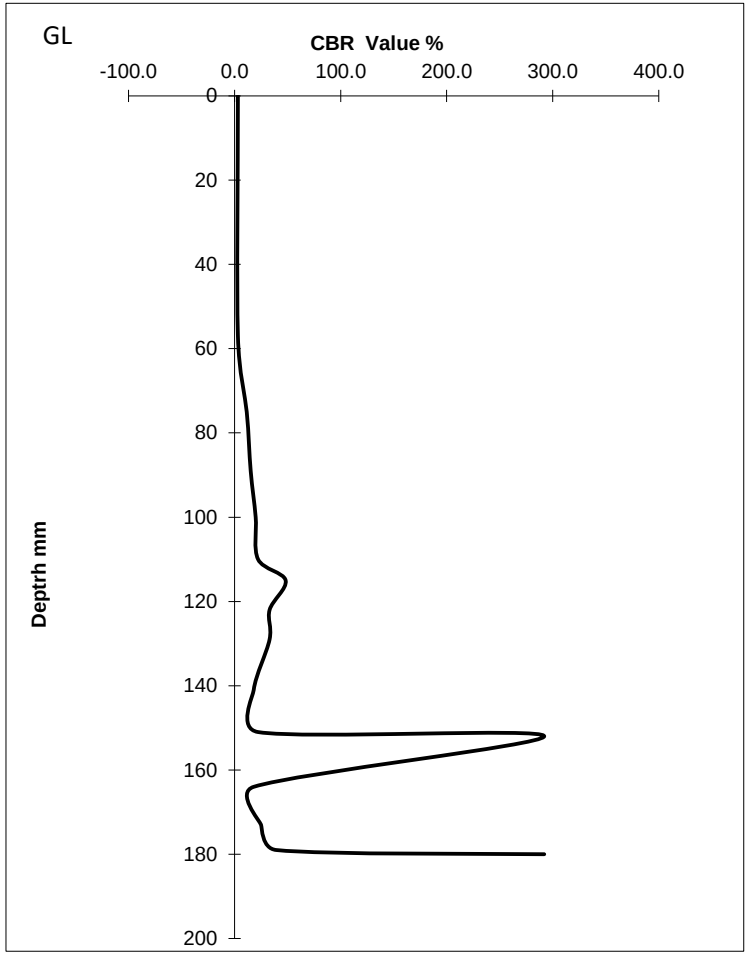
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
3.2			0				
3.2	57	92	57				
11.5	18	110	75				
15.2	14	124	89				
19.9	11	135	100				
22.2	10	145	110				
48.1	5	150	115				
33.0	7	157	122				
33.0	7	164	129				
18.1	12	176	141				
22.2	10	186	151				
292.0	1	187	152				
18.1	12	199	164				
24.9	9	208	173				
39.3	6	214	179				
292.0	1	215	180				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 81 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 23.08.22

Reference: DCP 130

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

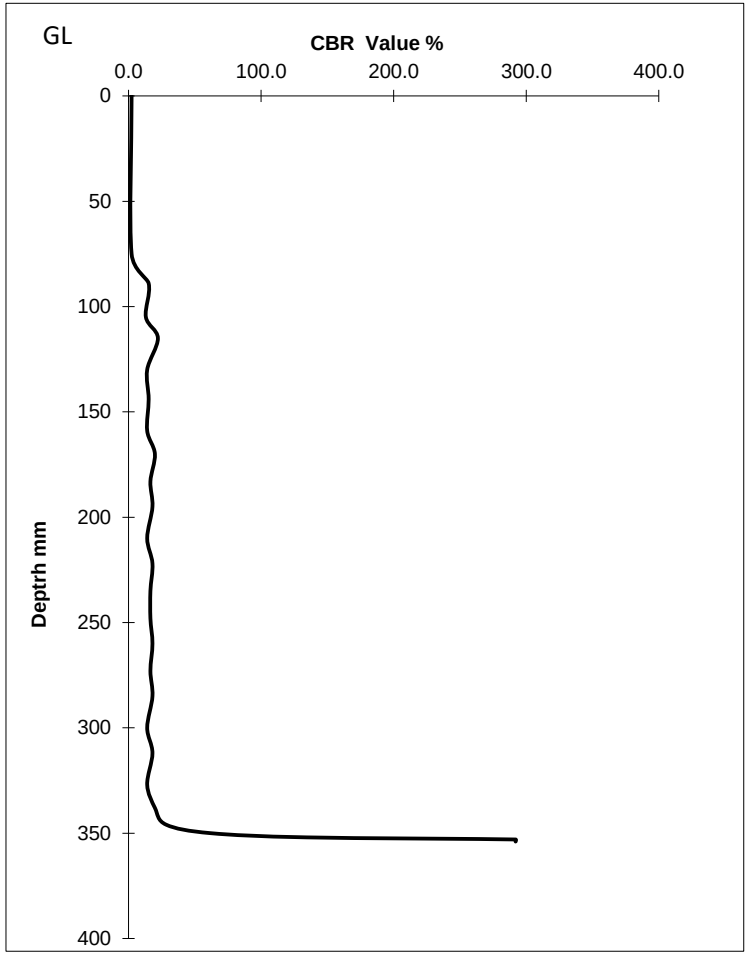
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.3			0				
2.3	75	110	75				
15.2	14	124	89				
13.1	16	140	105				
22.2	10	150	115				
14.1	15	165	130				
15.2	14	179	144				
14.1	15	194	159				
19.9	11	205	170				
16.5	13	218	183				
18.1	12	230	195				
14.1	15	245	210				
18.1	12	257	222				
16.5	13	270	235				
16.5	13	283	248				
18.1	12	295	260				
16.5	13	308	273				
18.1	12	320	285				
14.1	15	335	300				
18.1	12	347	312				
14.1	15	362	327				
19.9	11	373	338				
28.4	8	381	346				
61.8	4	385	350				
134.3	2	387	352				
292.0	1	388	353				
292.0	1	389	354				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 81 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 23.08.22

Reference: DCP 131

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

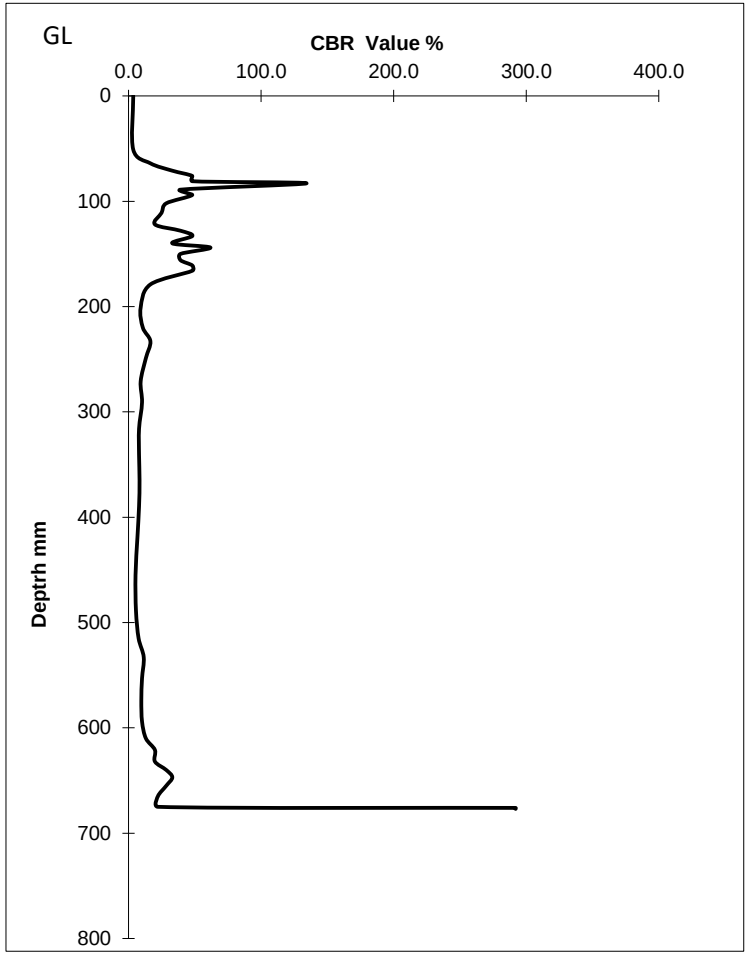
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
3.6			0				
3.6	51	86	51				
16.5	13	99	64	22.2	10	700	665
33.0	7	106	71	22.2	10	710	675
48.1	5	111	76	292.0	1	711	676
48.1	5	116	81	292.0	1	712	677
134.3	2	118	83				
39.3	6	124	89				
48.1	5	129	94				
28.4	8	137	102				
24.9	9	146	111				
19.9	11	157	122				
39.3	6	163	128				
48.1	5	168	133				
33.0	7	175	140				
61.8	4	179	144				
39.3	6	185	150				
39.3	6	191	156				
48.1	5	196	161				
48.1	5	201	166				
16.5	13	214	179				
9.2	22	236	201				
10.8	19	255	220				
16.5	13	268	233				
13.1	16	284	249				
9.2	22	306	271				
10.2	20	326	291				
7.9	25	351	316				
7.9	25	376	341				
8.3	24	400	365				
7.9	25	425	390				
6.7	29	454	419				
5.3	36	490	455				
5.6	34	524	489				
7.6	26	550	515				
11.5	18	568	533				
10.2	20	588	553				
9.6	21	609	574				
10.2	20	629	594				
13.1	16	645	610				
19.9	11	656	621				
19.9	11	667	632				
28.4	8	675	640				
33.0	7	682	647				
28.4	8	690	655				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 62 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 23.08.22

Reference: DCP 132

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

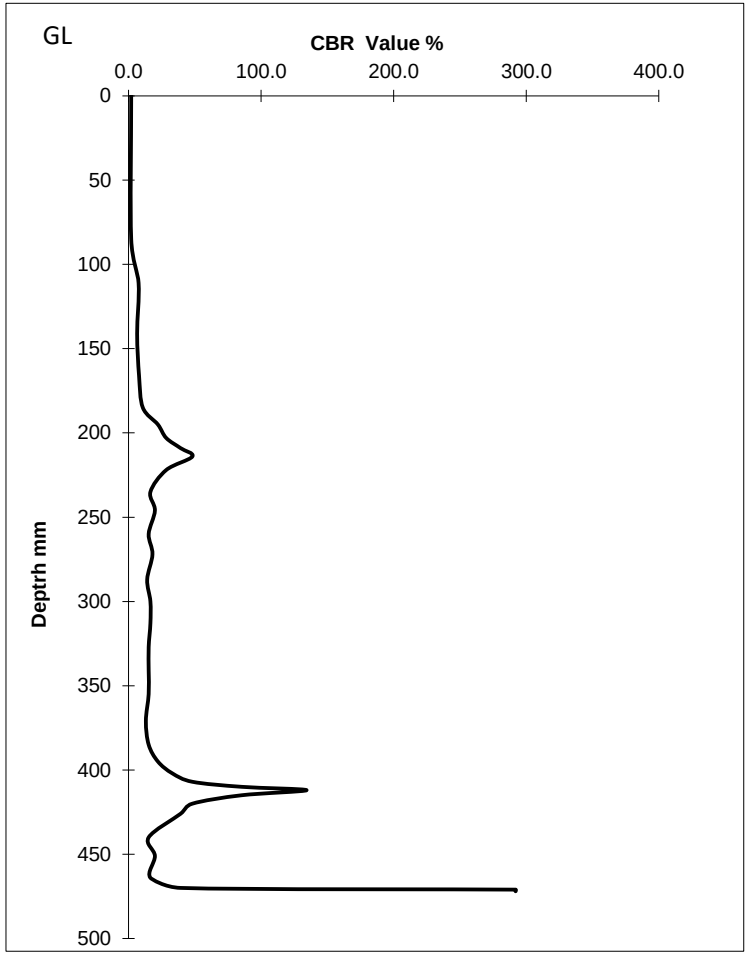
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.0			0				
2.0	85	120	85				
7.6	26	146	111				
6.5	30	176	141				
7.9	25	201	166				
10.8	19	220	185				
22.2	10	230	195				
28.4	8	238	203				
39.3	6	244	209				
48.1	5	249	214				
28.4	8	257	222				
16.5	13	270	235				
19.9	11	281	246				
15.2	14	295	260				
18.1	12	307	272				
14.1	15	322	287				
16.5	13	335	300				
16.5	13	348	313				
15.2	14	362	327				
15.2	14	376	341				
15.2	14	390	355				
13.1	16	406	371				
15.2	14	420	385				
22.2	10	430	395				
33.0	7	437	402				
48.1	5	442	407				
85.3	3	445	410				
134.3	2	447	412				
85.3	3	450	415				
48.1	5	455	420				
39.3	6	461	426				
15.2	14	475	440				
19.9	11	486	451				
16.5	13	499	464				
39.3	6	505	470				
292.0	1	506	471				
292.0	1	507	472				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 87 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 23.08.22

Reference: DCP 133

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

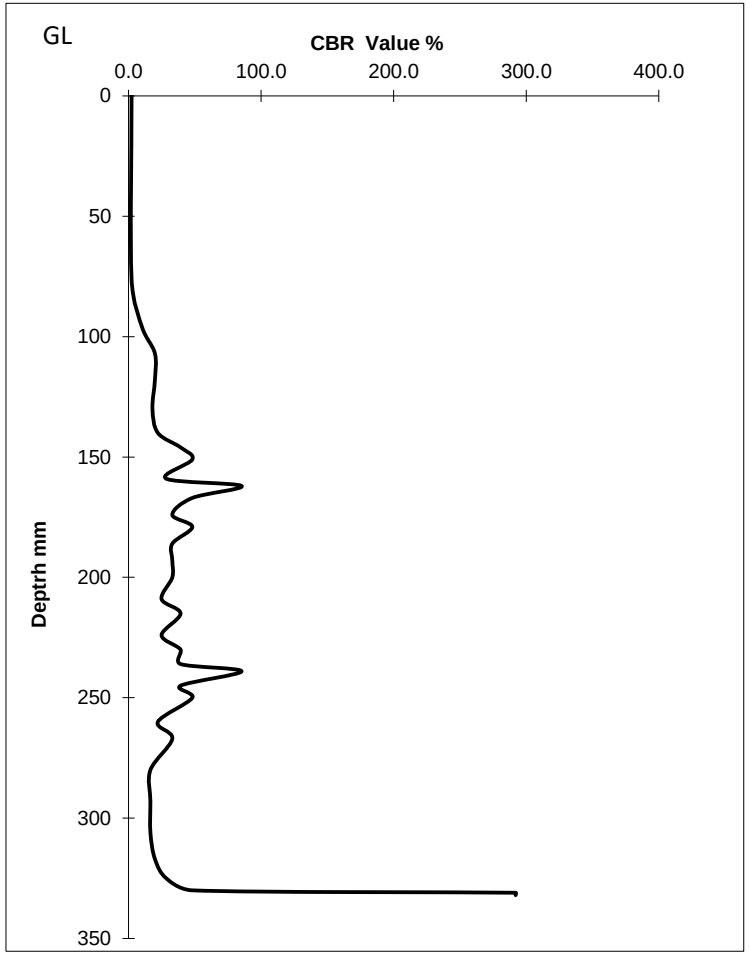
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.3			0				
2.3	76	111	76				
10.2	20	131	96				
19.9	11	142	107				
19.9	11	153	118				
18.1	12	165	130				
22.2	10	175	140				
39.3	6	181	146				
48.1	5	186	151				
28.4	8	194	159				
85.3	3	197	162				
48.1	5	202	167				
33.0	7	209	174				
48.1	5	214	179				
33.0	7	221	186				
33.0	7	228	193				
33.0	7	235	200				
24.9	9	244	209				
39.3	6	250	215				
24.9	9	259	224				
39.3	6	265	230				
39.3	6	271	236				
85.3	3	274	239				
39.3	6	280	245				
48.1	5	285	250				
22.2	10	295	260				
33.0	7	302	267				
16.5	13	315	280				
16.5	13	328	293				
16.5	13	341	306				
19.9	11	352	317				
28.4	8	360	325				
48.1	5	365	330				
292.0	1	366	331				
292.0	1	367	332				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 71 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 23.08.22

Reference: DCP 134

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

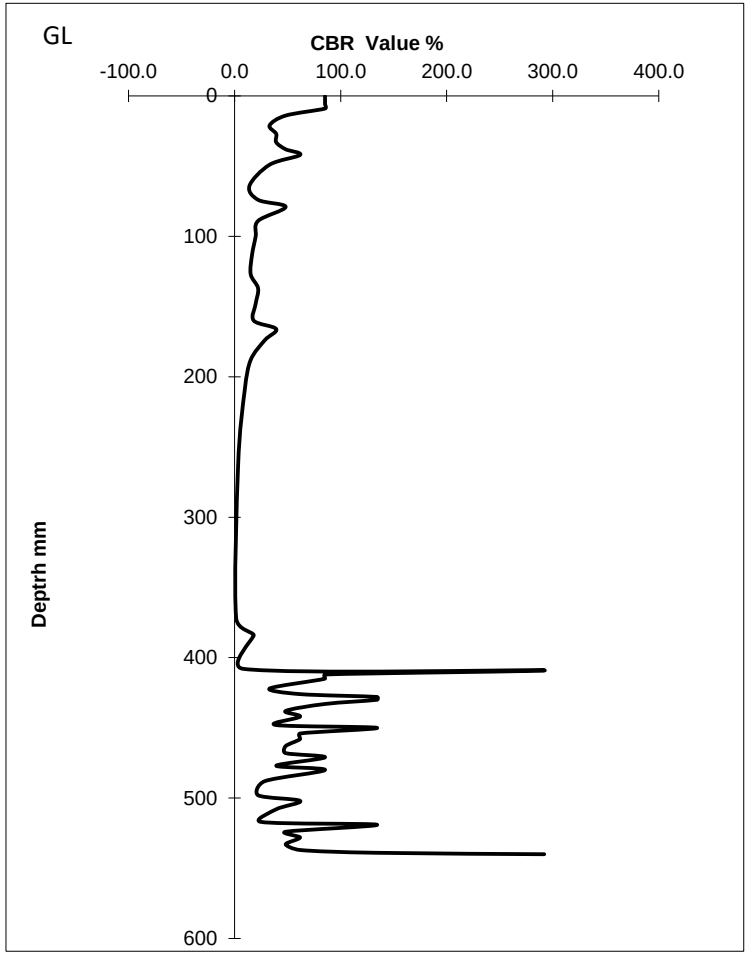
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
85.3			0				
85.3	3	25	3				
85.3	3	28	6	85.3	3	493	471
85.3	3	31	9	39.3	6	499	477
48.1	5	36	14	85.3	3	502	480
33.0	7	43	21	28.4	8	510	488
39.3	6	49	27	22.2	10	520	498
39.3	6	55	33	61.8	4	524	502
48.1	5	60	38	39.3	6	530	508
61.8	4	64	42	24.9	9	539	517
33.0	7	71	49	134.3	2	541	519
14.1	15	86	64	48.1	5	546	524
22.2	10	96	74	61.8	4	550	528
48.1	5	101	79	48.1	5	555	533
22.2	10	111	89	61.8	4	559	537
19.9	11	122	100	134.3	2	561	539
16.5	13	135	113	292.0	1	562	540
15.2	14	149	127				
22.2	10	159	137				
19.9	11	170	148				
18.1	12	182	160				
39.3	6	188	166				
28.4	8	196	174				
15.2	14	210	188				
9.6	21	231	209				
3.4	54	285	263				
1.5	109	394	372				
18.1	12	406	384				
8.3	24	430	408				
292.0	1	431	409				
85.3	3	434	412				
85.3	3	437	415				
33.0	7	444	422				
61.8	4	448	426				
134.3	2	450	428				
134.3	2	452	430				
85.3	3	455	433				
48.1	5	460	438				
61.8	4	464	442				
39.3	6	470	448				
134.3	2	472	450				
61.8	4	476	454				
61.8	4	480	458				
48.1	5	485	463				
48.1	5	490	468				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 22 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 221

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

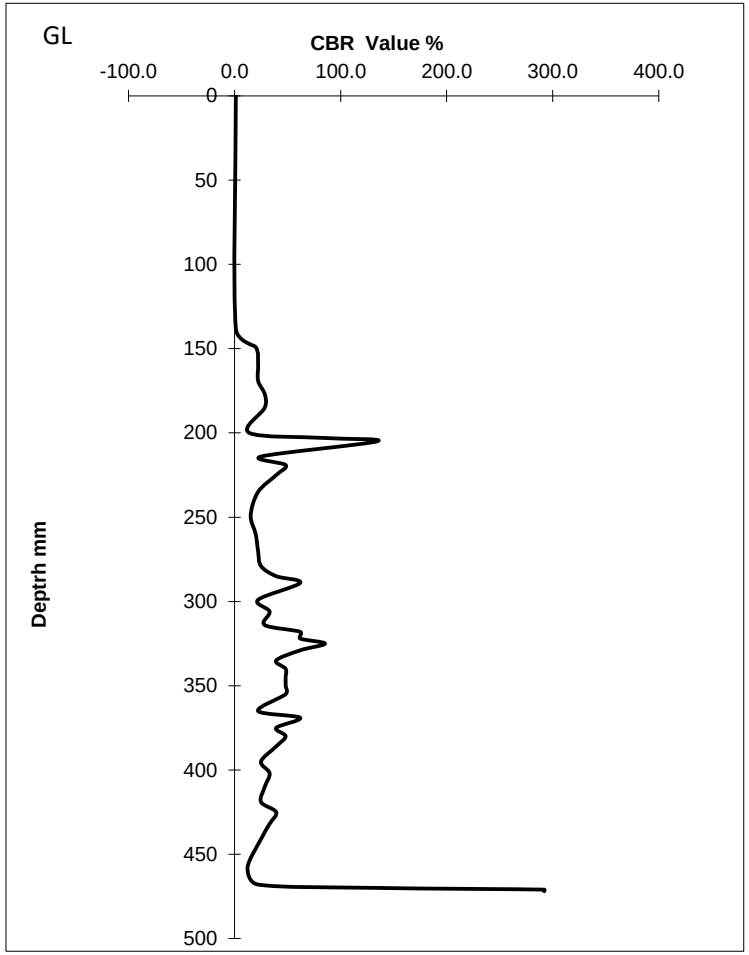
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
1.2			0				
1.2	138	173	138				
19.9	11	184	149	22.2	10	503	468
22.2	10	194	159	134.3	2	505	470
22.2	10	204	169	292.0	1	506	471
28.4	8	212	177	292.0	1	507	472
28.4	8	220	185				
14.1	15	235	200				
85.3	3	238	203				
134.3	2	240	205				
24.9	9	249	214				
48.1	5	254	219				
39.3	6	260	225				
22.2	10	270	235				
15.2	14	284	249				
19.9	11	295	260				
22.2	10	305	270				
24.9	9	314	279				
39.3	6	320	285				
61.8	4	324	289				
22.2	10	334	299				
33.0	7	341	306				
28.4	8	349	314				
61.8	4	353	318				
61.8	4	357	322				
85.3	3	360	325				
61.8	4	364	329				
39.3	6	370	335				
48.1	5	375	340				
48.1	5	380	345				
48.1	5	385	350				
48.1	5	390	355				
22.2	10	400	365				
61.8	4	404	369				
39.3	6	410	375				
48.1	5	415	380				
39.3	6	421	386				
24.9	9	430	395				
33.0	7	437	402				
28.4	8	445	410				
24.9	9	454	419				
39.3	6	460	425				
33.0	7	467	432				
24.9	9	476	441				
12.2	17	493	458				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 35 (mm)

Zero Reading test start 153 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 25.08.22

Reference: DCP 222

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

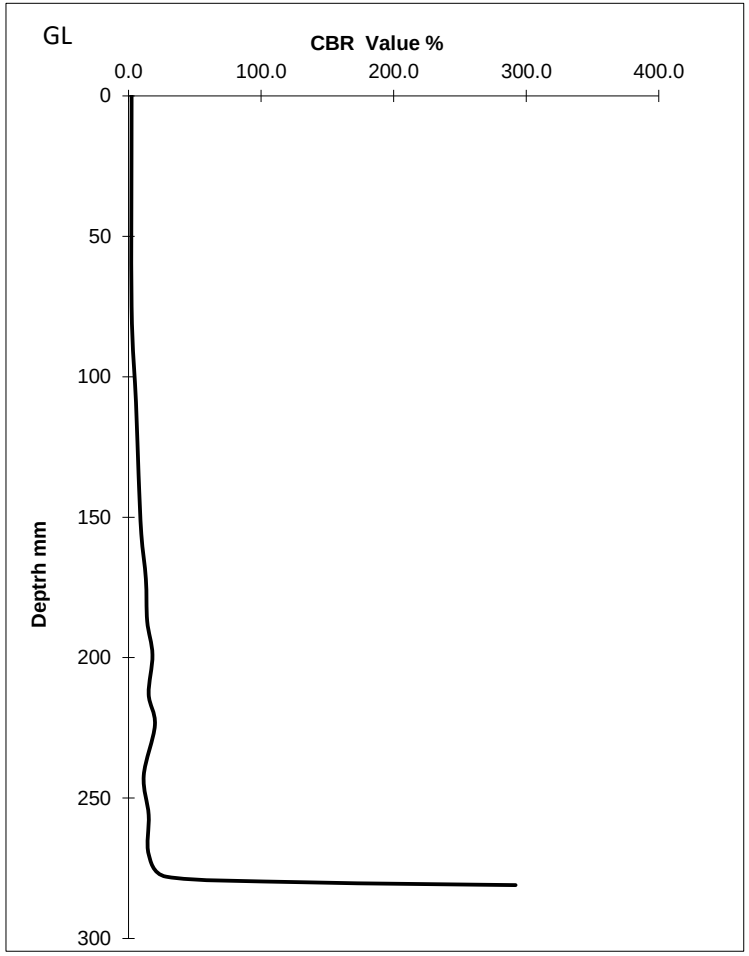
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.3			0				
2.3	75	97	75				
5.6	34	131	109				
7.6	26	157	135				
9.6	21	178	156				
13.1	16	194	172				
14.1	15	209	187				
18.1	12	221	199				
15.2	14	235	213				
19.9	11	246	224				
11.5	18	264	242				
15.2	14	278	256				
15.2	14	292	270				
28.4	8	300	278				
134.3	2	302	280				
292.0	1	303	281				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 51 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 223

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

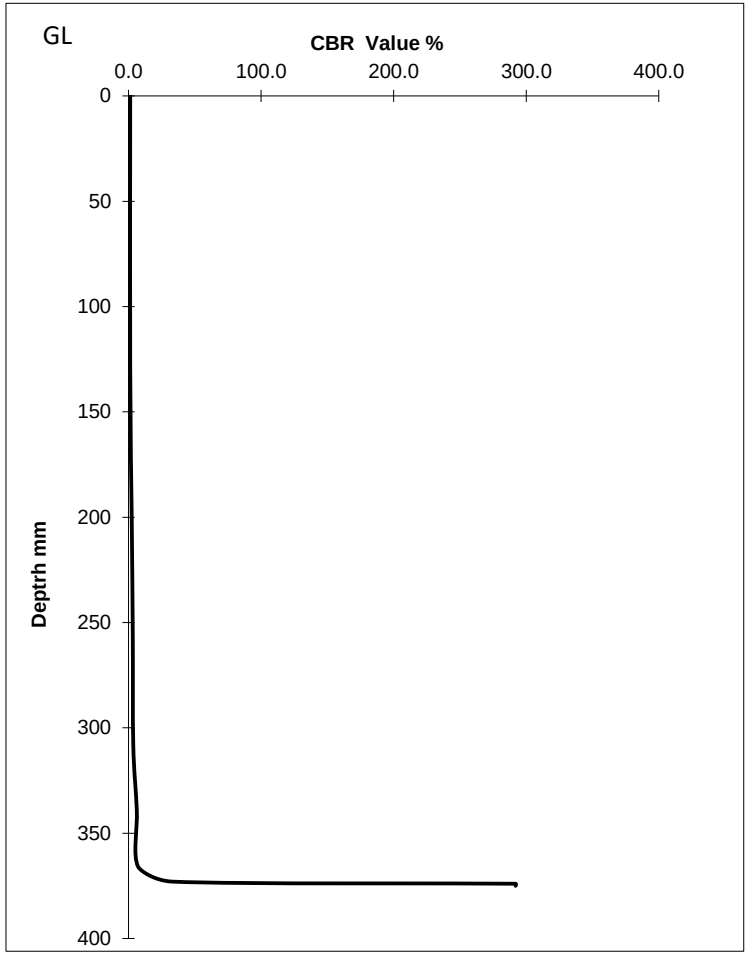
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
1.3			0				
1.3	129	151	129				
2.4	72	223	201				
3.2	56	279	257				
3.6	51	330	308				
6.2	31	361	339				
7.3	27	388	366				
33.0	7	395	373				
292.0	1	396	374				
292.0	1	397	375				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 53 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 224

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

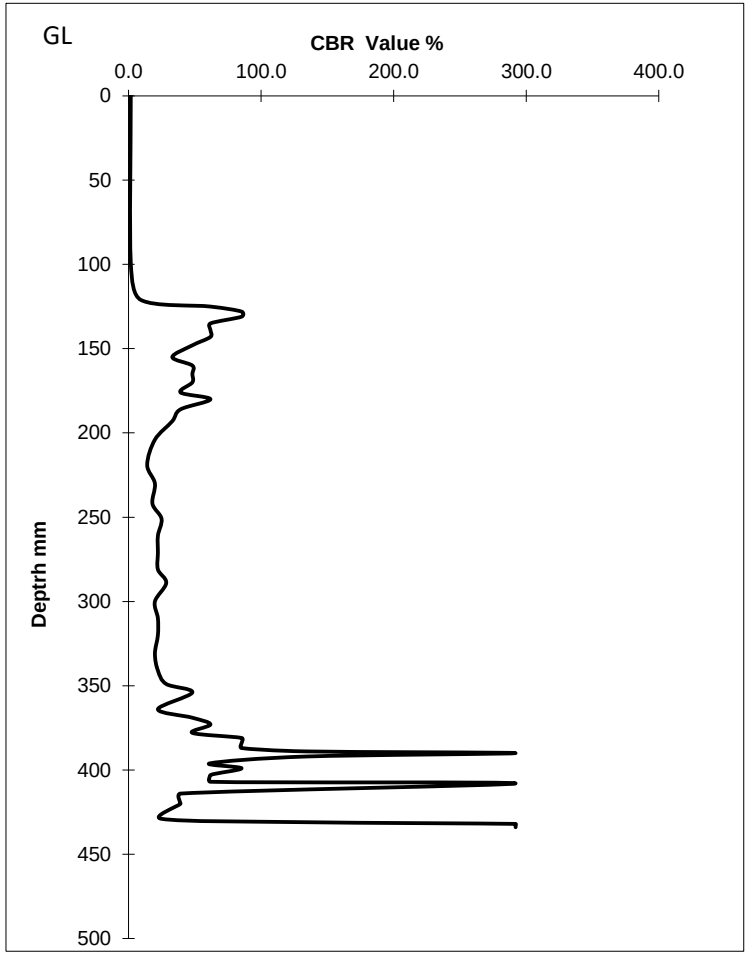
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
1.7			0				
1.7	99	121	99				
9.2	22	143	121	85.3	3	421	399
61.8	4	147	125	61.8	4	425	403
85.3	3	150	128	61.8	4	429	407
85.3	3	153	131	292.0	1	430	408
61.8	4	157	135	39.3	6	436	414
61.8	4	161	139	39.3	6	442	420
61.8	4	165	143	24.9	9	451	429
48.1	5	170	148	134.3	2	453	431
33.0	7	177	155	292.0	1	454	432
48.1	5	182	160	292.0	1	455	433
48.1	5	187	165	292.0	1	456	434
48.1	5	192	170				
39.3	6	198	176				
61.8	4	202	180				
39.3	6	208	186				
33.0	7	215	193				
19.9	11	226	204				
14.1	15	241	219				
19.9	11	252	230				
18.1	12	264	242				
24.9	9	273	251				
22.2	10	283	261				
22.2	10	293	271				
22.2	10	303	281				
28.4	8	311	289				
19.9	11	322	300				
22.2	10	332	310				
22.2	10	342	320				
19.9	11	353	331				
22.2	10	363	341				
28.4	8	371	349				
48.1	5	376	354				
22.2	10	386	364				
48.1	5	391	369				
61.8	4	395	373				
48.1	5	400	378				
85.3	3	403	381				
85.3	3	406	384				
85.3	3	409	387				
134.3	2	411	389				
292.0	1	412	390				
134.3	2	414	392				
61.8	4	418	396				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 47 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 225

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

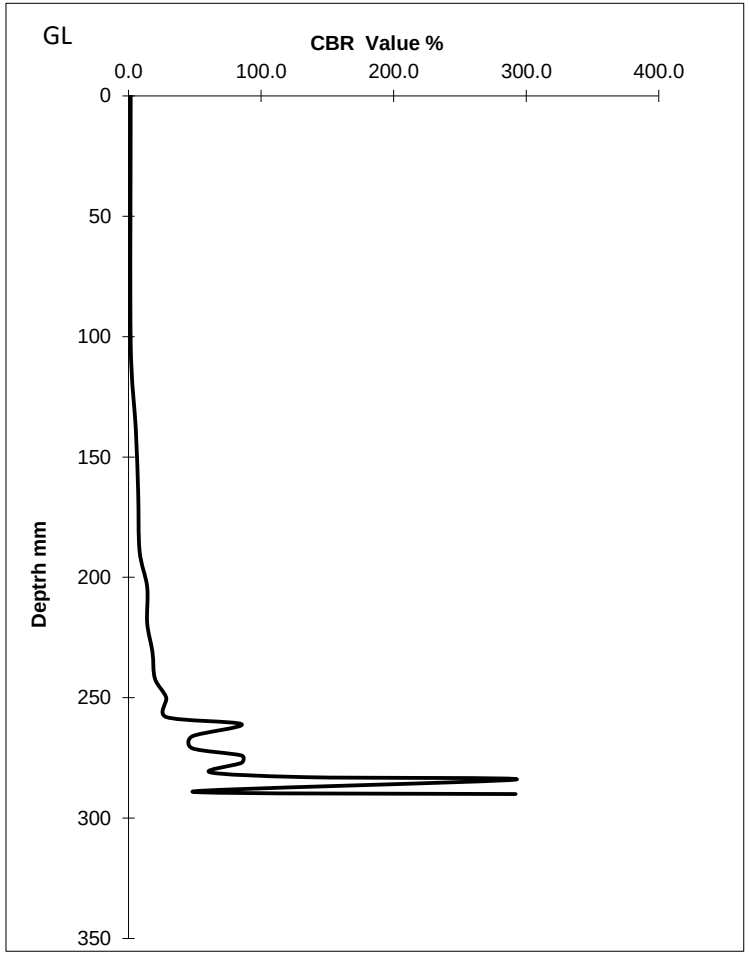
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
1.6			0				
1.6	103	125	103				
5.4	35	160	138				
7.3	27	187	165				
8.3	24	211	189				
14.1	15	226	204				
14.1	15	241	219				
18.1	12	253	231				
19.9	11	264	242				
28.4	8	272	250				
28.4	8	280	258				
85.3	3	283	261				
48.1	5	288	266				
48.1	5	293	271				
85.3	3	296	274				
85.3	3	299	277				
61.8	4	303	281				
134.3	2	305	283				
292.0	1	306	284				
48.1	5	311	289				
292.0	1	312	290				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 56 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 226

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe (test from base of cored hole)

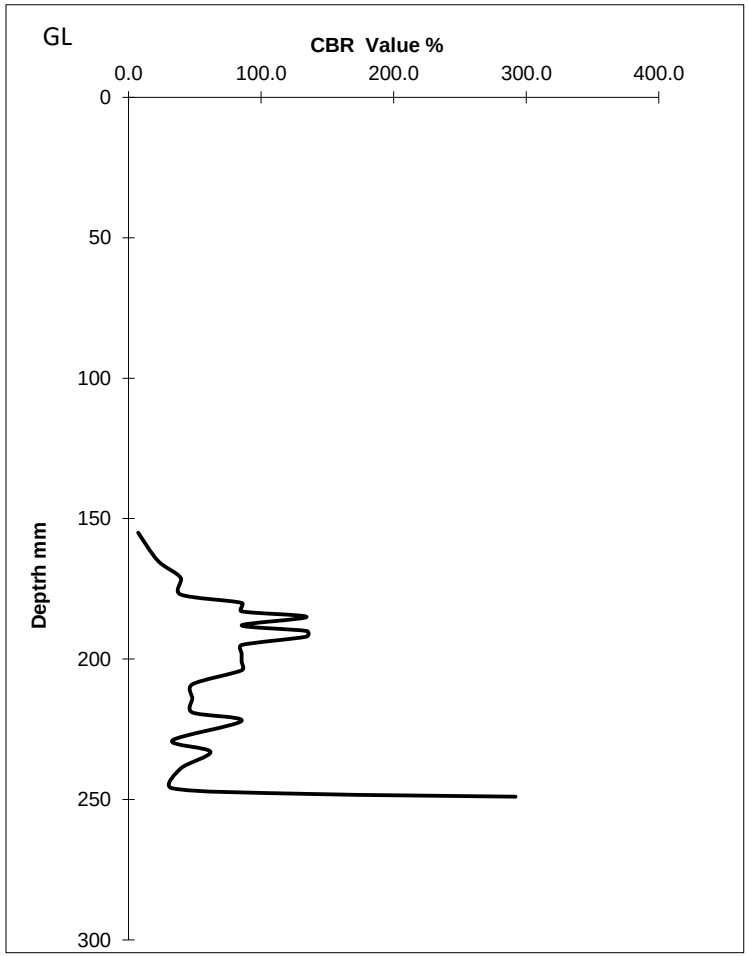
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
			128				
7.3	27	177	155				
22.2	10	187	165				
39.3	6	193	171				
39.3	6	199	177				
85.3	3	202	180				
85.3	3	205	183				
134.3	2	207	185				
85.3	3	210	188				
134.3	2	212	190				
134.3	2	214	192				
85.3	3	217	195				
85.3	3	220	198				
85.3	3	223	201				
85.3	3	226	204				
48.1	5	231	209				
48.1	5	236	214				
48.1	5	241	219				
85.3	3	244	222				
33.0	7	251	229				
61.8	4	255	233				
39.3	6	261	239				
33.0	7	268	246				
134.3	2	270	248				
292.0	1	271	249				

Remarks: Tests commenced from below hard standing

Base reading = reading on scale at surface

Base reading at surface 22 (mm)

Reading on scale hole base 150 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004
Broken out with jackhammer to 150mm.
Project: Bishop Headley School

Date: 24.08.22
Reference: DCP 227
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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

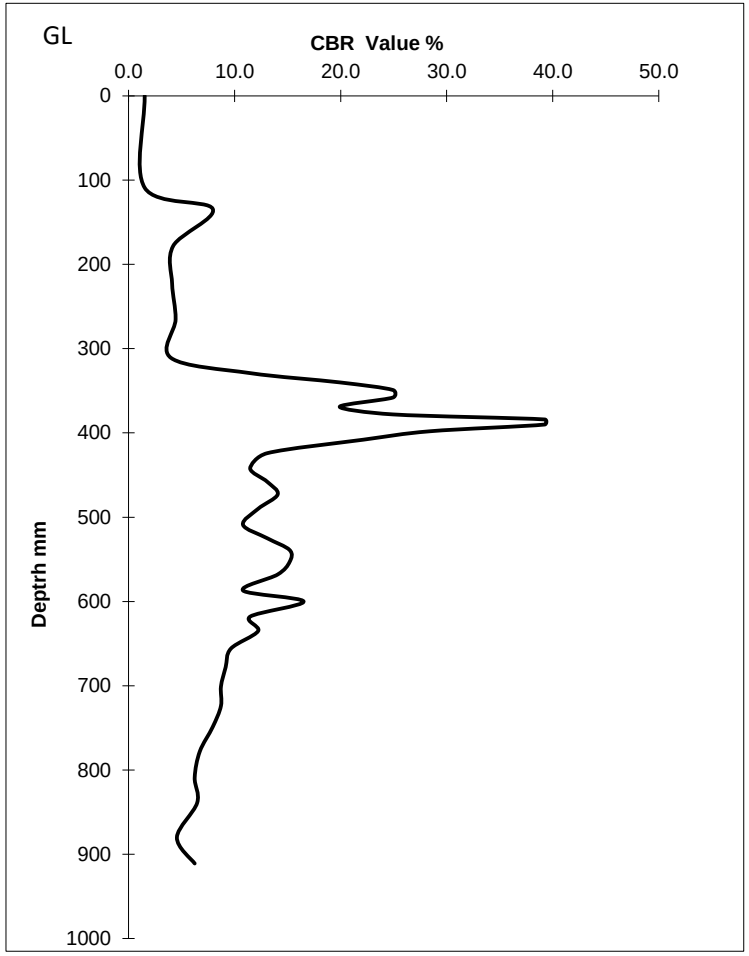
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
1.5			0				
1.5	109	131	109				
7.9	25	156	134				
4.2	44	200	178				
4.1	45	245	223				
4.4	42	287	265				
4.0	46	333	311				
11.5	18	351	329				
19.9	11	362	340				
24.9	9	371	349				
24.9	9	380	358				
19.9	11	391	369				
24.9	9	400	378				
39.3	6	406	384				
39.3	6	412	390				
28.4	8	420	398				
22.2	10	430	408				
13.1	16	446	424				
11.5	18	464	442				
13.1	16	480	458				
14.1	15	495	473				
12.2	17	512	490				
10.8	19	531	509				
13.1	16	547	525				
15.2	14	561	539				
15.2	14	575	553				
14.1	15	590	568				
10.8	19	609	587				
16.5	13	622	600				
11.5	18	640	618				
12.2	17	657	635				
9.6	21	678	656				
9.2	22	700	678				
8.7	23	723	701				
8.7	23	746	724				
7.9	25	771	749				
6.7	29	800	778				
6.2	31	831	809				
6.5	30	861	839				
4.6	41	902	880				
6.2	31	933	911				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 50 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 229

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

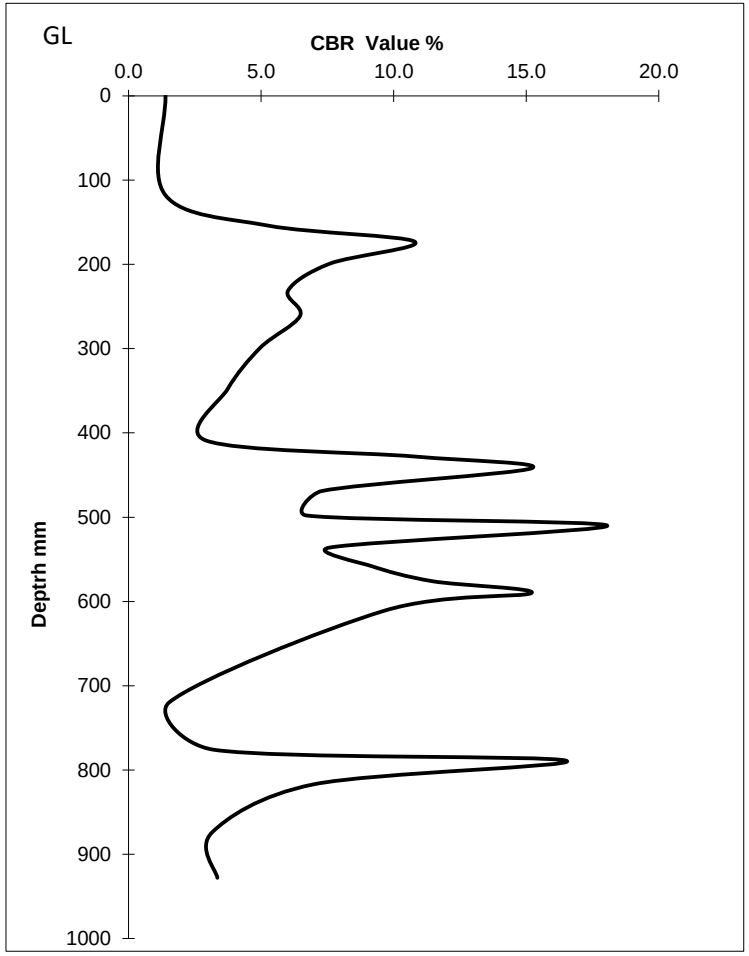
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
1.4			0				
1.4	118	140	118				
5.3	36	176	154				
10.8	19	195	173				
7.6	26	221	199				
6.0	32	253	231				
6.5	30	283	261				
5.0	38	321	299				
3.7	49	370	348				
2.9	61	431	409				
10.8	19	450	428				
15.2	14	464	442				
7.3	27	491	469				
6.7	29	520	498				
18.1	12	532	510				
7.6	26	558	536				
9.2	22	580	558				
11.5	18	598	576				
15.2	14	612	590				
9.6	21	633	611				
1.5	109	742	720				
3.2	56	798	776				
16.5	13	811	789				
7.0	28	839	817				
3.2	57	896	874				
3.4	54	950	928				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 55 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 230

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

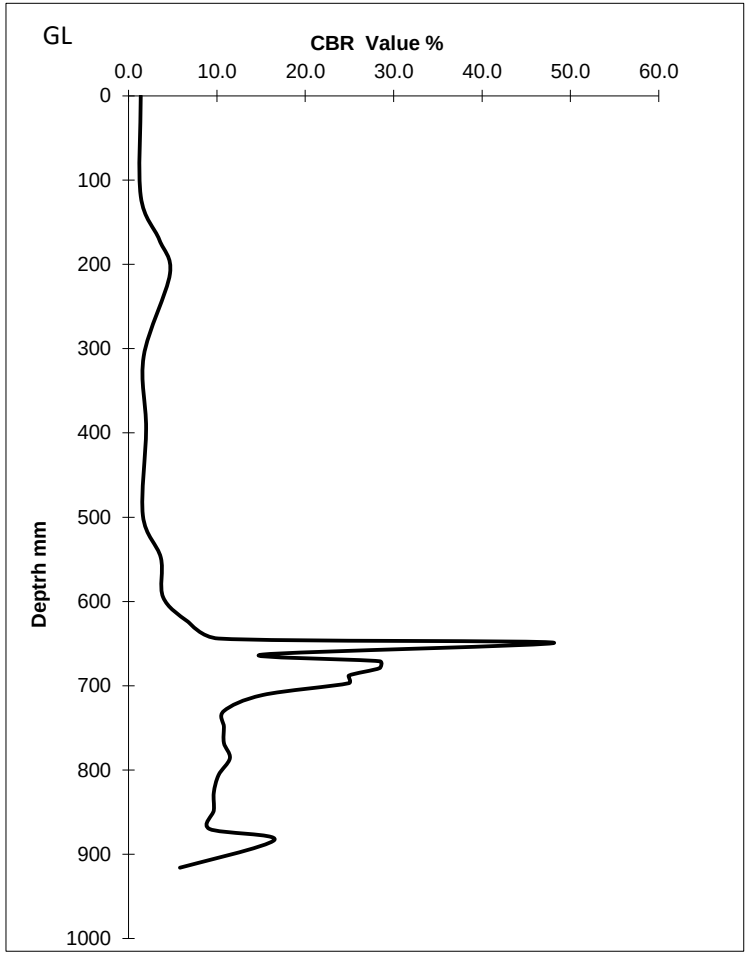
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
1.4			0				
1.4	119	141	119				
3.5	52	193	171				
4.7	40	233	211				
1.7	98	331	309				
2.0	86	417	395				
1.6	103	520	498				
3.7	50	570	548				
3.9	47	617	595				
6.7	29	646	624				
10.2	20	666	644				
48.1	5	671	649				
15.2	14	685	663				
28.4	8	693	671				
28.4	8	701	679				
24.9	9	710	688				
24.9	9	719	697				
15.2	14	733	711				
10.8	19	752	730				
10.8	19	771	749				
10.8	19	790	768				
11.5	18	808	786				
10.2	20	828	806				
9.6	21	849	827				
9.6	21	870	848				
9.2	22	892	870				
16.5	13	905	883				
5.8	33	938	916				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 51 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 24.08.22

Reference: DCP 231

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SOUTH WALES GROUND TESTING

South Wales Ground Testing - In situ CBR by DCP Probe

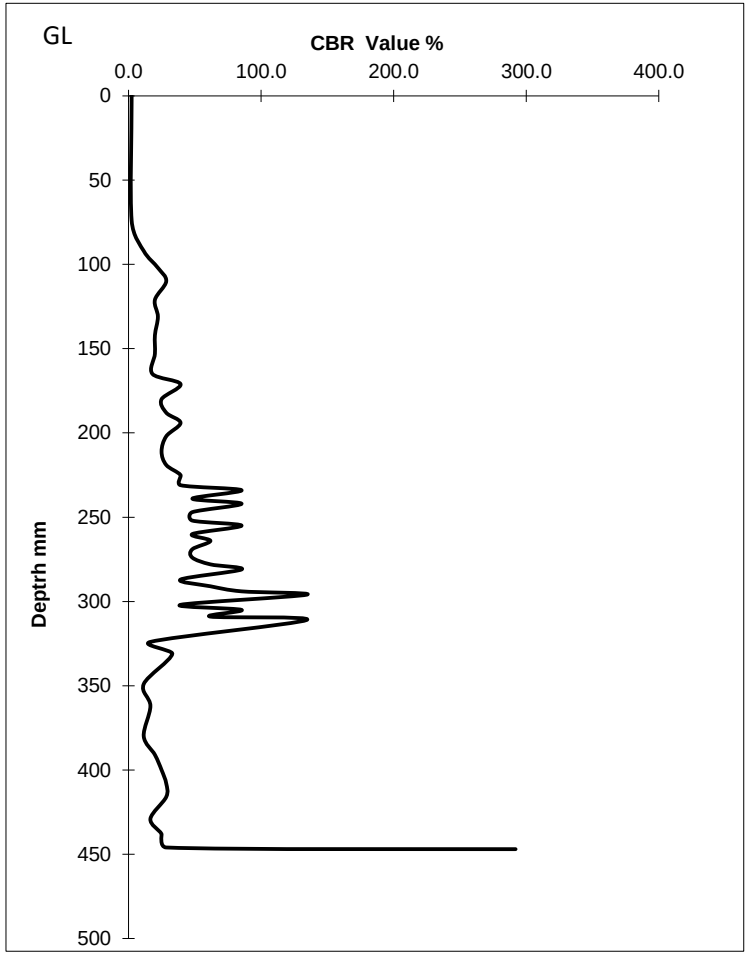
CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)	CBR Value %	mm per blow	Reading on Scale (mm)	Depth From GL (mm)
2.4			0				
2.4	74	96	74				
11.5	18	114	92	24.9	9	422	400
22.2	10	124	102	28.4	8	430	408
28.4	8	132	110	28.4	8	438	416
19.9	11	143	121	16.5	13	451	429
22.2	10	153	131	24.9	9	460	438
19.9	11	164	142	28.4	8	468	446
19.9	11	175	153	292.0	1	469	447
18.1	12	187	165				
39.3	6	193	171				
24.9	9	202	180				
28.4	8	210	188				
39.3	6	216	194				
28.4	8	224	202				
24.9	9	233	211				
28.4	8	241	219				
39.3	6	247	225				
39.3	6	253	231				
85.3	3	256	234				
48.1	5	261	239				
85.3	3	264	242				
48.1	5	269	247				
48.1	5	274	252				
85.3	3	277	255				
48.1	5	282	260				
61.8	4	286	264				
48.1	5	291	269				
48.1	5	296	274				
61.8	4	300	278				
85.3	3	303	281				
39.3	6	309	287				
61.8	4	313	291				
85.3	3	316	294				
134.3	2	318	296				
39.3	6	324	302				
85.3	3	327	305				
61.8	4	331	309				
134.3	2	333	311				
16.5	13	346	324				
33.0	7	353	331				
11.5	18	371	349				
16.5	13	384	362				
11.5	18	402	380				
19.9	11	413	391				

Remarks: Tests commenced from ground level

Zero reading = start depth below ground surface

Reading on scale GL 22 (mm)

Zero Reading test start 56 (mm)



CBR derivation after Webster et al, 1992

Remarks: After Transport Research Laboratory 2004

Project: Bishop Headley School

Date: 22.08.22

Reference: DCP 232

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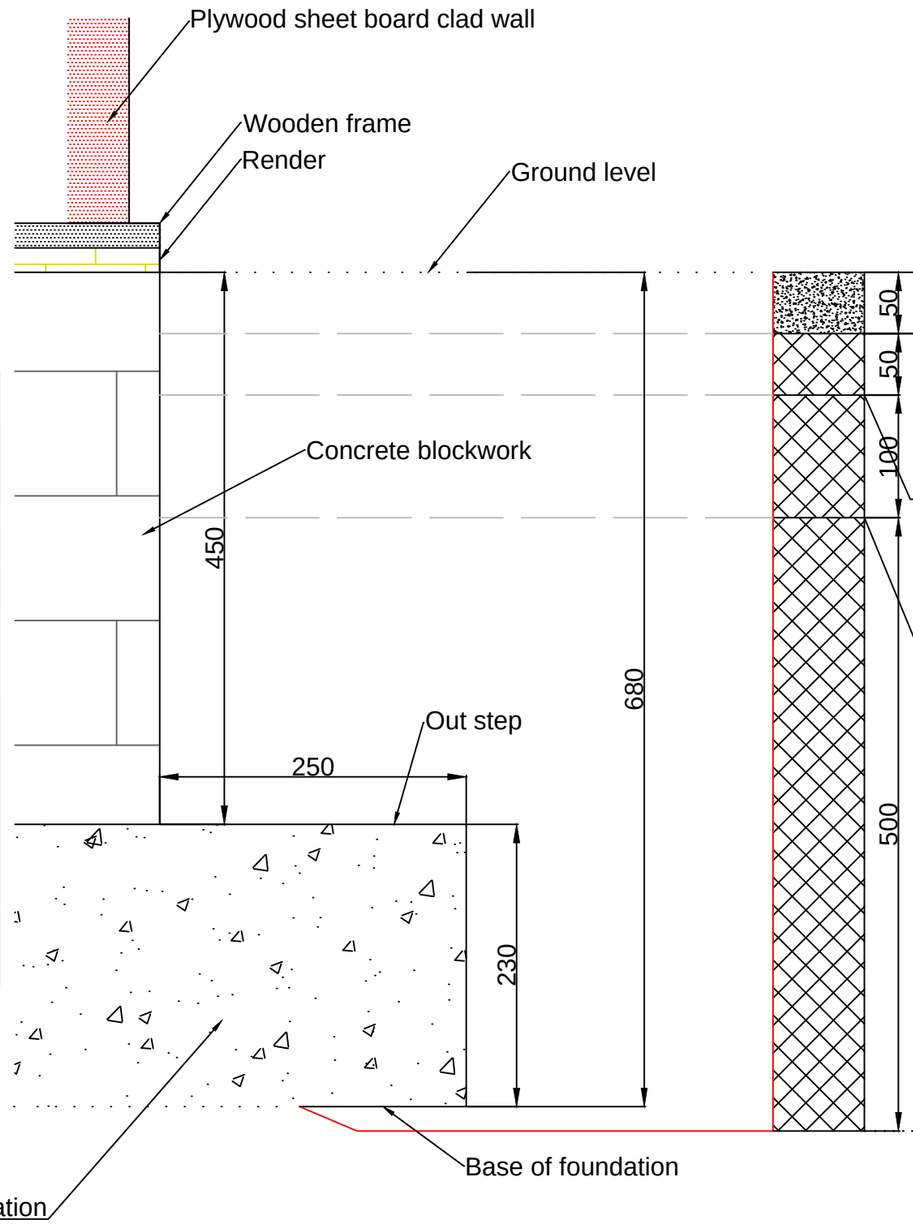
SOUTH WALES GROUND TESTING

APPENDIX I

SCHEMATIC HAND DUG TRIAL PIT DRAWINGS



A - Concrete paving slab

B - MADE GROUND: (Soft) brown slightly silty slightly gravelly CLAY. Gravel is fine to coarse angular and sub-angular of mudstone and sandstone.

C - MADE GROUND: (Loose) yellowish brown fine to coarse SAND.

D - MADE GROUND: (Loose) greyish brown slightly silty gravelly CLAY with medium cobble and boulder content of angular to sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone, vesicular and vitreous slag and concrete with inclusions of timber and metal.

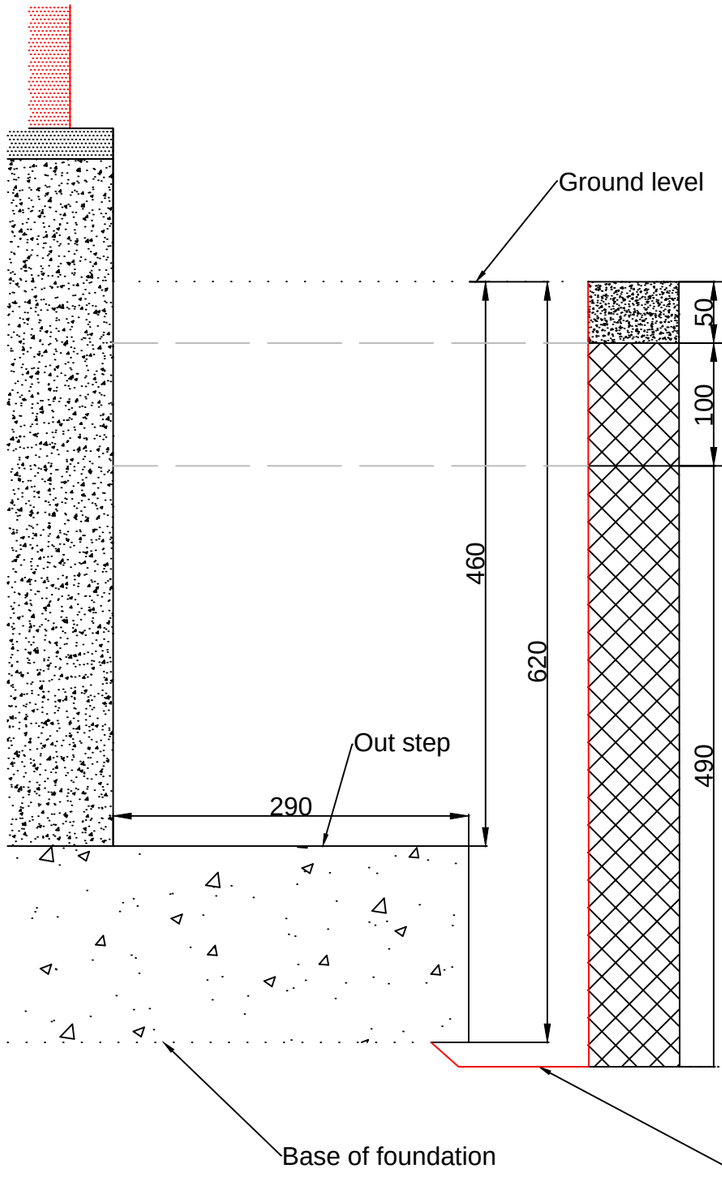
Trial pit terminated at 700mm bgl.

All measurements in mm.

TP151-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



50	**A** - Concrete paving slab
100	**B** - Lean mix CEMENT [recovered as yellow and grey sandy gravel. Gravel is fine to coarse angular of concrete].
490	**C** - MADE GROUND: (Loose) brownish grey slightly silty gravelly CLAY with low cobble content of angular to sub-rounded of concrete, sandstone, vesicular slag and brick. Gravel is fine to coarse angular to sub-rounded of mudstone, sandstone, brick, concrete, bituminous material, vitreous and vesicular slag with inclusions of metal reinforcement bar, timber and polystyrene foam.

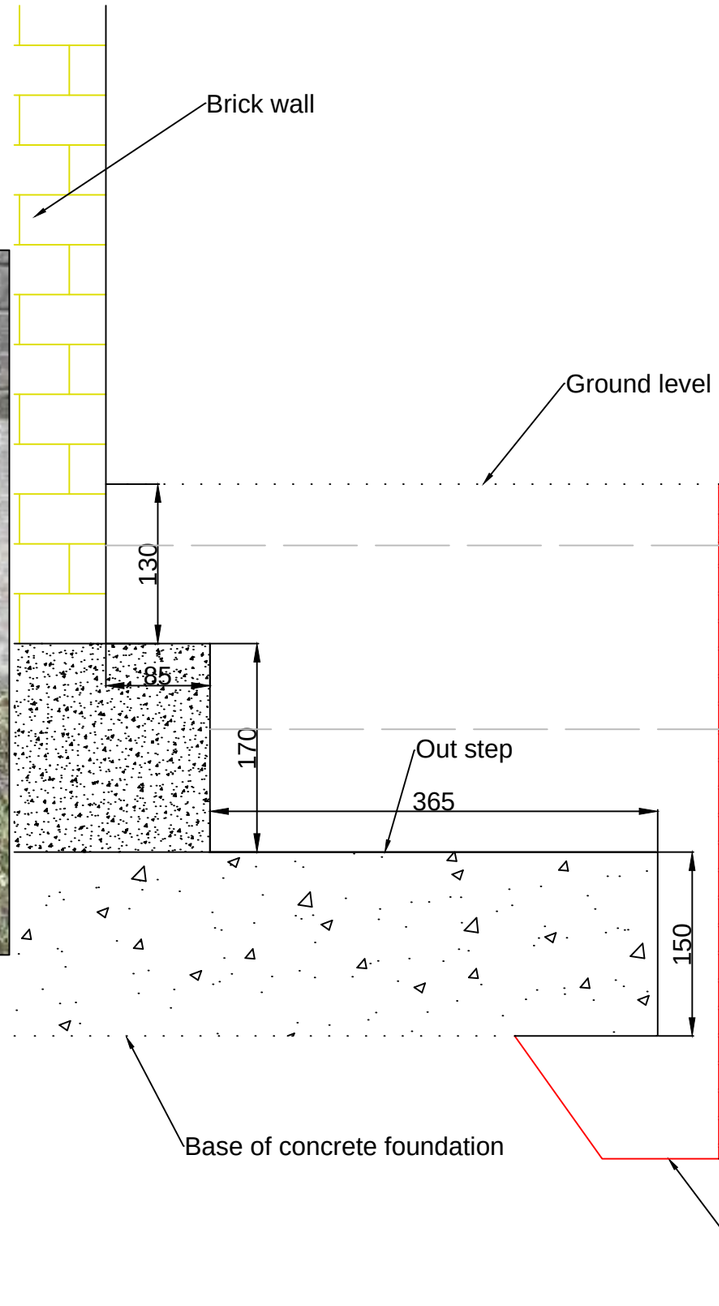
Trial pit refused at 640mm bgl.

All measurements in mm.

TP153-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



50	**A** - Concrete paving slab
150	**B** - Lean mix CEMENT [recovered as yellow and grey sandy gravel. Gravel is fine to coarse angular of concrete].
350	**C** - MADE GROUND: (Soft) blackish brown and greyish brown slightly silty gravelly CLAY with medium cobble and boulder content of angular to sub-rounded sandstone, mudstone and concrete. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone, brick, concrete and vesicular slag.

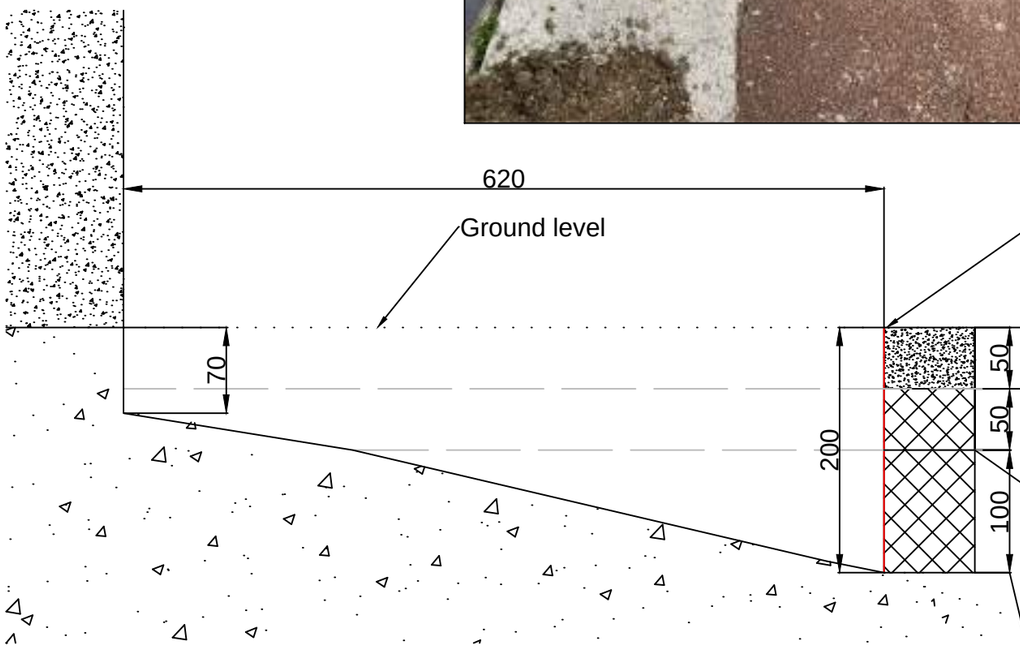
Trial pit refused at 550mm bgl.

All measurements in mm.

TP154-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



A - Concrete paving slab

B - MADE GROUND: (Loose) yellowish brown fine to coarse SAND.

C - MADE GROUND: (Soft) greyish brown slightly silty gravelly CLAY with low cobble content of sub-angular concrete. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone, vesicular slag and concrete.

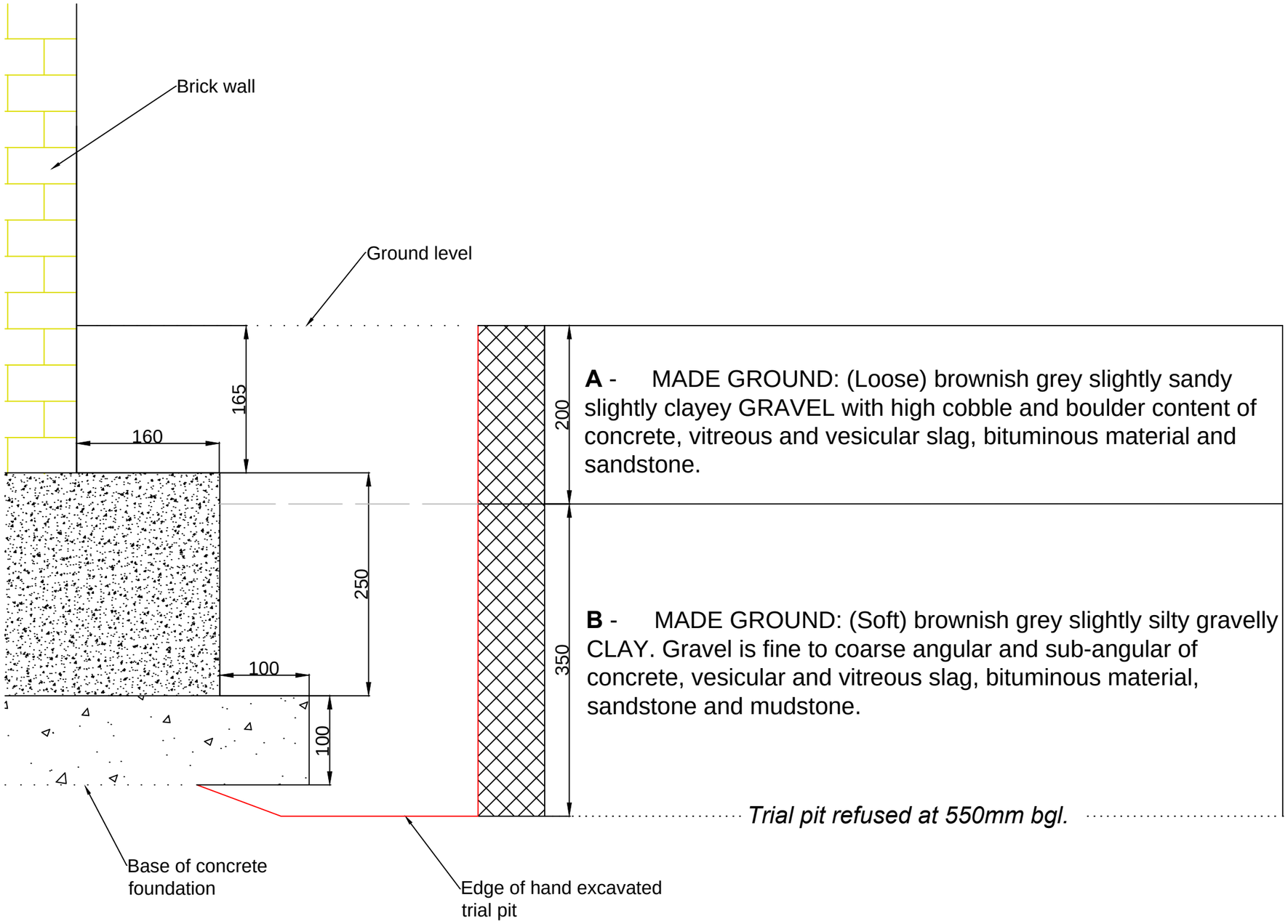
Trial pit refused at 200mm bgl.

All measurements in mm.

TP155-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



A - MADE GROUND: (Loose) brownish grey slightly sandy slightly clayey GRAVEL with high cobble and boulder content of concrete, vitreous and vesicular slag, bituminous material and sandstone.

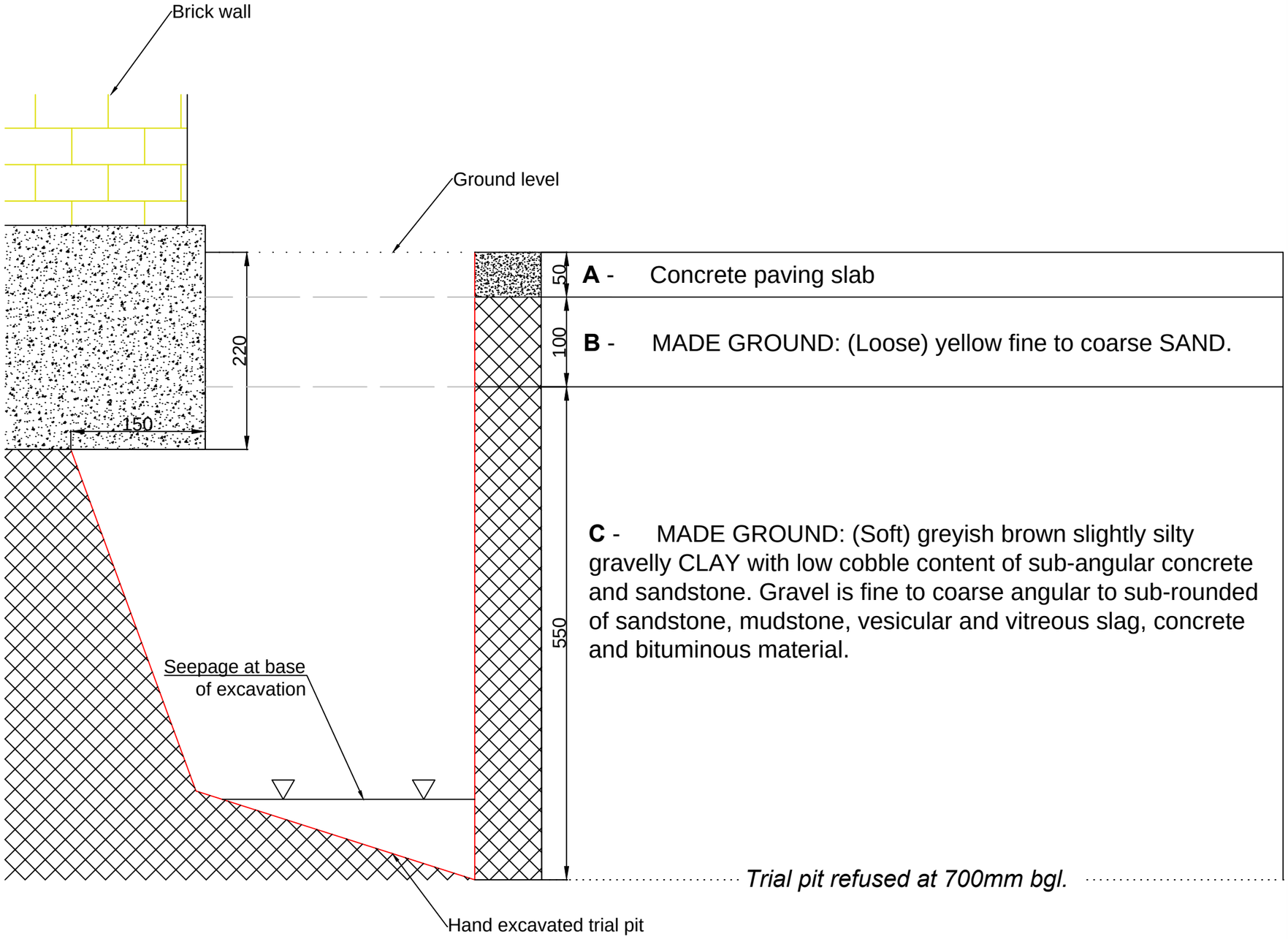
B - MADE GROUND: (Soft) brownish grey slightly silty gravelly CLAY. Gravel is fine to coarse angular and sub-angular of concrete, vesicular and vitreous slag, bituminous material, sandstone and mudstone.

All measurements in mm.

TP156-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:10 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



A - Concrete paving slab

B - MADE GROUND: (Loose) yellow fine to coarse SAND.

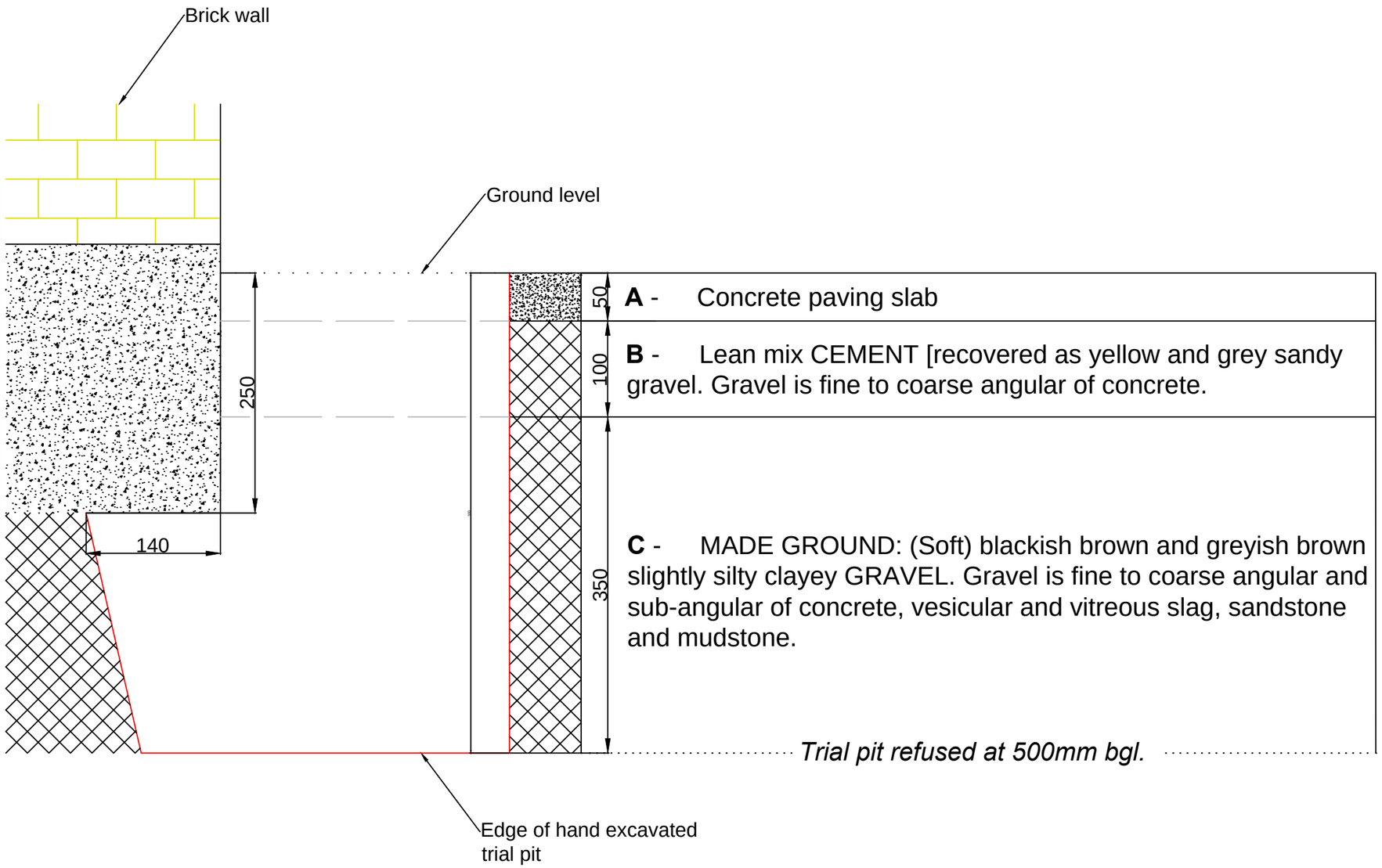
C - MADE GROUND: (Soft) greyish brown slightly silty gravelly CLAY with low cobble content of sub-angular concrete and sandstone. Gravel is fine to coarse angular to sub-rounded of sandstone, mudstone, vesicular and vitreous slag, concrete and bituminous material.

All measurements in mm.

TP157-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



A - Concrete paving slab

B - Lean mix CEMENT [recovered as yellow and grey sandy gravel. Gravel is fine to coarse angular of concrete.

C - MADE GROUND: (Soft) blackish brown and greyish brown slightly silty clayey GRAVEL. Gravel is fine to coarse angular and sub-angular of concrete, vesicular and vitreous slag, sandstone and mudstone.

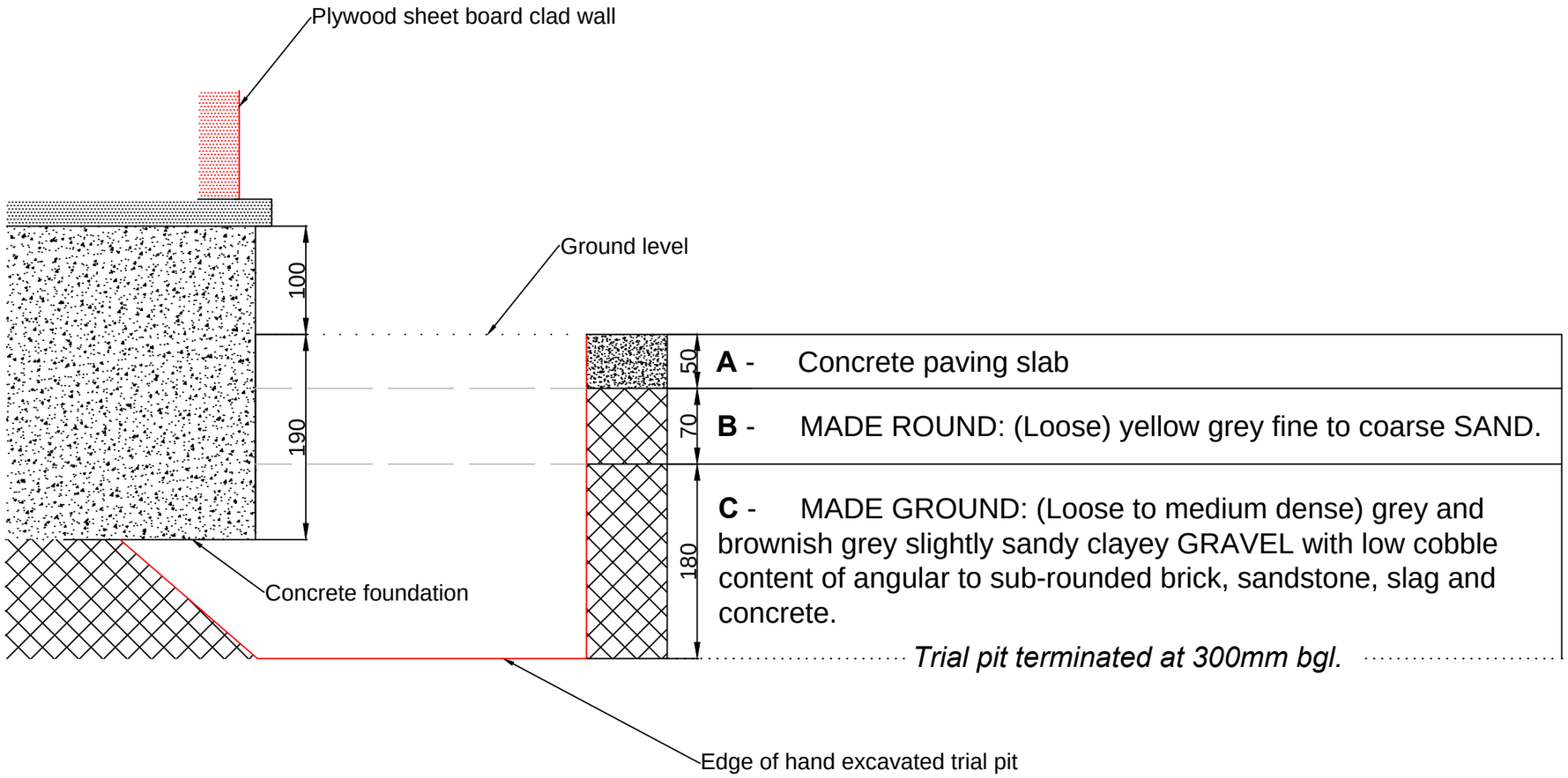
All measurements in mm.

TP158-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991

No Image Available

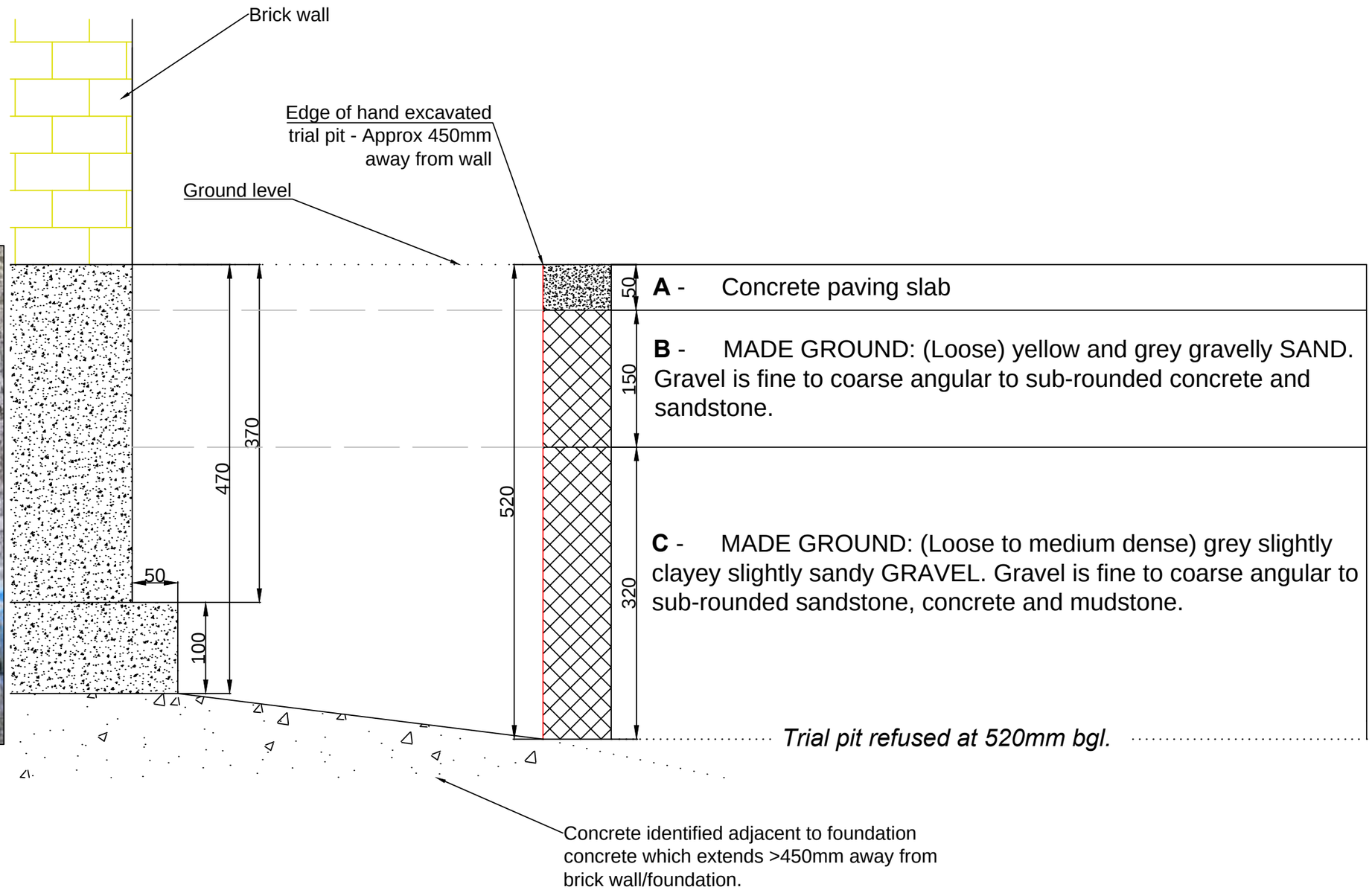


All measurements in mm.

TP247-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



A - Concrete paving slab

B - MADE GROUND: (Loose) yellow and grey gravelly SAND. Gravel is fine to coarse angular to sub-rounded concrete and sandstone.

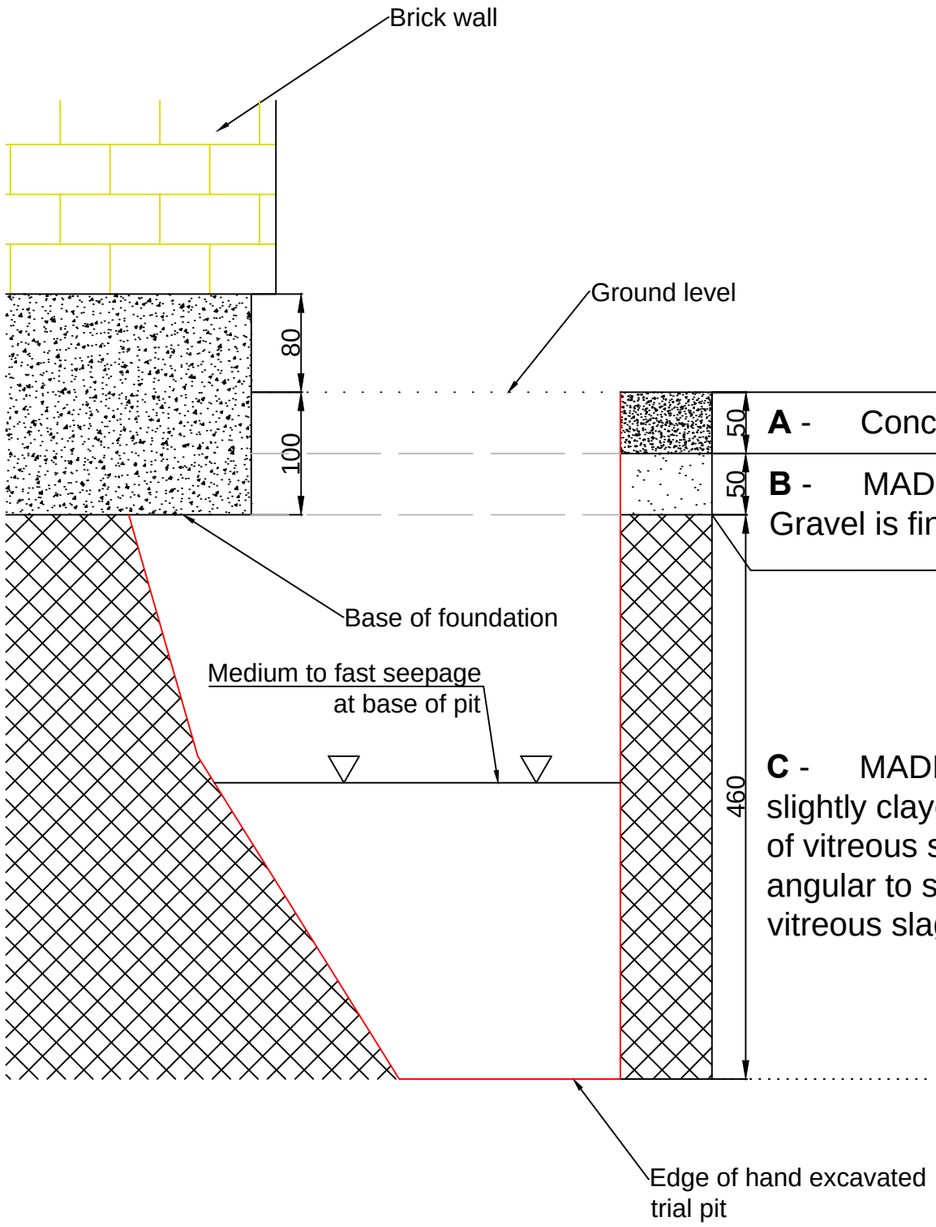
C - MADE GROUND: (Loose to medium dense) grey slightly clayey slightly sandy GRAVEL. Gravel is fine to coarse angular to sub-rounded sandstone, concrete and mudstone.

All measurements in mm.

TP251-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



A - Concrete paving slab

B - MADE GROUND: (Loose) grey yellow gravelly SAND. Gravel is fine to coarse sub-rounded to rounded of sandstone.

C - MADE GROUND: (Medium dense) grey slightly silty sandy slightly clayey GRAVEL with medium cobble and boulder content of vitreous slag, brick and concrete. Gravel is fine to coarse angular to sub-rounded of mudstone, sandstone, vesicular and vitreous slag and brick.

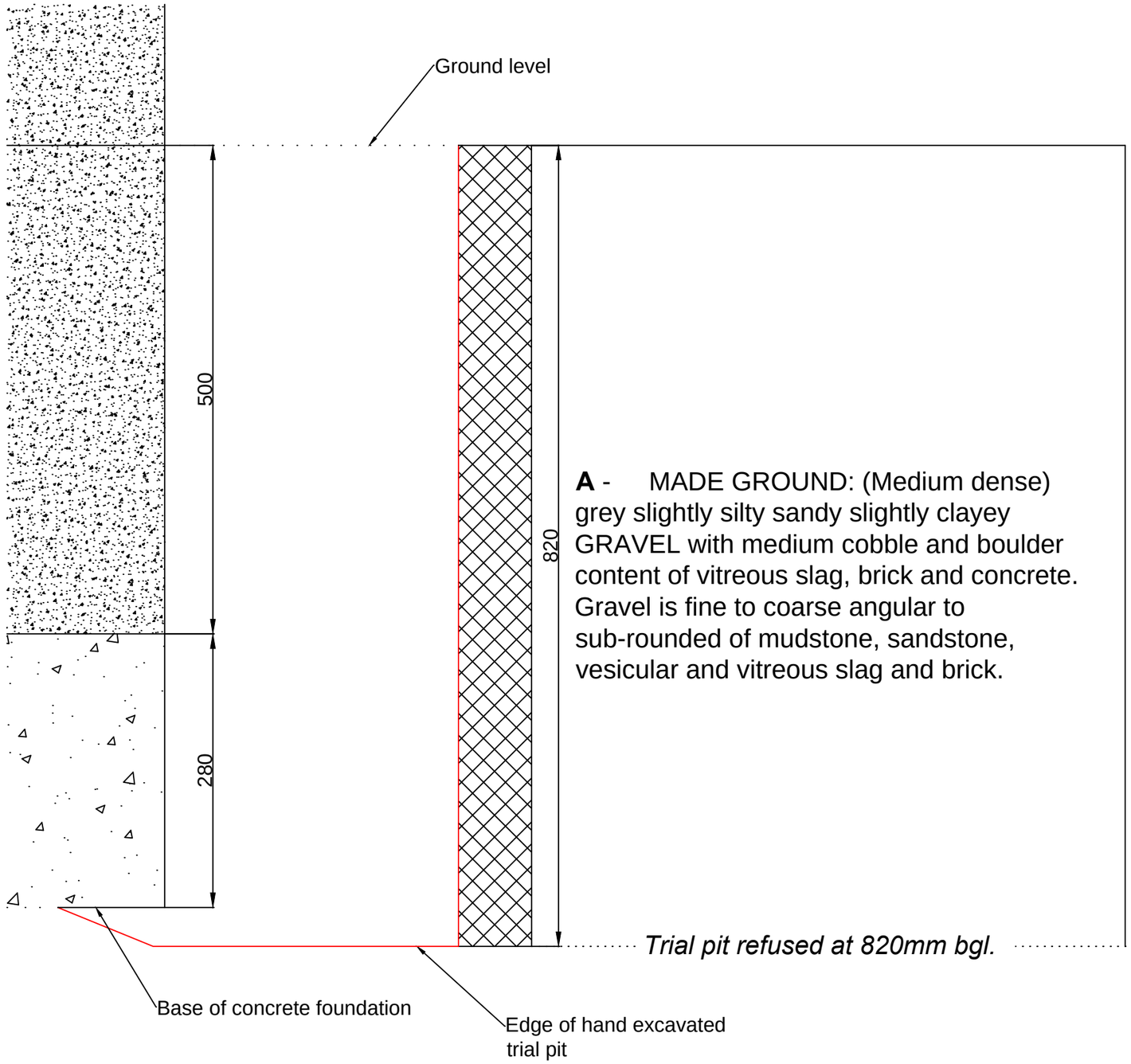
Trial pit terminated at 560mm bgl.

All measurements in mm.

TP252-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991

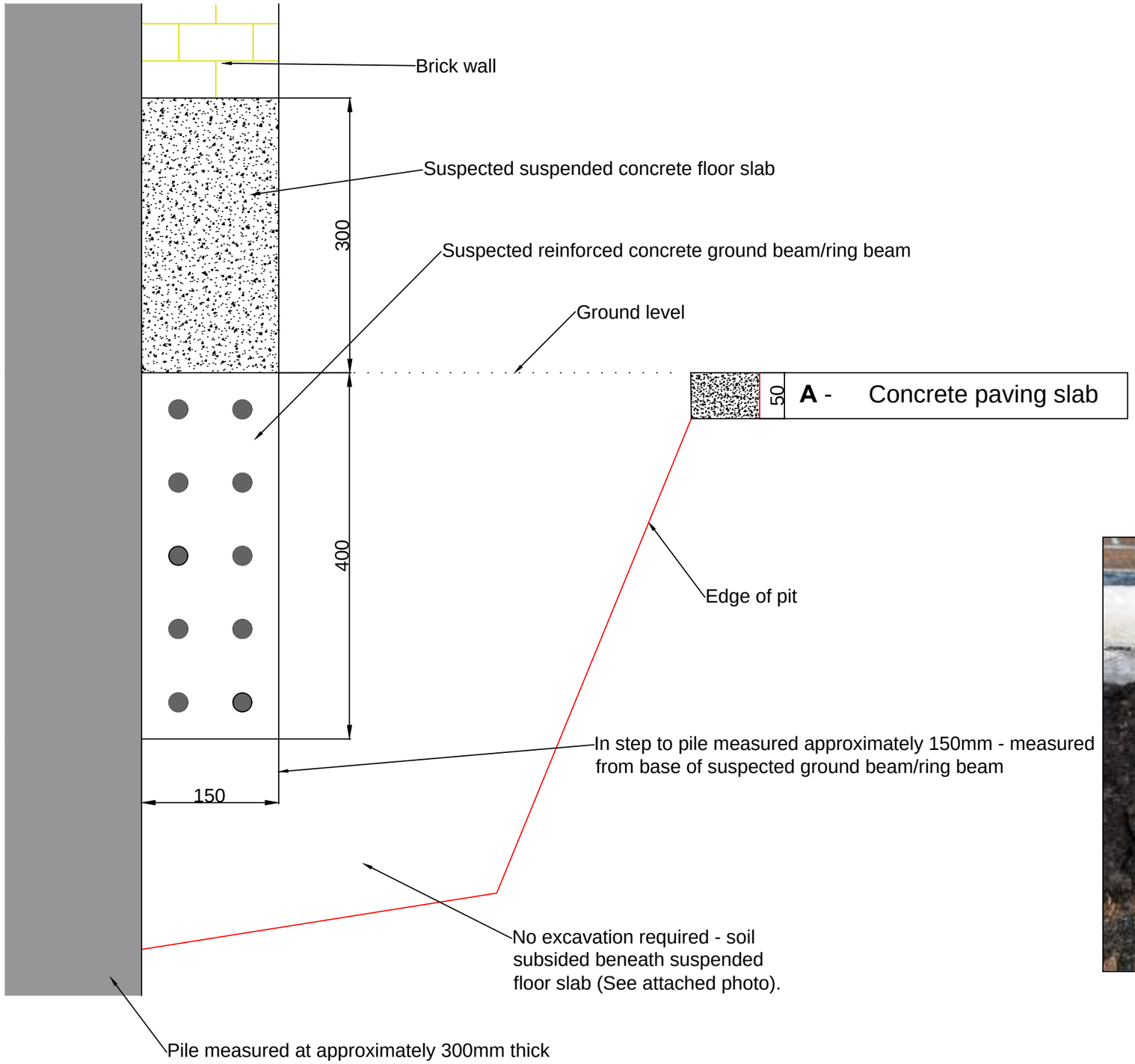


All measurements in mm.

TP254-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991

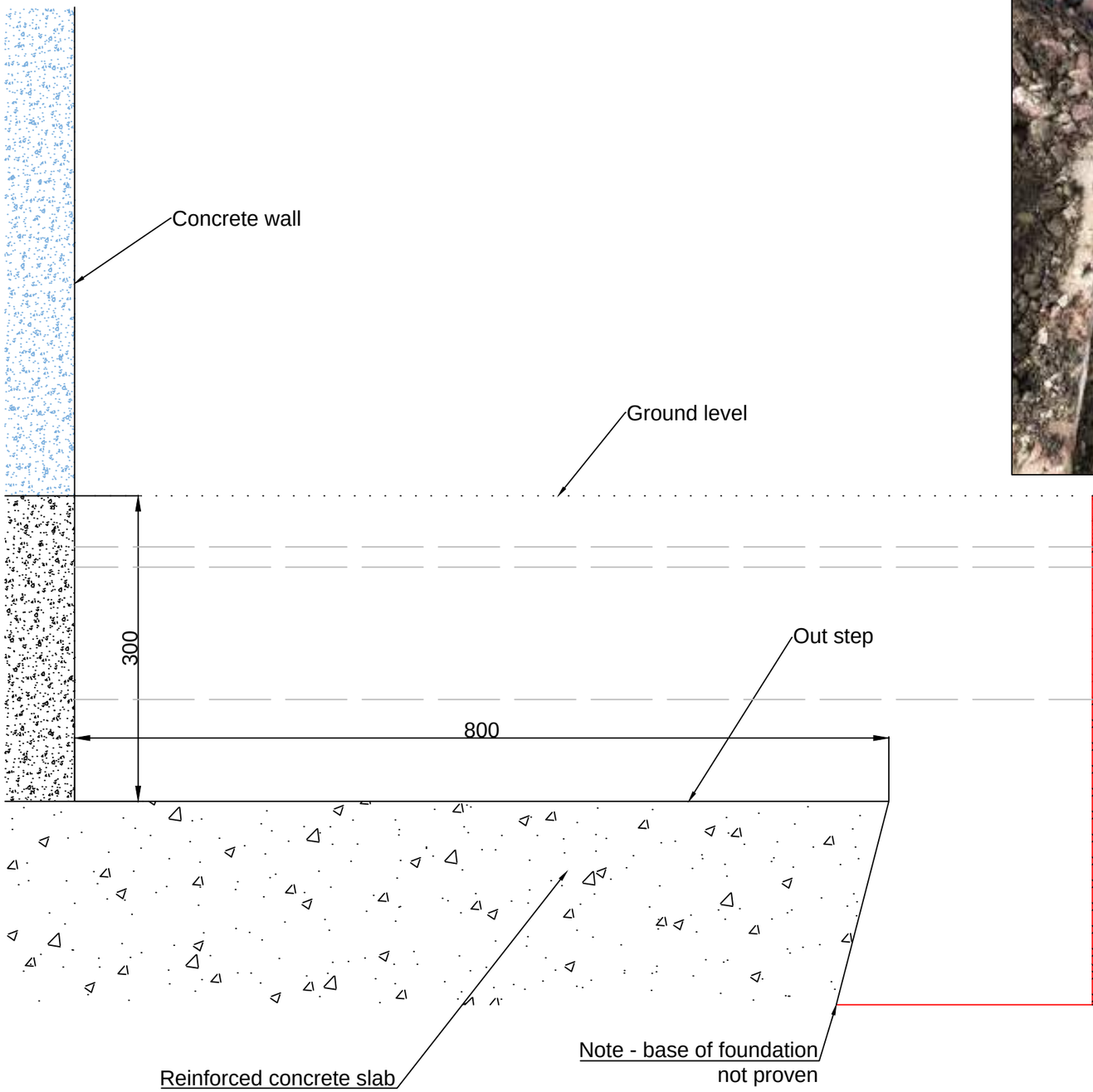


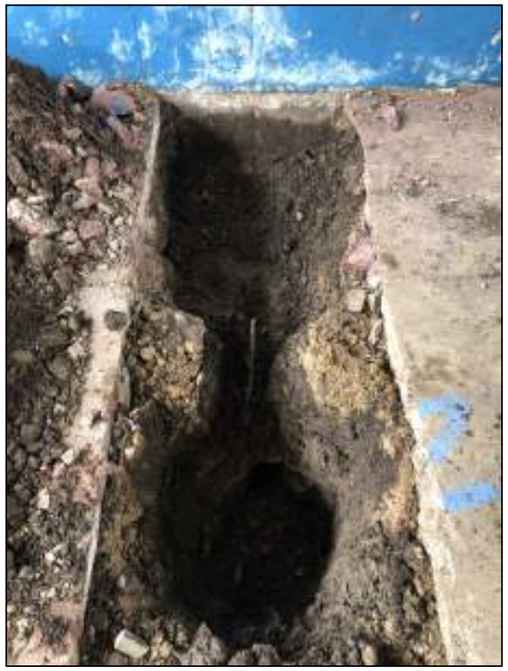
All measurements in mm.

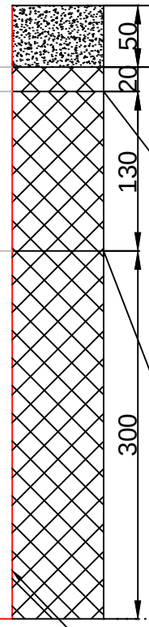
TP255-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991







A - Concrete paving slab

B - MADE GROUND: (Loose) yellowish brown coarse SAND.

C - MADE GROUND: (Loose) black and grey slightly silty sandy slightly clayey GRAVEL. Gravel is fine to coarse angular to sub-rounded sandstone, concrete, brick, vitreous clay pipe and vesicular and vitreous slag with inclusions of reinforcement metal bars.

D - MADE GROUND: (Soft to firm) brownish grey slightly silty gravelly CLAY with low cobble content of sub-rounded sandstone. Gravel is fine to coarse angular to sub-rounded sandstone and mudstone.

Trial pit refused at 500mm bgl.

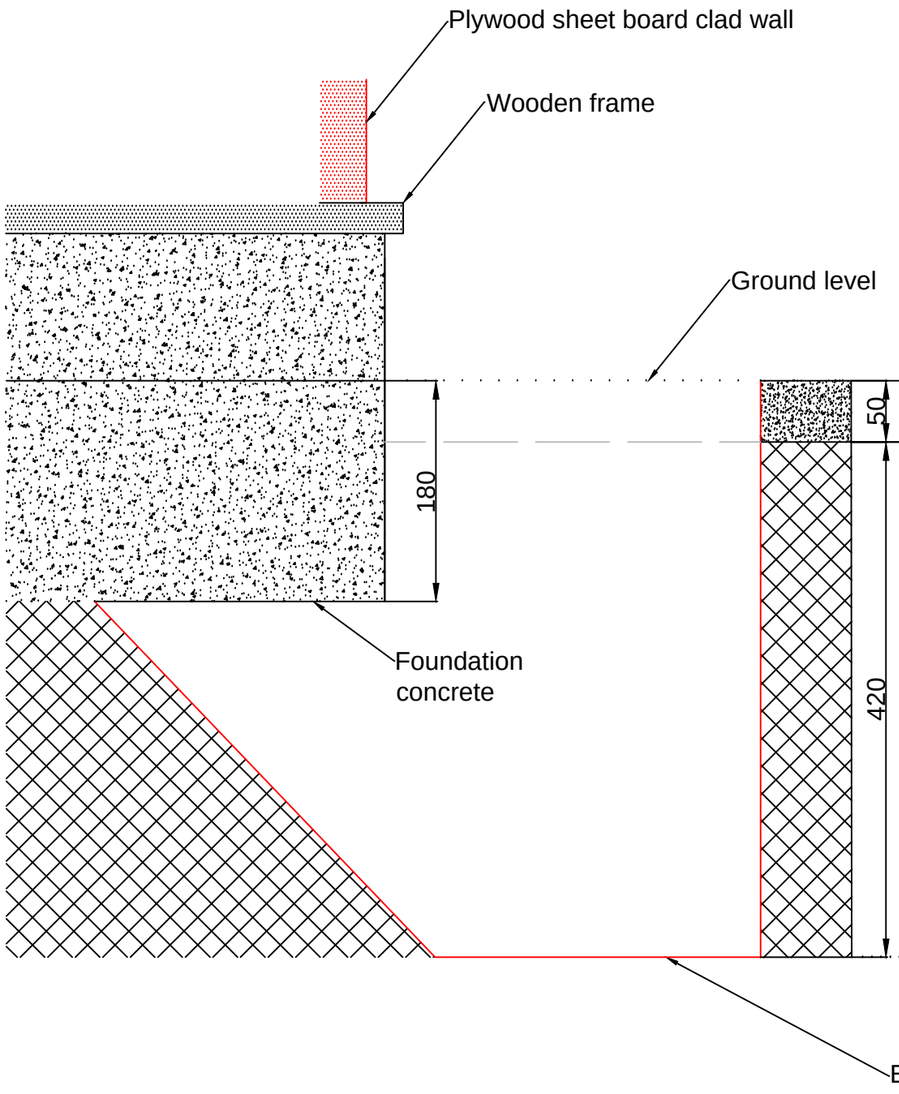
Edge of hand excavated trial pit

All measurements in mm.

TP256-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991



A - Concrete paving slab

B - MADE GROUND: (Loose) grey slightly silty sandy GRAVEL with medium cobble content of angular to sub-rounded concrete, slag and sandstone. Gravel is fine to coarse angular to sub-rounded concrete, vitreous and vesicular slag, sandstone, mudstone, brick and bituminous material with inclusions of glass, reinforcement bars and metal.

Trial pit terminated at 470mm bgl.

All measurements in mm.

TP257-HD Schematic Cross Section (Hand Dug Trial Pit)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique
Client: Willmott Dixon Construction Ltd	Scale: 1:5 at A3	

Integral House,
7 Beddau Way,
Castlegate Business Park,
Caerphilly,
CF83 2AX.
Tel: 029 2080 7991

APPENDIX J

SOIL INFILTRATION/FALLING HEAD PERCOLATION TEST RESULTS

PERMEABILITY TEST DATA

PROJECT	**Bishop Hedley High School, Merthyr Tydfil**	**JOB No.**	**14075**

TYPE	FALLING			
DATE	24/08/2022	**TIME**	11:00	hrs
BOREHOLE NUMBER	SA108	**TEST No.**	1	
Depth of borehole at start of test (mBGL) h_i			2.00	m
Depth of borehole at end of test (mBGL) h_e			2.00	m
Borehole diameter (m) D			0.086	m
Piezometer diameter (m) d				m
Filter Backfill			No	
Soil in casing (m) L			0.00	m
L/D Ratio			23.3	
Hole in Soil below base of casing (m) L			2.00	m
Depth of casing (mBGL) h_c			0.00	m
Height of casing above ground level h_{uc}			0.00	m
Ground water level (mBGL) H_G			2.00	m
Water level at start of test below top of casing h_o			0.00	m
		$H_{G\ TEST}$	2.00	m

Elapsed Time t (mins)	**t (s)**	**Depth of water below top of casing h (m)**	**Head of Water $H = (H_G - h)$ (m)**	**Ratio H/H_0**
0	0	0.00	2.0	1.00
1	60	0.20	1.8	0.90
3	180	0.26	1.7	0.87
10	600	0.27	1.7	0.87
18	1080	0.29	1.7	0.86
30	1800	0.32	1.7	0.84
43	2580	0.34	1.7	0.83
53	3180	0.35	1.7	0.83
62	3720	0.36	1.6	0.82

TEST SECTION

Length L = **2.00** m

Area A = **0.5462** m^2

INTAKE FACTOR

Refer to BS 5930 Figure 7

Type **Special**

$$F = \frac{D*2.32*\Pi*(L/D)}{\log_e[1.1(L/D)+((1+1.1(L/D)^2)^{0.5}]}$$

F = **3.73**

TIME LAG

T = Time from start of test when h = 0.37 h_o

See graph opposite

T = s

PERMEABILITY

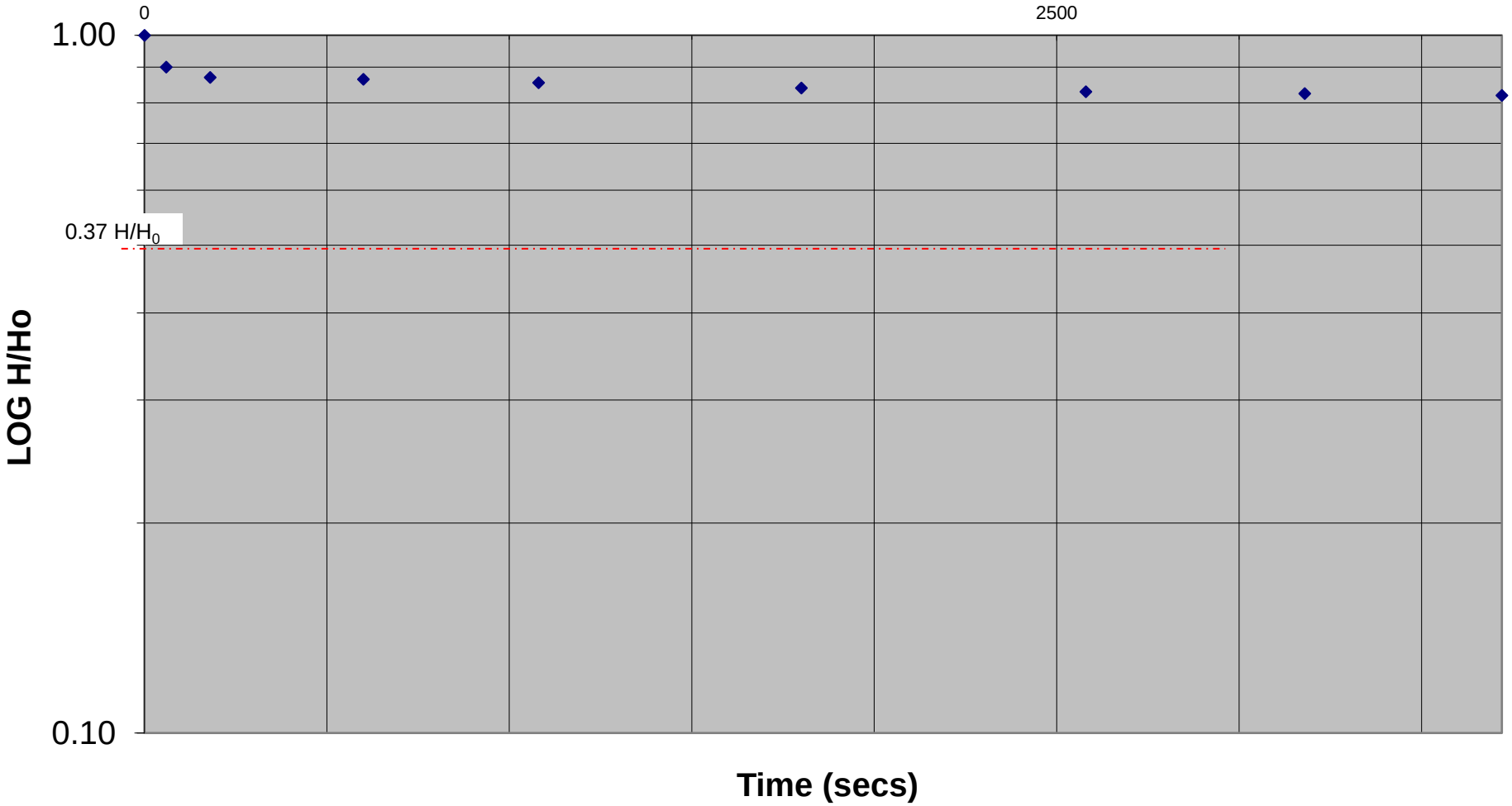
K = A / (F * T)

K = **#DIV/0!** m/s

COMMENTS

Insufficient infiltration to calculate design infiltration rate
Test failed

Borehole SA108



PERMEABILITY TEST DATA

PROJECT	**Bishop Hedley High School, Merthyr Tydfil**	**JOB No.**	**14075**

TYPE	FALLING			
DATE	23/08/2022	**TIME**	11:00	hrs
BOREHOLE NUMBER	SA112	**TEST No.**	1	
Depth of borehole at start of test (mBGL) h_i			2.00	m
Depth of borehole at end of test (mBGL) h_e			2.00	m
Borehole diameter (m) D			0.086	m
Piezometer diameter (m) d				m
Filter Backfill			No	
Soil in casing (m) L			0.00	m
L/D Ratio			23.3	
Hole in Soil below base of casing (m) L			2.00	m
Depth of casing (mBGL) h_c			0.00	m
Height of casing above ground level h_{uc}			0.00	m
Ground water level (mBGL) H_G			2.00	m
Water level at start of test below top of casing h_o			0.00	m
		$H_{G\ TEST}$	2.00	m

Elapsed Time t (mins)	**t (s)**	**Depth of water below top of casing h (m)**	**Head of Water $H = (H_G - h)$ (m)**	**Ratio H/H_0**
0	0	0.00	2.0	1.00
3	180	0.23	1.8	0.89
23	1380	0.32	1.7	0.84
33	1980	0.34	1.7	0.83
40	2400	0.36	1.6	0.82
45	2700	0.37	1.6	0.82
52	3120	0.37	1.6	0.82
66	3960	0.38	1.6	0.81
72	4320	0.38	1.6	0.81

TEST SECTION

Length L = **2.00** m

Area A = **0.5462** m^2

INTAKE FACTOR

Refer to BS 5930 Figure 7

Type **Special**

$$F = \frac{D*2.32*\Pi*(L/D)}{\log_e[1.1(L/D)+((1+1.1(L/D)^2)^{0.5}]}$$

F = **3.73**

TIME LAG

T = Time from start of test when h = 0.37 h_o

See graph opposite

T = s

PERMEABILITY

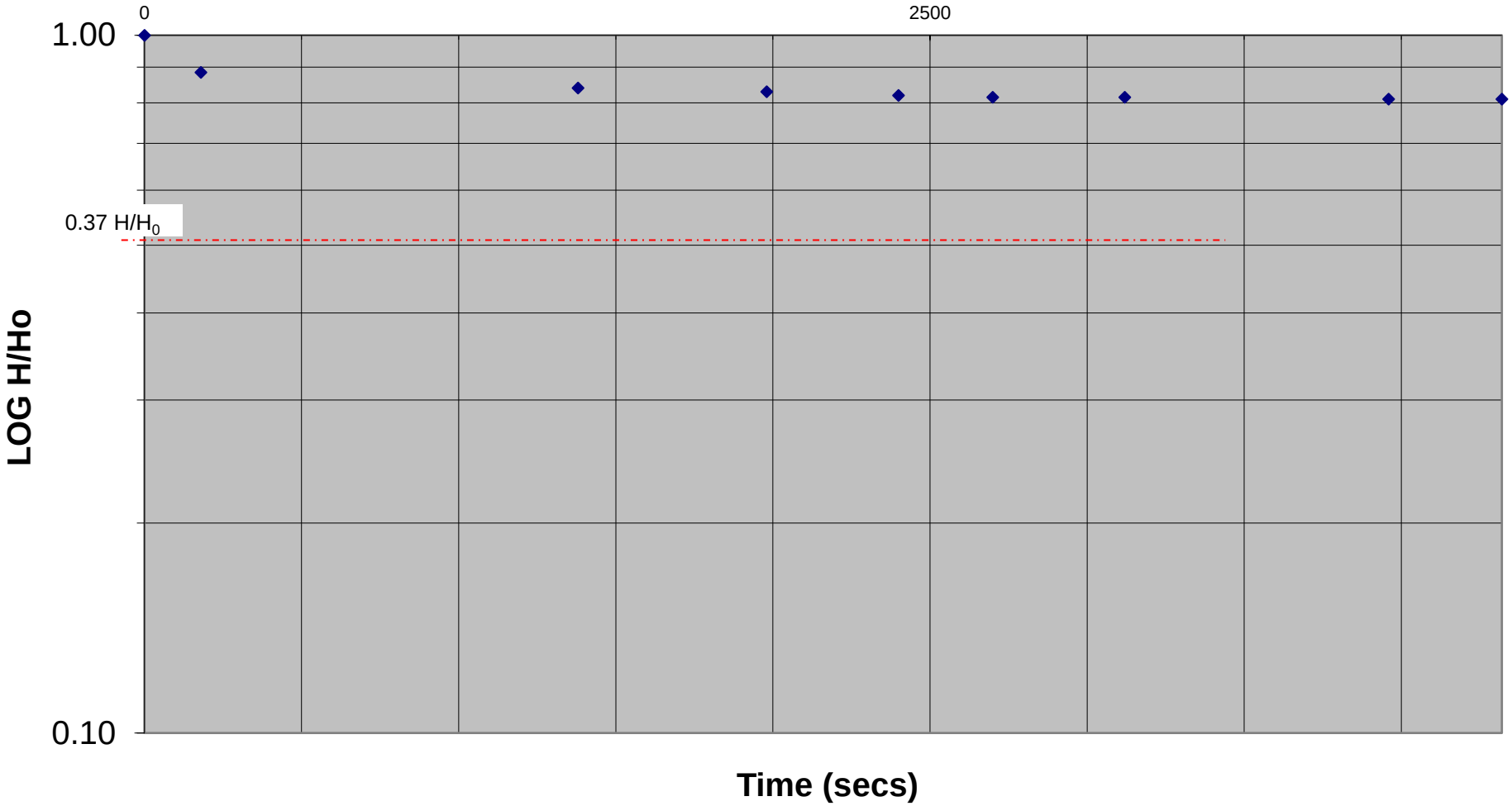
K = A / (F * T)

K = **#DIV/0!** m/s

COMMENTS

Insufficient infiltration to calculate deisgn infiltration rate
Test Failed

Borehole SA112



PERMEABILITY TEST DATA

PROJECT	**Bishop Hedley High School, Merthyr Tydfil**	**JOB No.**	**14075**

TYPE	FALLING			
DATE	23/08/2022	**TIME**	12:00	hrs
BOREHOLE NUMBER	SA113	**TEST No.**	1	
Depth of borehole at start of test (mBGL) h_i			1.70	m
Depth of borehole at end of test (mBGL) h_e			1.70	m
Borehole diameter (m) D			0.086	m
Piezometer diameter (m) d				m
Filter Backfill			No	
Soil in casing (m) L			0.00	m
L/D Ratio			19.8	
Hole in Soil below base of casing (m) L			1.70	m
Depth of casing (mBGL) h_c			0.00	m
Height of casing above ground level h_{uc}			0.00	m
Ground water level (mBGL) H_G			1.70	m
Water level at start of test below top of casing h_o			0.00	m
		$H_{G\ TEST}$	1.70	m

Elapsed Time t (mins)	**t (s)**	**Depth of water below top of casing h (m)**	**Head of Water $H = (H_G - h)$ (m)**	**Ratio H/H_0**
0	0	0.00	1.7	1.00
1	60	0.25	1.5	0.85
2	120	0.31	1.4	0.82
3	180	0.38	1.3	0.78
5	300	0.41	1.3	0.76
10	600	0.43	1.3	0.75
15	900	0.48	1.2	0.72
21	1260	0.53	1.2	0.69
29	1740	0.55	1.2	0.68
41	2460	0.57	1.1	0.66
58	3480	0.57	1.1	0.66
73	4380	0.58	1.1	0.66
113	6780	0.58	1.1	0.66
135	8100	0.58	1.1	0.66
155	9300	0.58	1.1	0.66
180	10800	0.58	1.1	0.66

TEST SECTION

Length L = **1.70** m

Area A = **0.4651** m^2

INTAKE FACTOR

Refer to BS 5930 Figure 7

Type **Special**

F = **D*2.32*π*(L/D)**

F = **3.30**

TIME LAG

T = Time from start of test when h = 0.37 h_o

See graph opposite

T = s

PERMEABILITY

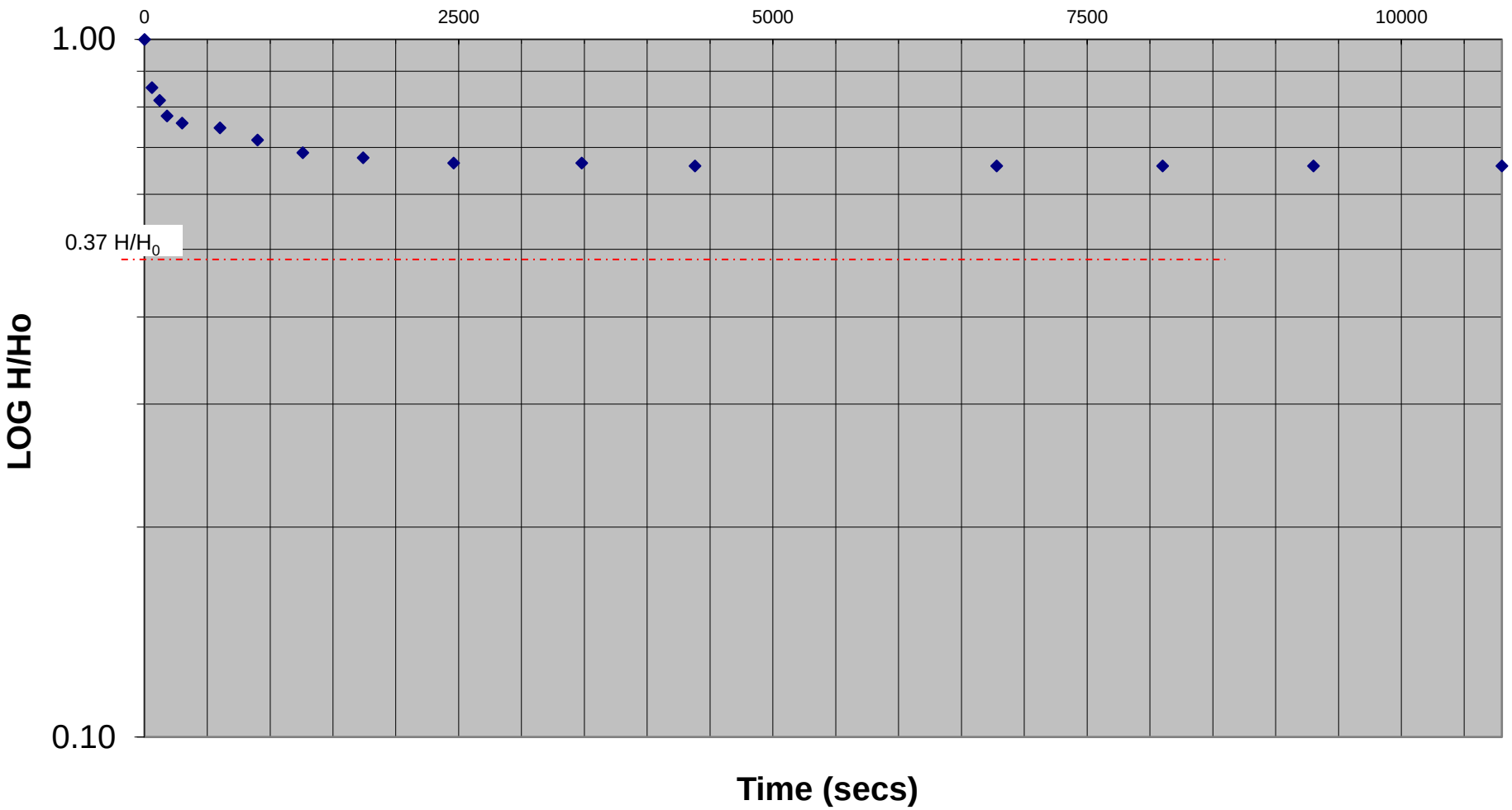
K = A / (F * T)

K = **#DIV/0!** m/s

COMMENTS

Infiltration stalled after 73 minutes
Insufficient infiltration to calculate deisgn infiltration rate
Test Failed

Borehole SA113



PERMEABILITY TEST DATA

PROJECT	**Bishop Hedley High School, Merthyr Tydfil**	**JOB No.**	**14075**

TYPE	FALLING			
DATE	23/08/2022	**TIME**	13:00	hrs
BOREHOLE NUMBER	SA114	**TEST No.**	1	
Depth of borehole at start of test (mBGL) h_i			0.70	m
Depth of borehole at end of test (mBGL) h_e			0.70	m
Borehole diameter (m) D			0.086	m
Piezometer diameter (m) d				m
Filter Backfill			No	
Soil in casing (m) L			0.00	m
L/D Ratio			8.1	
Hole in Soil below base of casing (m) L			0.70	m
Depth of casing (mBGL) h_c			0.00	m
Height of casing above ground level h_{uc}			0.00	m
Ground water level (mBGL) H_G			0.70	m
Water level at start of test below top of casing h_o			0.00	m
		$H_{G\ TEST}$	0.70	m

Elapsed Time t (mins)	**t (s)**	**Depth of water below top of casing h (m)**	**Head of Water $H = (H_G - h)$ (m)**	**Ratio H/H_0**
0	0	0.00	0.7	1.00
1	60	0.19	0.5	0.73
5	300	0.33	0.4	0.53
12	720	0.36	0.3	0.49
22	1320	0.38	0.3	0.46
78	4680	0.40	0.3	0.43
102	6120	0.40	0.3	0.43

TEST SECTION

Length L = **0.70** m

Area A = **0.1949** m^2

INTAKE FACTOR

Refer to BS 5930 Figure 7

Type **Special**

F = **D*2.32*π*(L/D)**

F = **1.78**

TIME LAG

T = Time from start of test when h = 0.37 h_o

See graph opposite

T = s

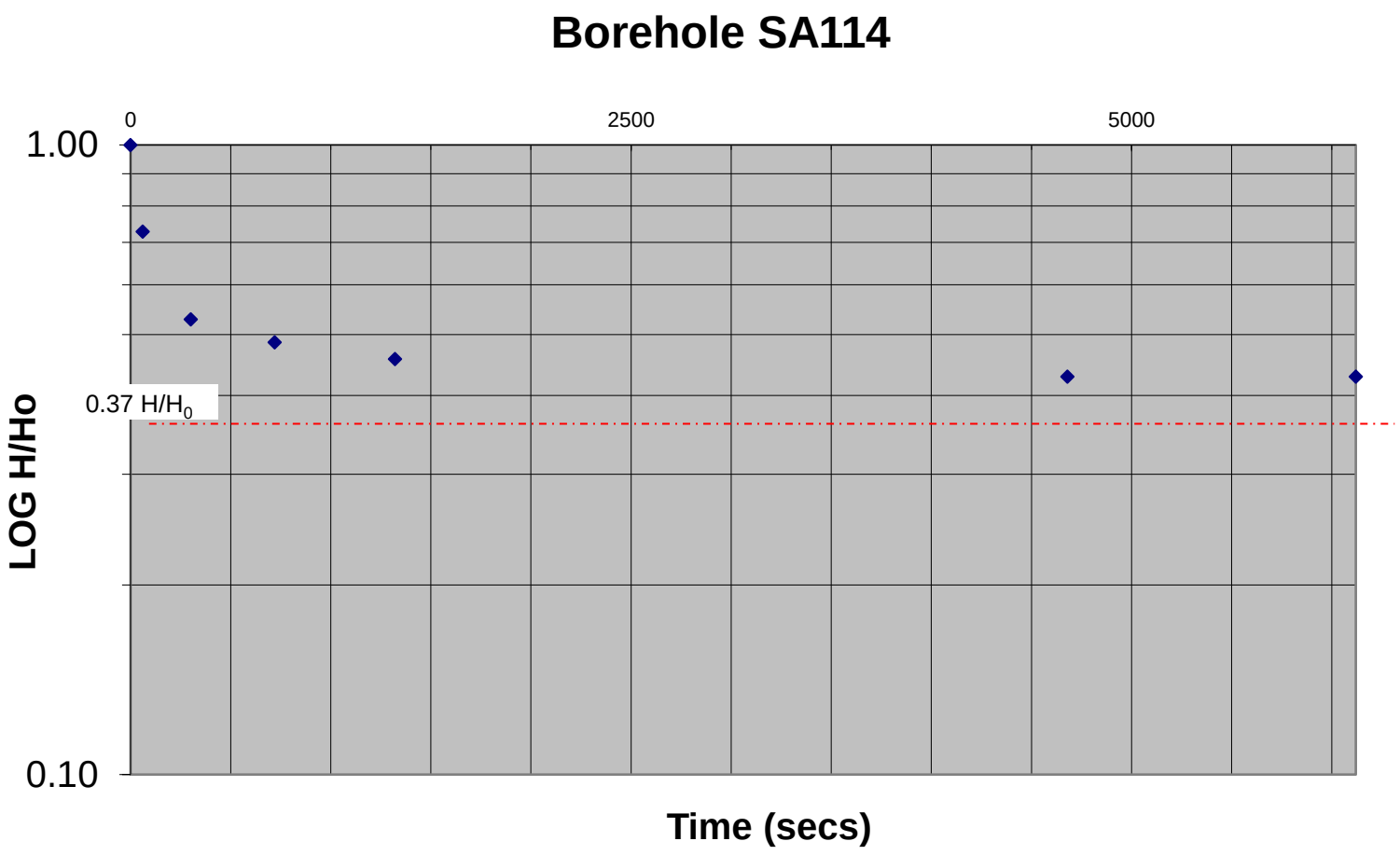
PERMEABILITY

K = A / (F * T)

K = **#DIV/0!** m/s

COMMENTS

Infiltration stalled after 78 minutes
Insufficient infiltration to calculate design infiltration rate
Test failed


Borehole SA114
0
2500
5000
1.00
0.37 H/H0
0.10
LOG H/Ho
Time (secs)

BRE365 SOIL INFILTRATION RATE TEST - SA101

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.50
Width (m)	0.70
Depth (m)	2.00
Groundwater	Dry
Weather Conditions	Cloudy
Date	22/08/2022

Remarks

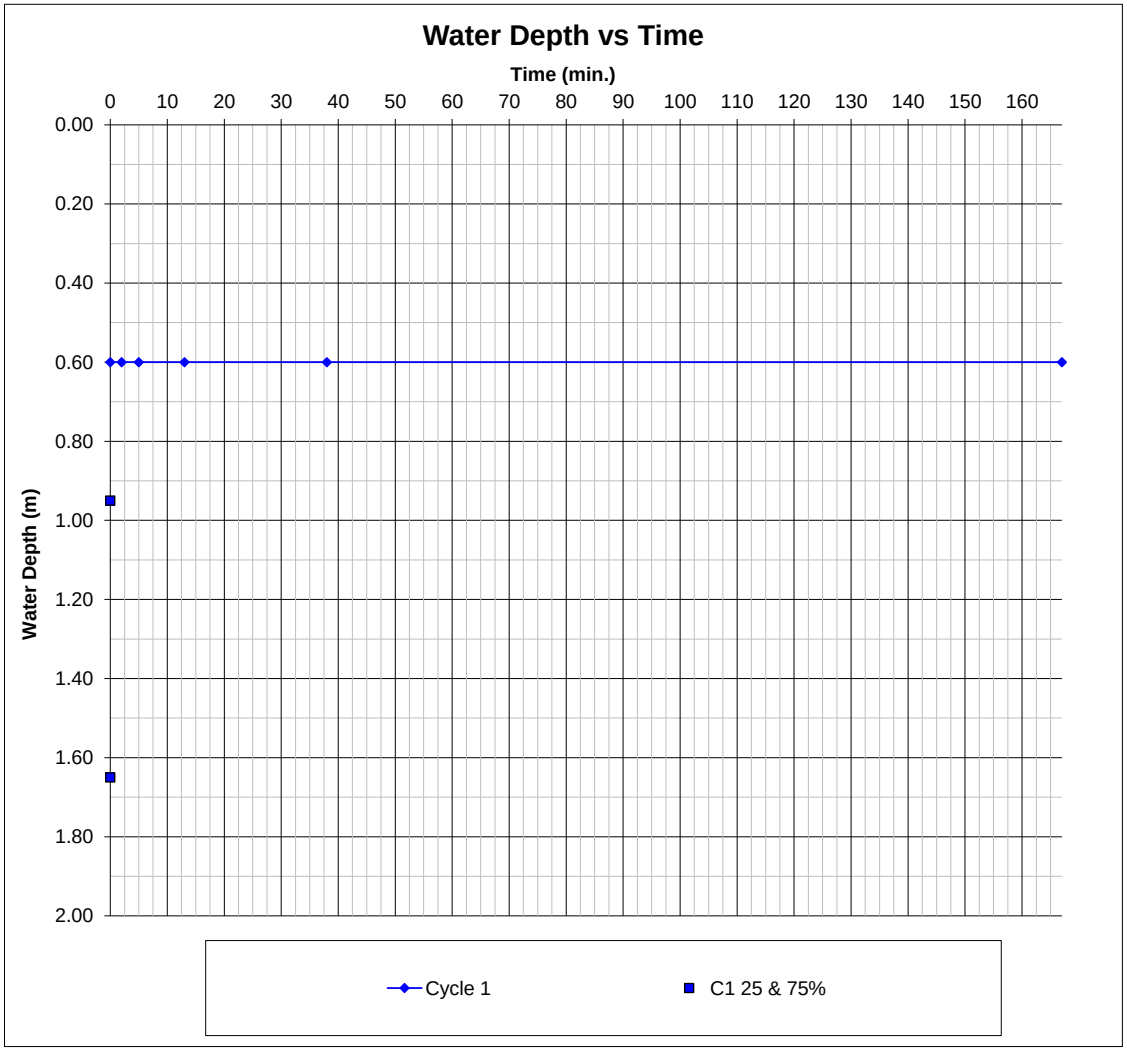
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate

3. Test Failed

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.60				
2	0.60				
5	0.60				
13	0.60				
38	0.60				
167	0.60				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.60		
Water depth at end of test	0.60		
Effective depth (measured)	0.00		
% Effective storage depth	0.00		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.40		
Effective storage depth (75%)	1.05		
Effective storage depth (50%)	0.70		
Effective storage depth (25%)	0.35		
Outflow Time (min)			
Time for measured outflow	167		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.00		
Over 100% effective depth	2.45		
From 75% - 25% effective depth	1.23		
Surface Area (m^2)			
For 100% effective storage	10.71		
For 50% effective storage	6.23		
Over measured depth	1.75		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	0.0E+00		
Over 75% - 25% effective depth			



BRE365 SOIL INFILTRATION RATE TEST - SA102

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.30
Width (m)	0.70
Depth (m)	2.00
Groundwater	Dry
Weather Conditions	Cloudy
Date	22/08/2022

Remarks

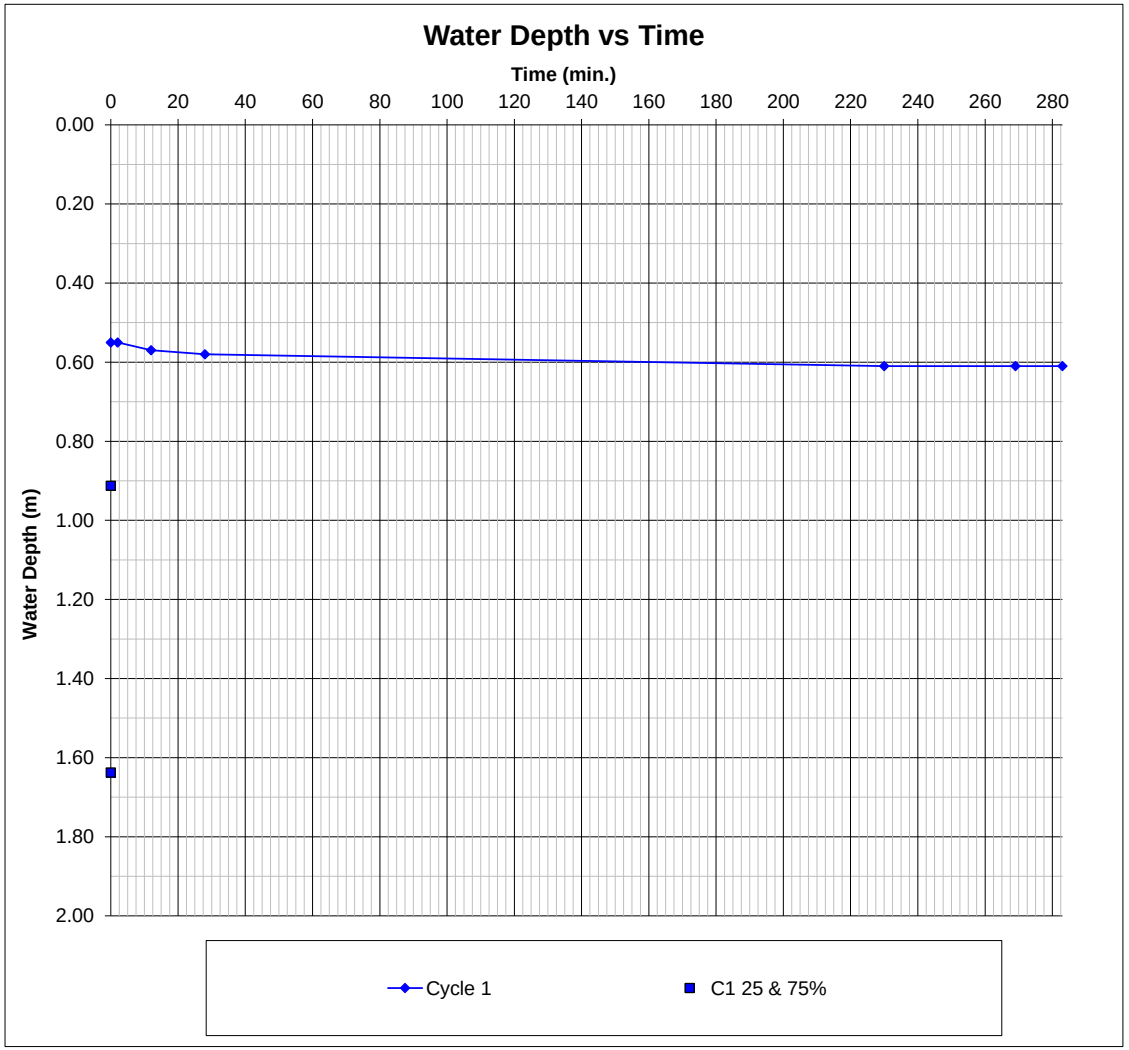
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test Failed

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.55				
2	0.55				
12	0.57				
28	0.58				
230	0.61				
269	0.61				
283	0.61				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.55		
Water depth at end of test	0.61		
Effective depth (measured)	0.06		
% Effective storage depth	0.04		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.45		
Effective storage depth (75%)	1.09		
Effective storage depth (50%)	0.73		
Effective storage depth (25%)	0.36		
Outflow Time (min)			
Time for measured outflow	283		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.10		
Over 100% effective depth	2.33		
From 75% - 25% effective depth	1.17		
Surface Area (m^2)			
For 100% effective storage	10.31		
For 50% effective storage	5.96		
Over measured depth	1.97		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	2.9E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA103

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.30
Width (m)	0.70
Depth (m)	2.00
Groundwater	Dry
Weather Conditions	Cloudy
Date	22/08/2022

Remarks

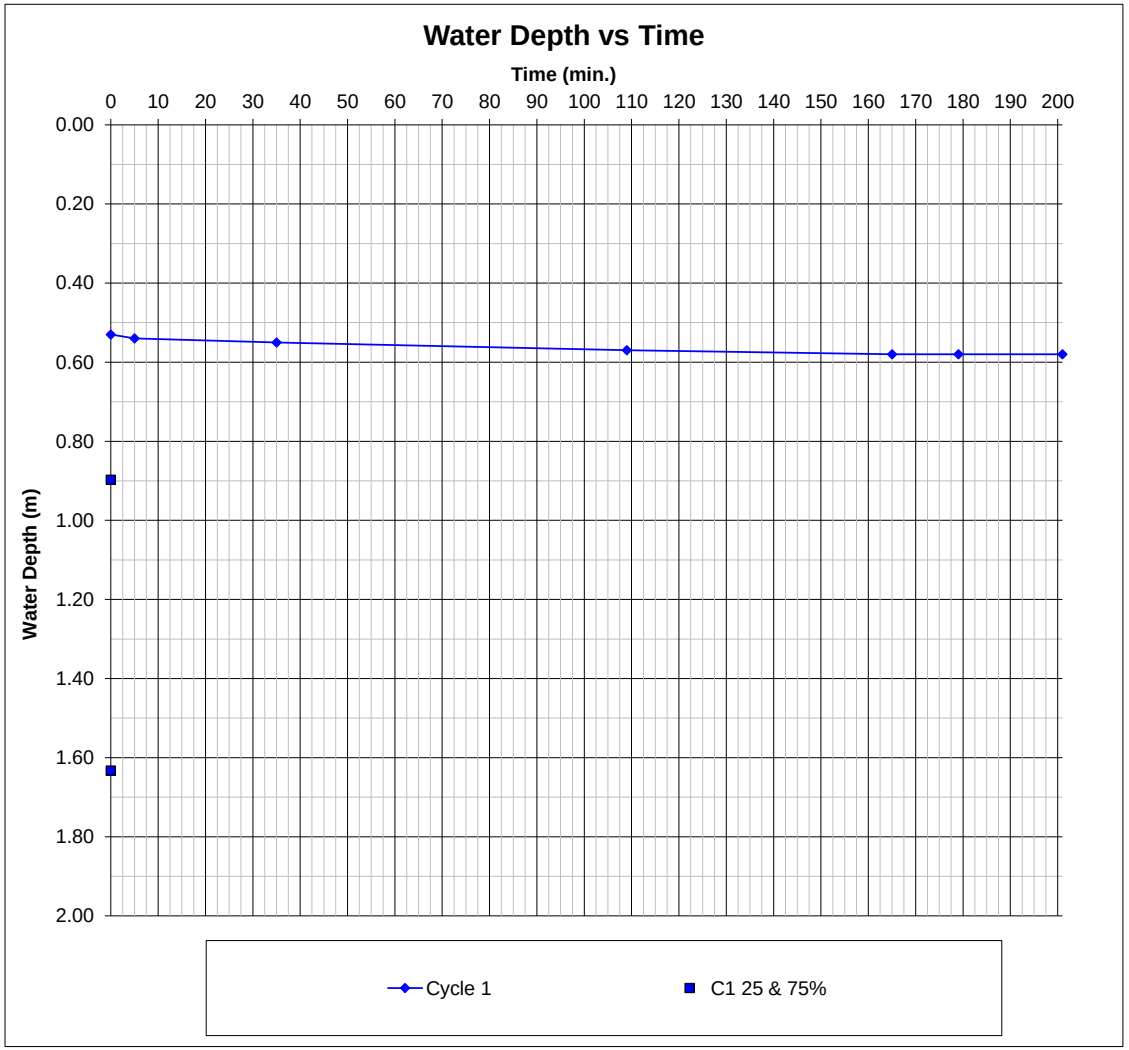
1. Test performed within cohesive made ground and well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.53				
5	0.54				
35	0.55				
109	0.57				
165	0.58				
179	0.58				
201	0.58				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.53		
Water depth at end of test	0.58		
Effective depth (measured)	0.05		
% Effective storage depth	0.03		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.47		
Effective storage depth (75%)	1.10		
Effective storage depth (50%)	0.74		
Effective storage depth (25%)	0.37		
Outflow Time (min)			
Time for measured outflow	201		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.08		
Over 100% effective depth	2.37		
From 75% - 25% effective depth	1.18		
Surface Area (m^2)			
For 100% effective storage	10.43		
For 50% effective storage	6.02		
Over measured depth	1.91		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	3.5E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA106

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.40
Width (m)	0.70
Depth (m)	2.30
Groundwater	Dry
Weather Conditions	Cloudy
Date	22/08/2022

Remarks

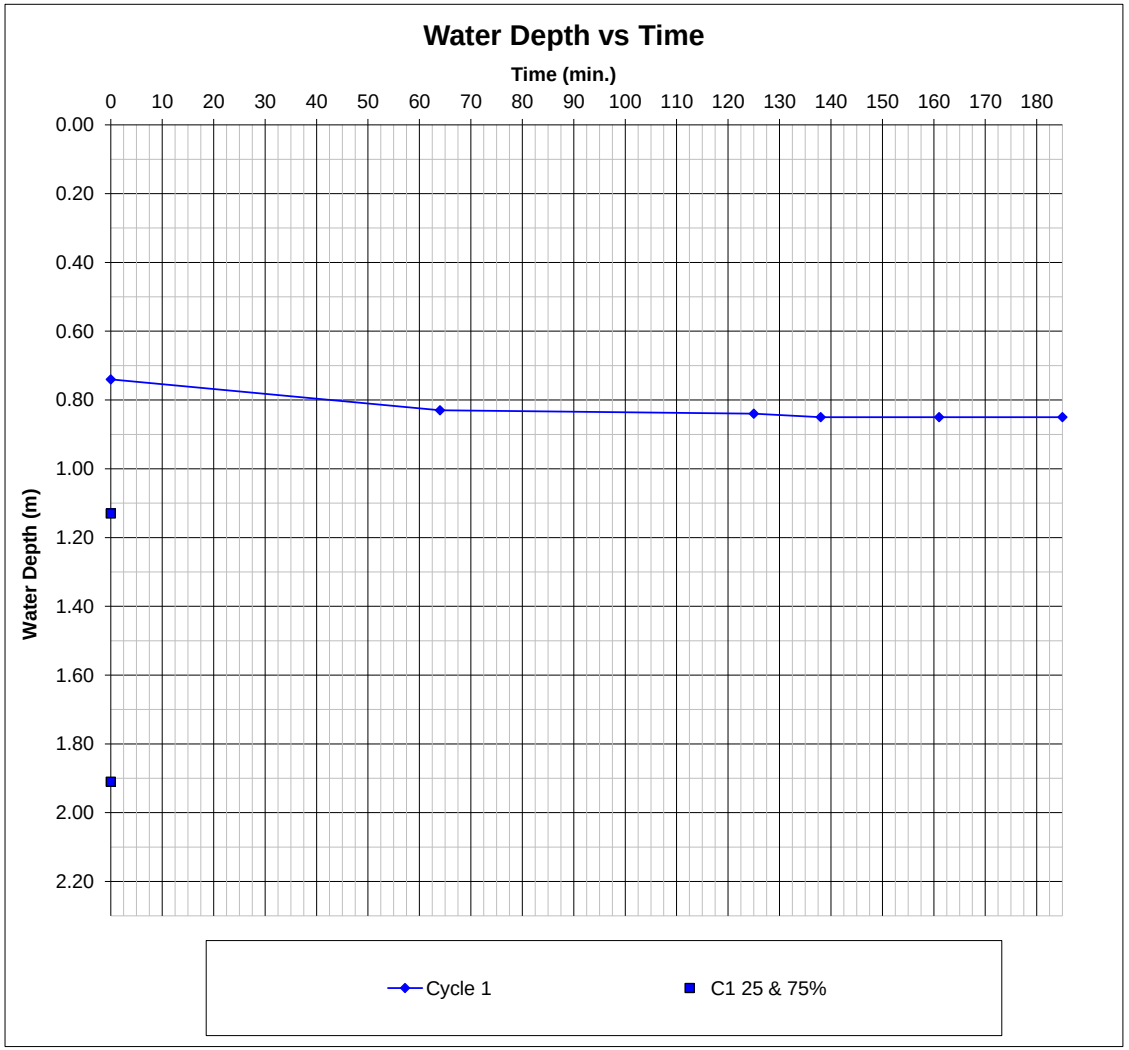
1. Test performed within cohesive made ground deposits.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test Failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.74				
64	0.83				
125	0.84				
138	0.85				
161	0.85				
185	0.85				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.30		
Water Depths (m)			
Water depth at start of test	0.74		
Water depth at end of test	0.85		
Effective depth (measured)	0.11		
% Effective storage depth	0.07		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.56		
Effective storage depth (75%)	1.17		
Effective storage depth (50%)	0.78		
Effective storage depth (25%)	0.39		
Outflow Time (min)			
Time for measured outflow	185		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.18		
Over 100% effective depth	2.62		
From 75% - 25% effective depth	1.31		
Surface Area (m^2)			
For 100% effective storage	11.35		
For 50% effective storage	6.52		
Over measured depth	2.36		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	7.0E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA107

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.90
Width (m)	0.70
Depth (m)	2.00
Groundwater	Dry
Weather Conditions	Cloudy
Date	23/08/2022

Remarks

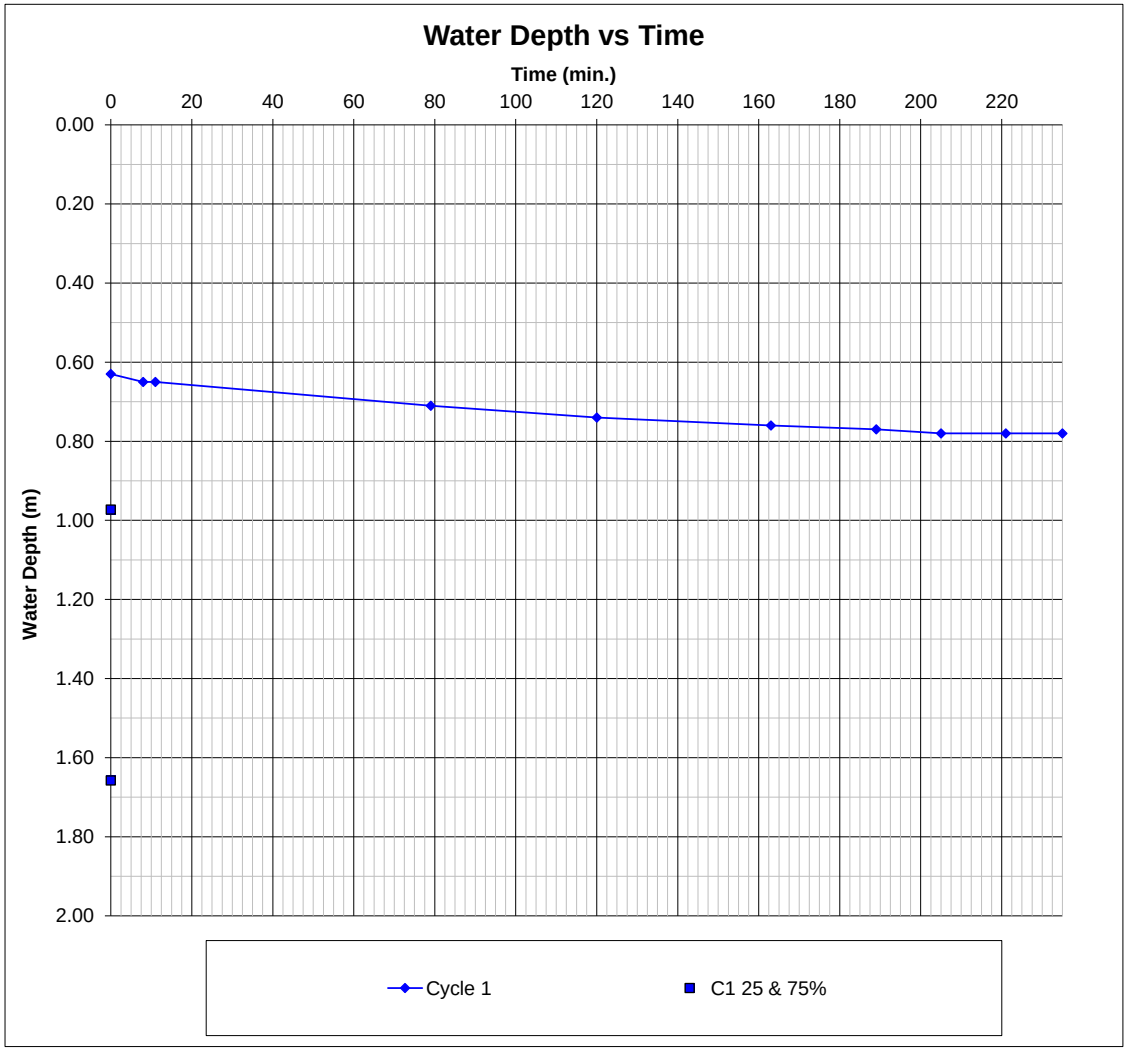
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.63				
8	0.65				
11	0.65				
79	0.71				
120	0.74				
163	0.76				
189	0.77				
205	0.78				
221	0.78				
235	0.78				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.63		
Water depth at end of test	0.78		
Effective depth (measured)	0.15		
% Effective storage depth	0.11		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.37		
Effective storage depth (75%)	1.03		
Effective storage depth (50%)	0.69		
Effective storage depth (25%)	0.34		
Outflow Time (min)			
Time for measured outflow	235		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.20		
Over 100% effective depth	1.82		
From 75% - 25% effective depth	0.91		
Surface Area (m^2)			
For 100% effective storage	8.45		
For 50% effective storage	4.89		
Over measured depth	2.11		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	6.7E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA109

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.10
Width (m)	0.70
Depth (m)	2.30
Groundwater	Dry
Weather Conditions	Cloudy
Date	23/08/2022

Remarks

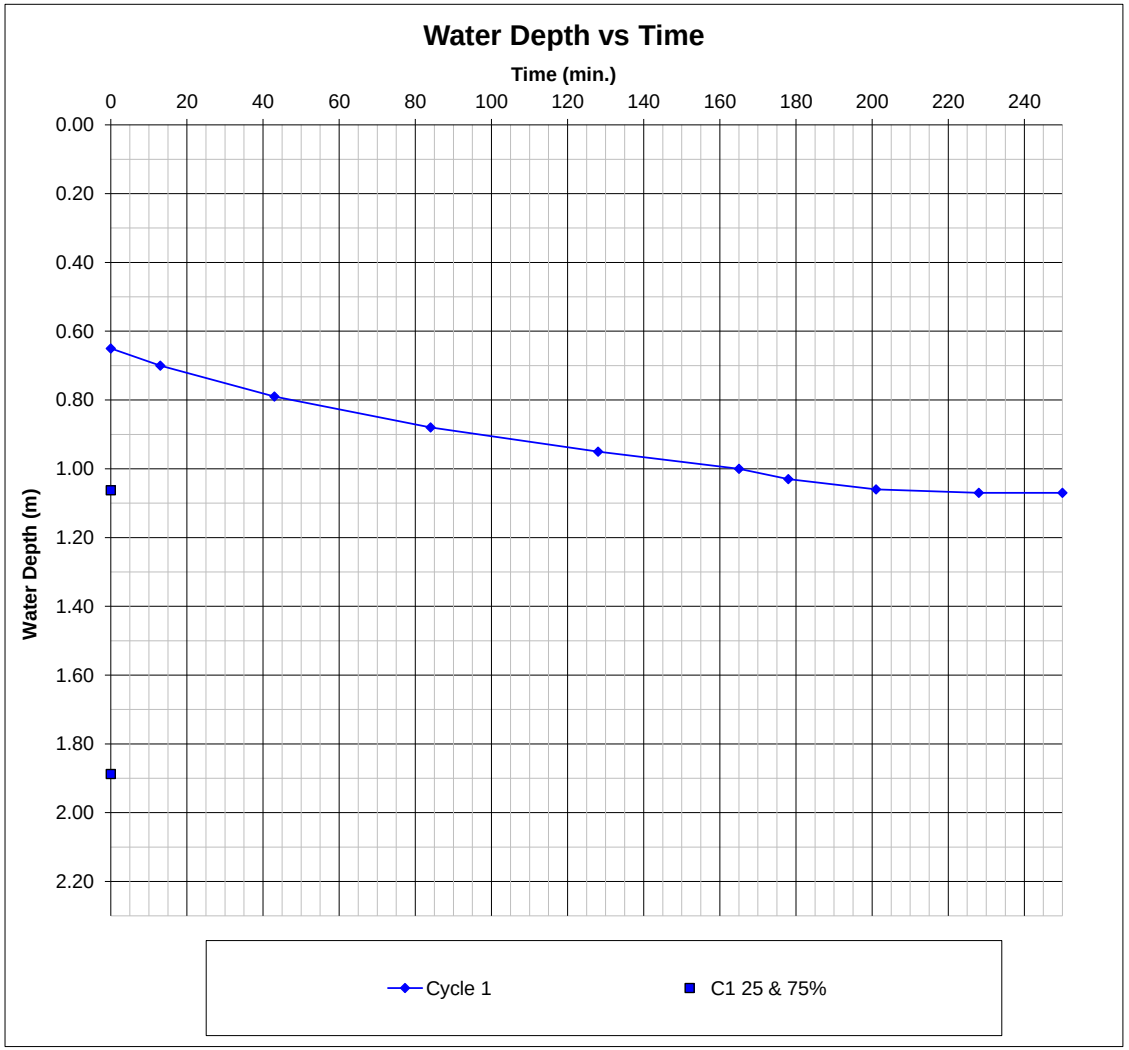
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.65				
13	0.70				
43	0.79				
84	0.88				
128	0.95				
165	1.00				
178	1.03				
201	1.06				
228	1.07				
250	1.07				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.30		
Water Depths (m)			
Water depth at start of test	0.65		
Water depth at end of test	1.07		
Effective depth (measured)	0.42		
% Effective storage depth	0.25		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.65		
Effective storage depth (75%)	1.24		
Effective storage depth (50%)	0.83		
Effective storage depth (25%)	0.41		
Outflow Time (min)			
Time for measured outflow	250		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.62		
Over 100% effective depth	2.43		
From 75% - 25% effective depth	1.21		
Surface Area (m^2)			
For 100% effective storage	10.71		
For 50% effective storage	6.09		
Over measured depth	3.82		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	1.1E-05		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA110

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.90
Width (m)	0.70
Depth (m)	2.10
Groundwater	Dry
Weather Conditions	Cloudy
Date	23/08/2022

Remarks

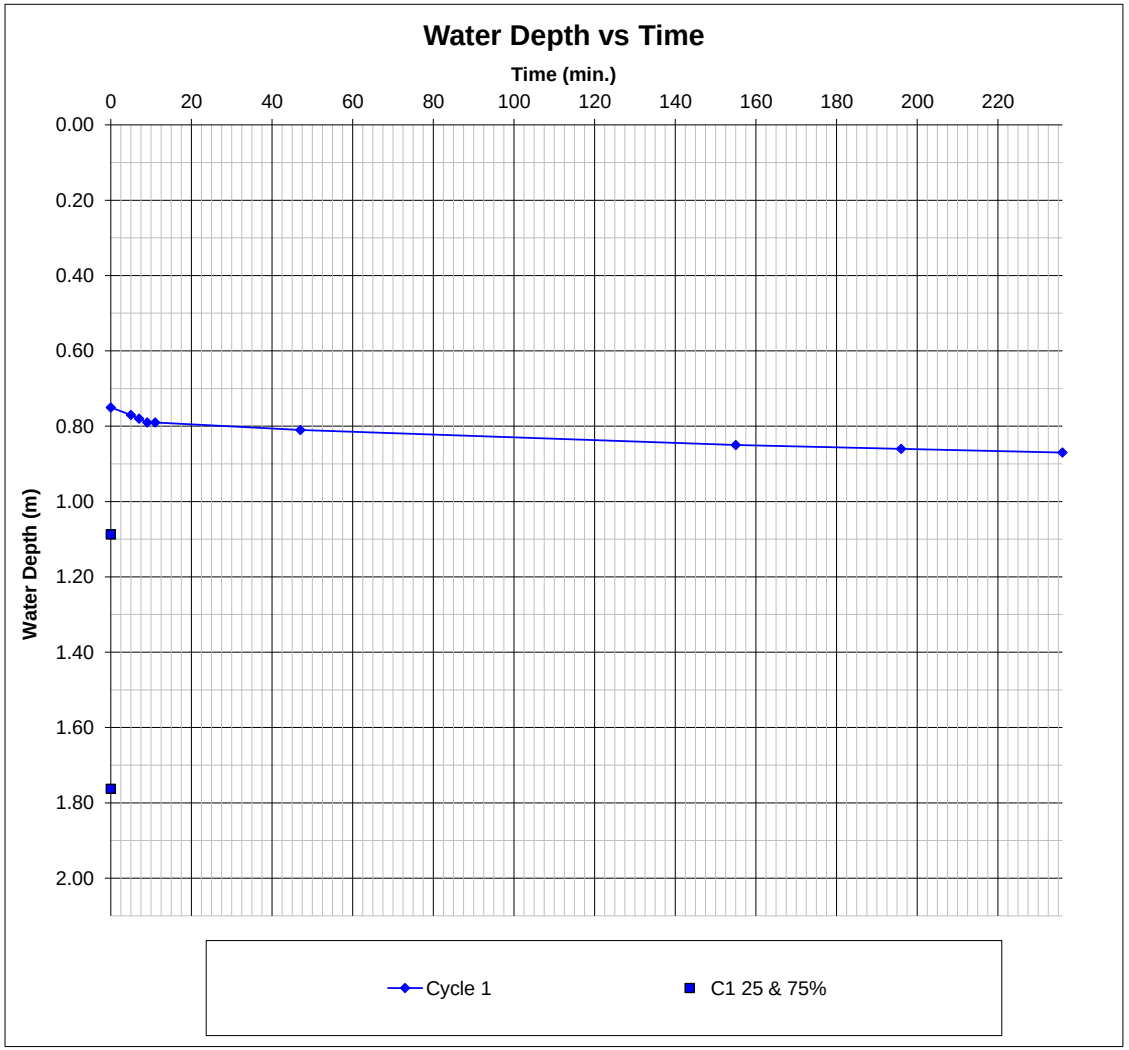
1. Test performed within well graded cohesive soil.

2.. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.75				
5	0.77				
7	0.78				
9	0.79				
11	0.79				
47	0.81				
155	0.85				
196	0.86				
236	0.87				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.10		
Water Depths (m)			
Water depth at start of test	0.75		
Water depth at end of test	0.87		
Effective depth (measured)	0.12		
% Effective storage depth	0.09		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.35		
Effective storage depth (75%)	1.01		
Effective storage depth (50%)	0.68		
Effective storage depth (25%)	0.34		
Outflow Time (min)			
Time for measured outflow	236		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.16		
Over 100% effective depth	1.80		
From 75% - 25% effective depth	0.90		
Surface Area (m^2)			
For 100% effective storage	8.35		
For 50% effective storage	4.84		
Over measured depth	1.95		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	5.8E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA111

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.80
Width (m)	0.70
Depth (m)	2.40
Groundwater	Dry
Weather Conditions	Cloudy
Date	23/08/2022

Remarks

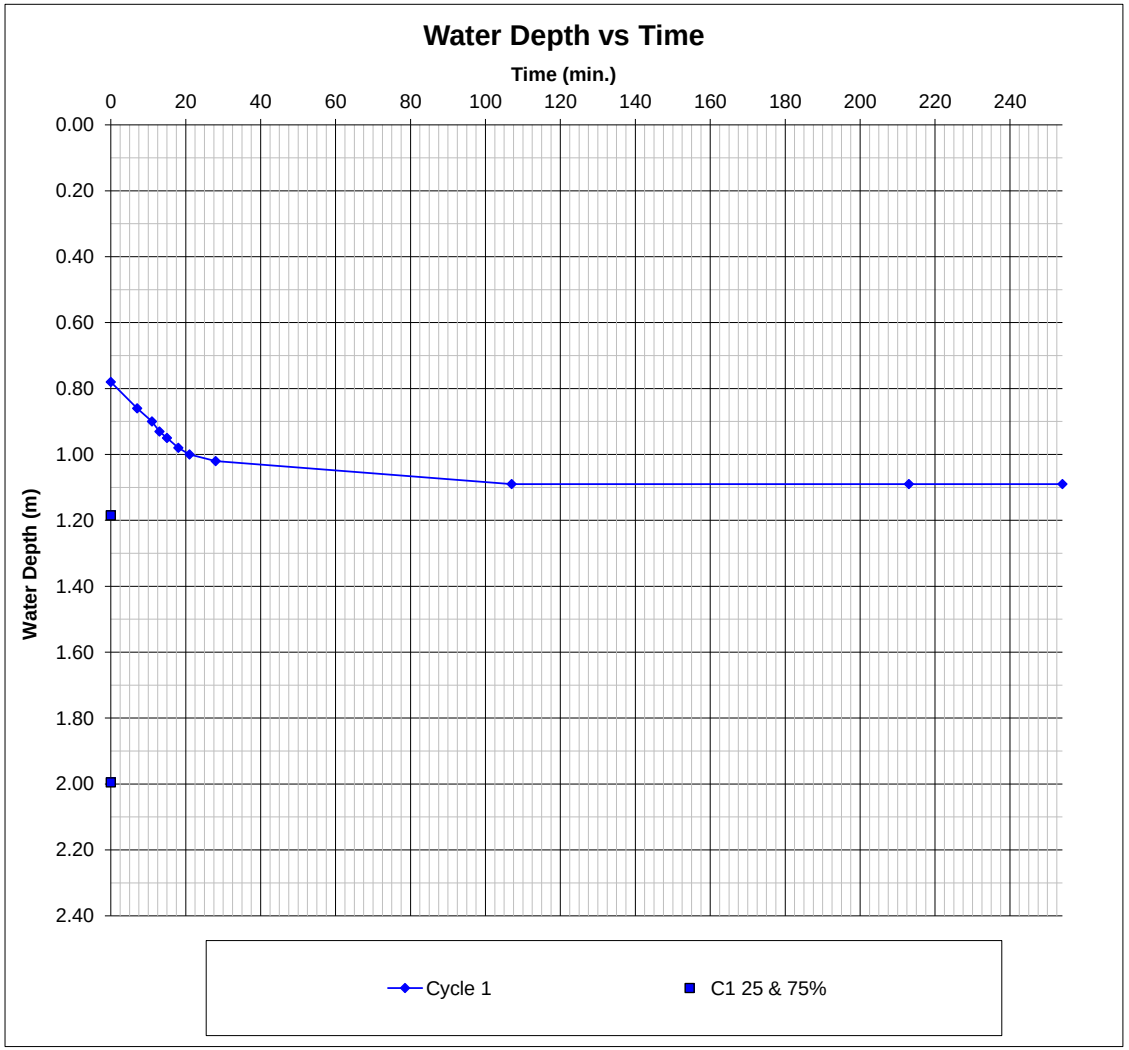
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.78				
7	0.86				
11	0.90				
13	0.93				
15	0.95				
18	0.98				
21	1.00				
28	1.02				
107	1.09				
213	1.09				
254	1.09				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.40		
Water Depths (m)			
Water depth at start of test	0.78		
Water depth at end of test	1.09		
Effective depth (measured)	0.31		
% Effective storage depth	0.19		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.62		
Effective storage depth (75%)	1.22		
Effective storage depth (50%)	0.81		
Effective storage depth (25%)	0.41		
Outflow Time (min)			
Time for measured outflow	254		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.39		
Over 100% effective depth	2.04		
From 75% - 25% effective depth	1.02		
Surface Area (m^2)			
For 100% effective storage	9.36		
For 50% effective storage	5.31		
Over measured depth	2.81		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	9.1E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA201

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.00
Width (m)	0.70
Depth (m)	2.00
Groundwater	Dry
Weather Conditions	Showers
Date	24/08/2022

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.45				
9	0.46				
243	0.56				
306	0.57				

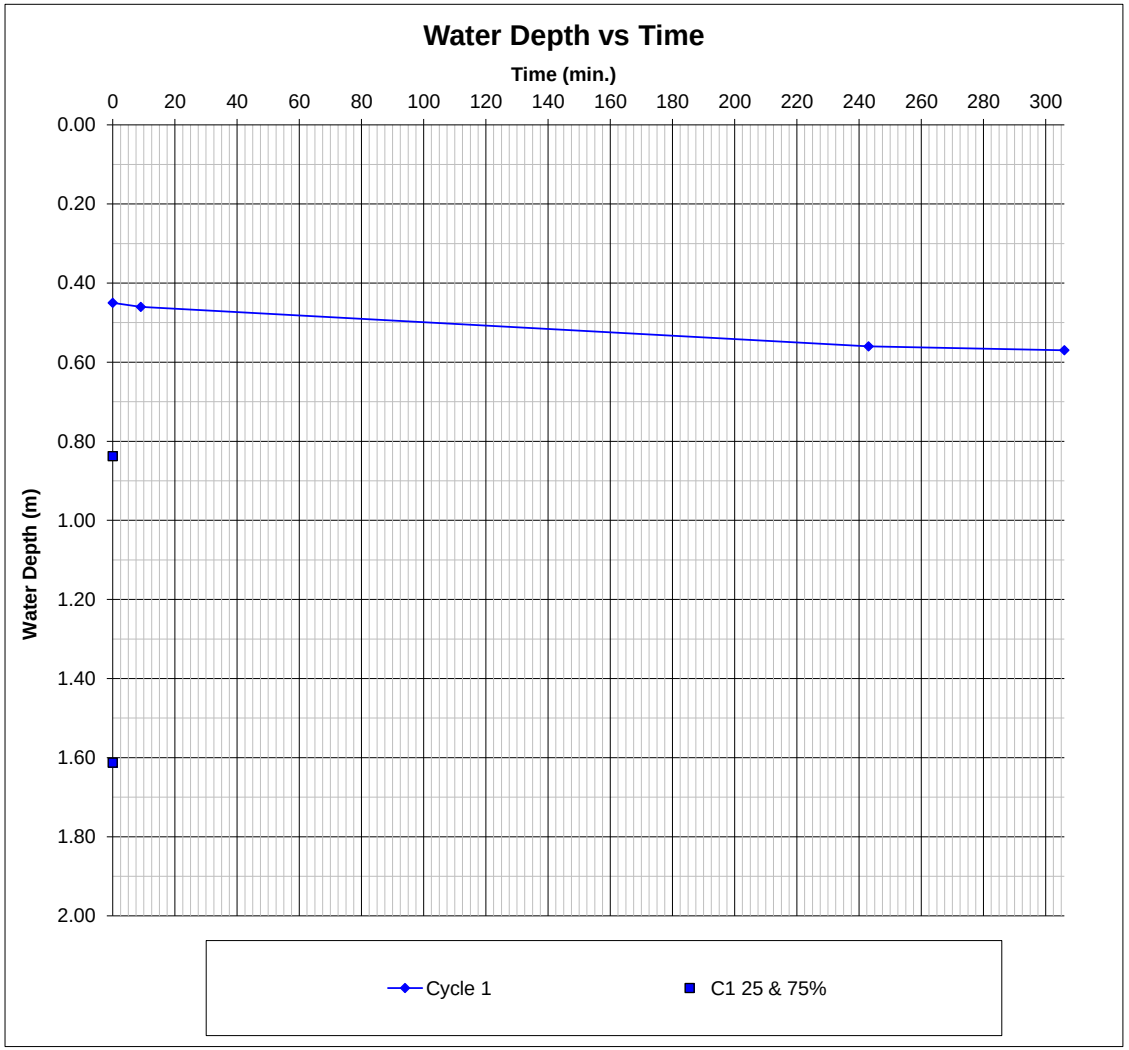
Remarks

1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.45		
Water depth at end of test	0.57		
Effective depth (measured)	0.12		
% Effective storage depth	0.08		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.55		
Effective storage depth (75%)	1.16		
Effective storage depth (50%)	0.78		
Effective storage depth (25%)	0.39		
Outflow Time (min)			
Time for measured outflow	306		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.17		
Over 100% effective depth	2.17		
From 75% - 25% effective depth	1.09		
Surface Area (m^2)			
For 100% effective storage	9.77		
For 50% effective storage	5.59		
Over measured depth	2.05		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	4.5E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA202

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.40
Width (m)	0.70
Depth (m)	2.10
Groundwater	Dry
Weather Conditions	Showers
Date	24/08/2022

Remarks

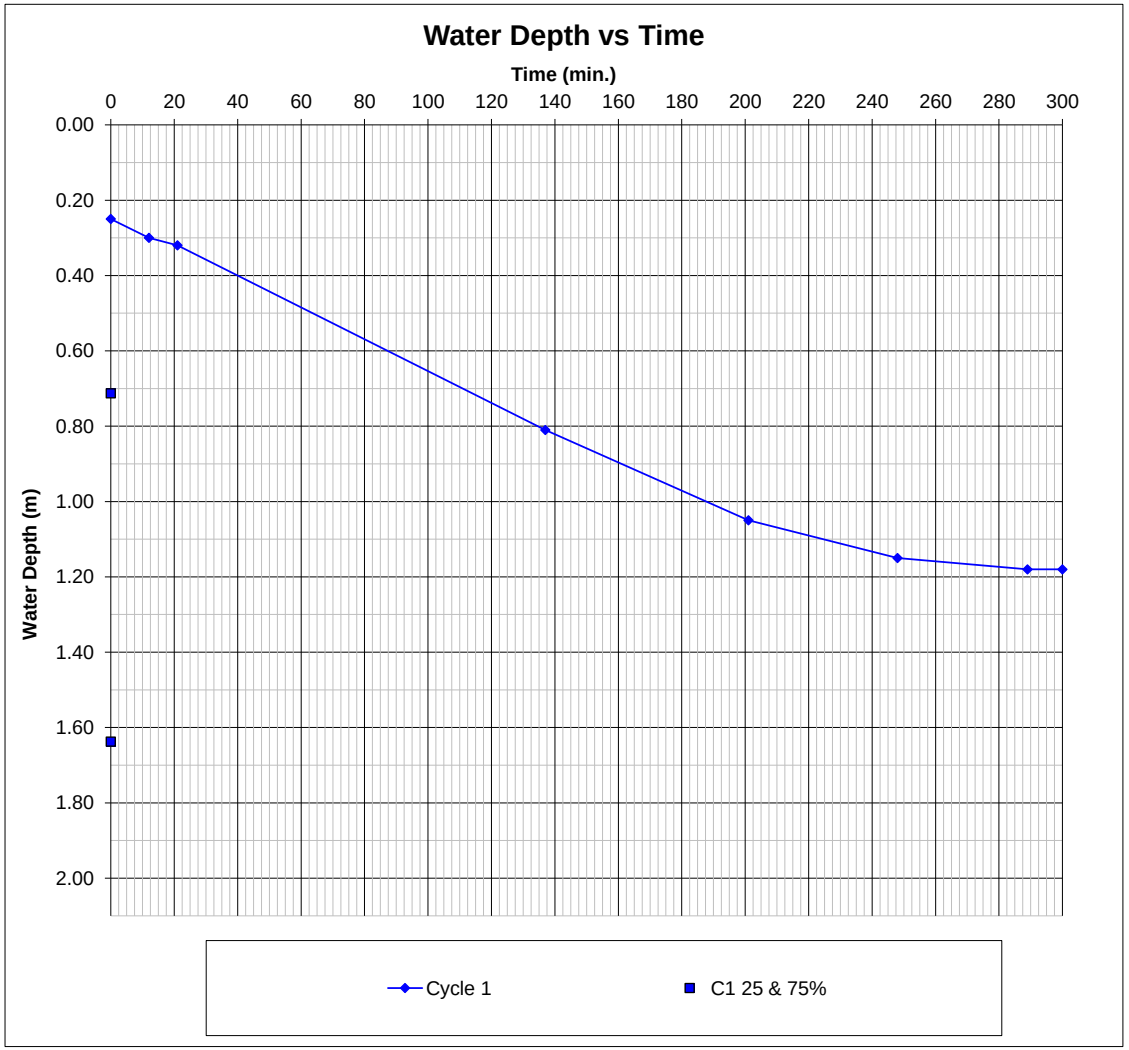
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.25				
12	0.30				
21	0.32				
137	0.81				
201	1.05				
248	1.15				
289	1.18				
300	1.18				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.10		
Water Depths (m)			
Water depth at start of test	0.25		
Water depth at end of test	1.18		
Effective depth (measured)	0.93		
% Effective storage depth	0.50		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.85		
Effective storage depth (75%)	1.39		
Effective storage depth (50%)	0.93		
Effective storage depth (25%)	0.46		
Outflow Time (min)			
Time for measured outflow	300		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	1.56		
Over 100% effective depth	3.11		
From 75% - 25% effective depth	1.55		
Surface Area (m^2)			
For 100% effective storage	13.15		
For 50% effective storage	7.42		
Over measured depth	7.45		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	1.2E-05		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA203

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.10
Width (m)	0.70
Depth (m)	2.30
Groundwater	Dry
Weather Conditions	Showers
Date	24/08/2022

Remarks

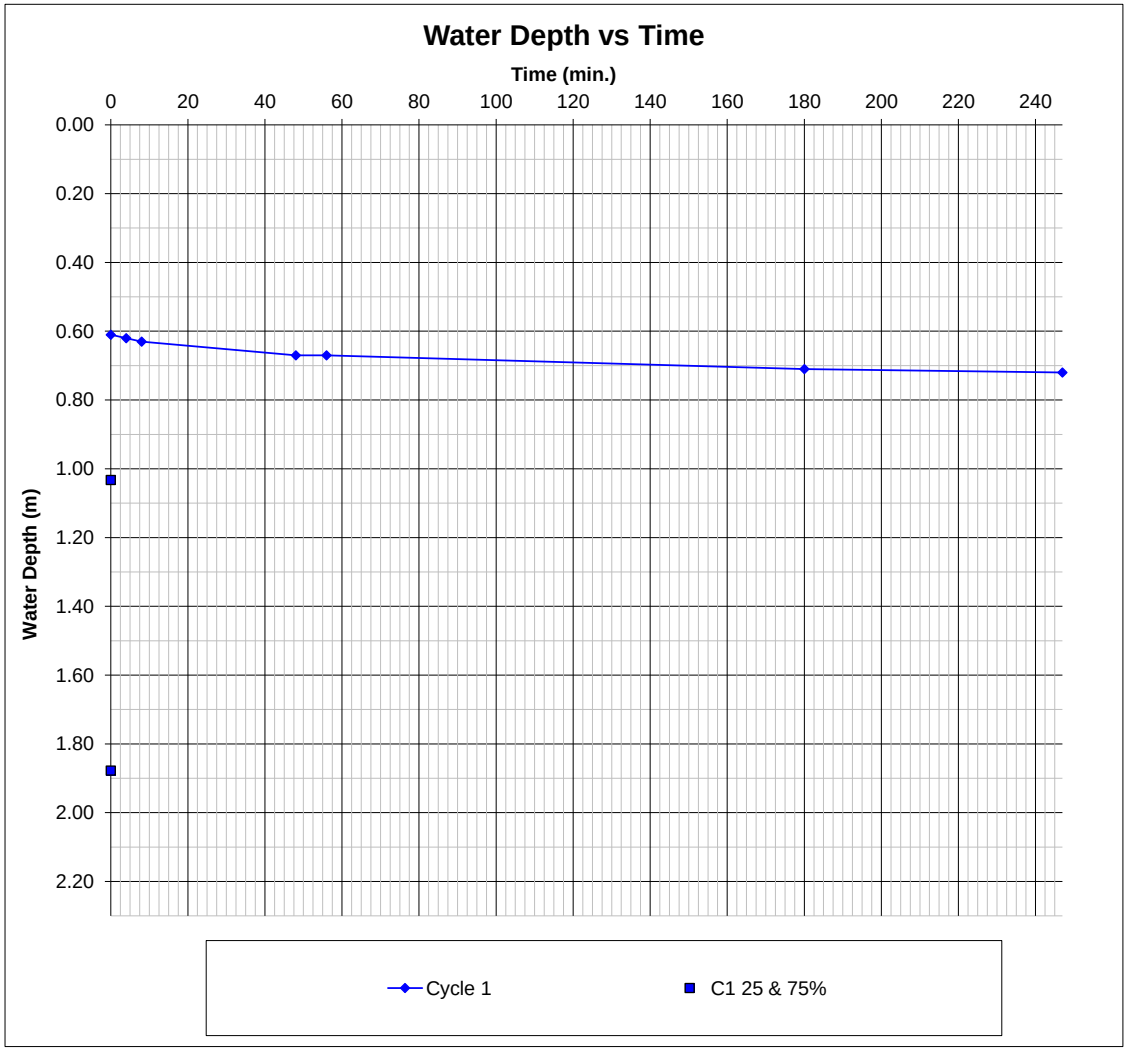
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.61				
4	0.62				
8	0.63				
48	0.67				
56	0.67				
180	0.71				
247	0.72				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.30		
Water Depths (m)			
Water depth at start of test	0.61		
Water depth at end of test	0.72		
Effective depth (measured)	0.11		
% Effective storage depth	0.07		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.69		
Effective storage depth (75%)	1.27		
Effective storage depth (50%)	0.85		
Effective storage depth (25%)	0.42		
Outflow Time (min)			
Time for measured outflow	247		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.16		
Over 100% effective depth	2.48		
From 75% - 25% effective depth	1.24		
Surface Area (m^2)			
For 100% effective storage	10.93		
For 50% effective storage	6.20		
Over measured depth	2.09		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	5.2E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA204

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.90
Width (m)	0.70
Depth (m)	2.10
Groundwater	Dry
Weather Conditions	Showers
Date	24/08/2022

Remarks

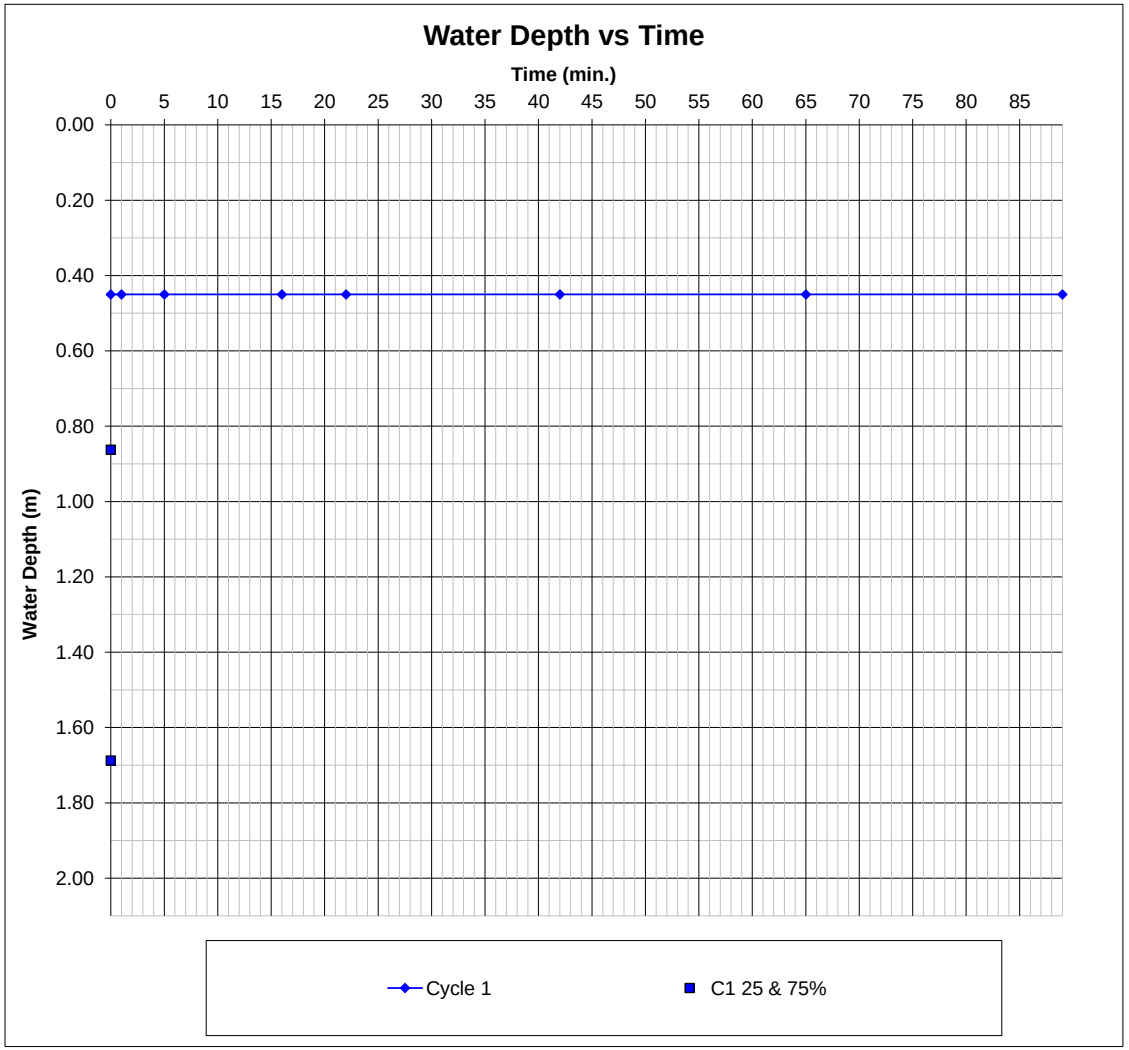
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.45				
1	0.45				
5	0.45				
16	0.45				
22	0.45				
42	0.45				
65	0.45				
89	0.45				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.10		
Water Depths (m)			
Water depth at start of test	0.45		
Water depth at end of test	0.45		
Effective depth (measured)	0.00		
% Effective storage depth	0.00		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.65		
Effective storage depth (75%)	1.24		
Effective storage depth (50%)	0.83		
Effective storage depth (25%)	0.41		
Outflow Time (min)			
Time for measured outflow	89		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.00		
Over 100% effective depth	2.19		
From 75% - 25% effective depth	1.10		
Surface Area (m^2)			
For 100% effective storage	9.91		
For 50% effective storage	5.62		
Over measured depth	1.33		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	0.0E+00		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA205

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.80
Width (m)	0.70
Depth (m)	2.00
Groundwater	Minor Seepage
Weather Conditions	Cloudy
Date	26/08/2022

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.43				
9	0.42				
93	0.43				
139	0.43				
165	0.43				

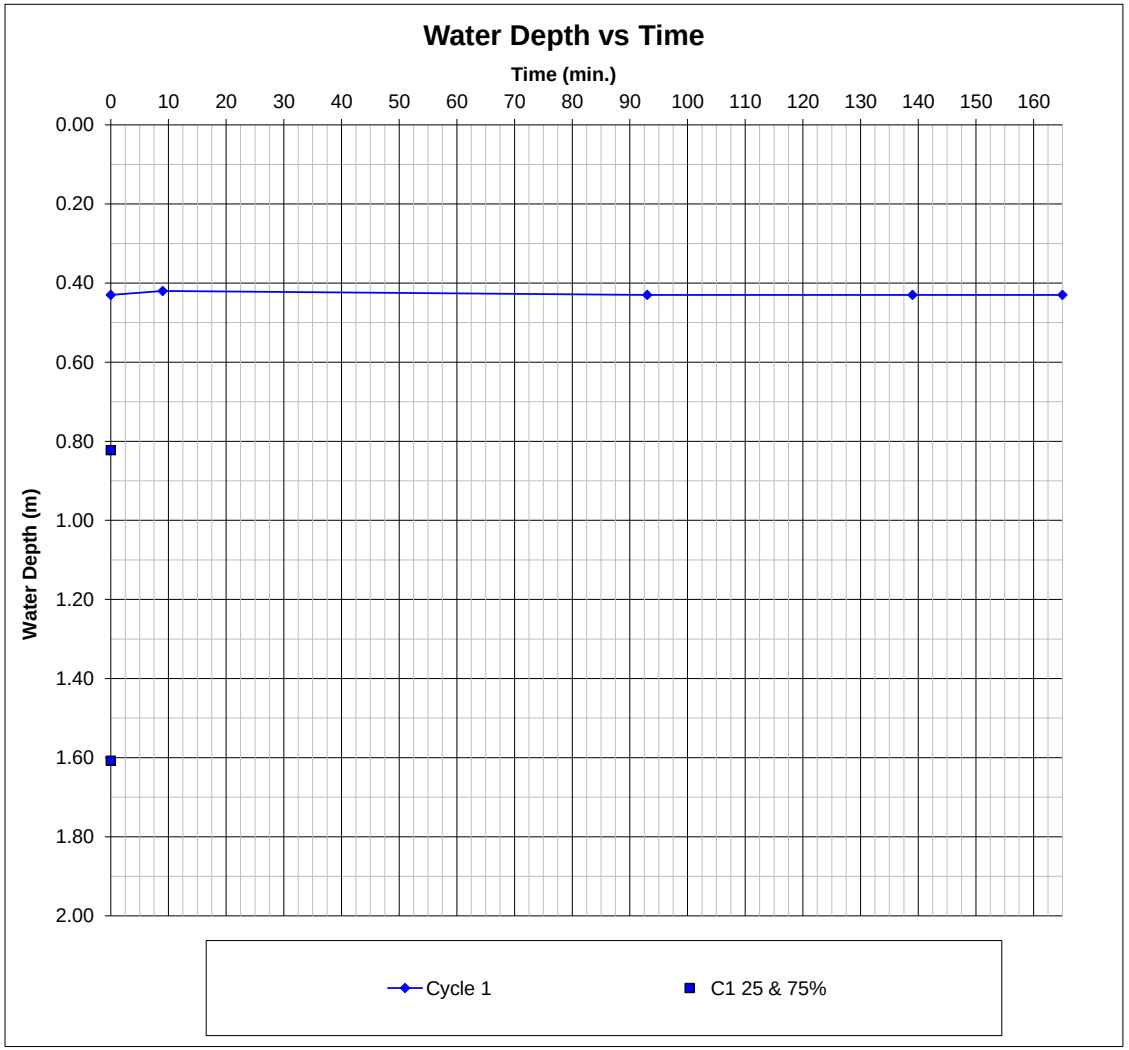
Remarks

1. Test performed within cohesive made ground and well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.43		
Water depth at end of test	0.43		
Effective depth (measured)	0.00		
% Effective storage depth	0.00		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.57		
Effective storage depth (75%)	1.18		
Effective storage depth (50%)	0.79		
Effective storage depth (25%)	0.39		
Outflow Time (min)			
Time for measured outflow	165		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.00		
Over 100% effective depth	1.98		
From 75% - 25% effective depth	0.99		
Surface Area (m^2)			
For 100% effective storage	9.11		
For 50% effective storage	5.19		
Over measured depth	1.26		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	0.0E+00		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA206

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.40
Width (m)	0.70
Depth (m)	1.90
Groundwater	Dry
Weather Conditions	Cloudy
Date	26/08/2022

Remarks

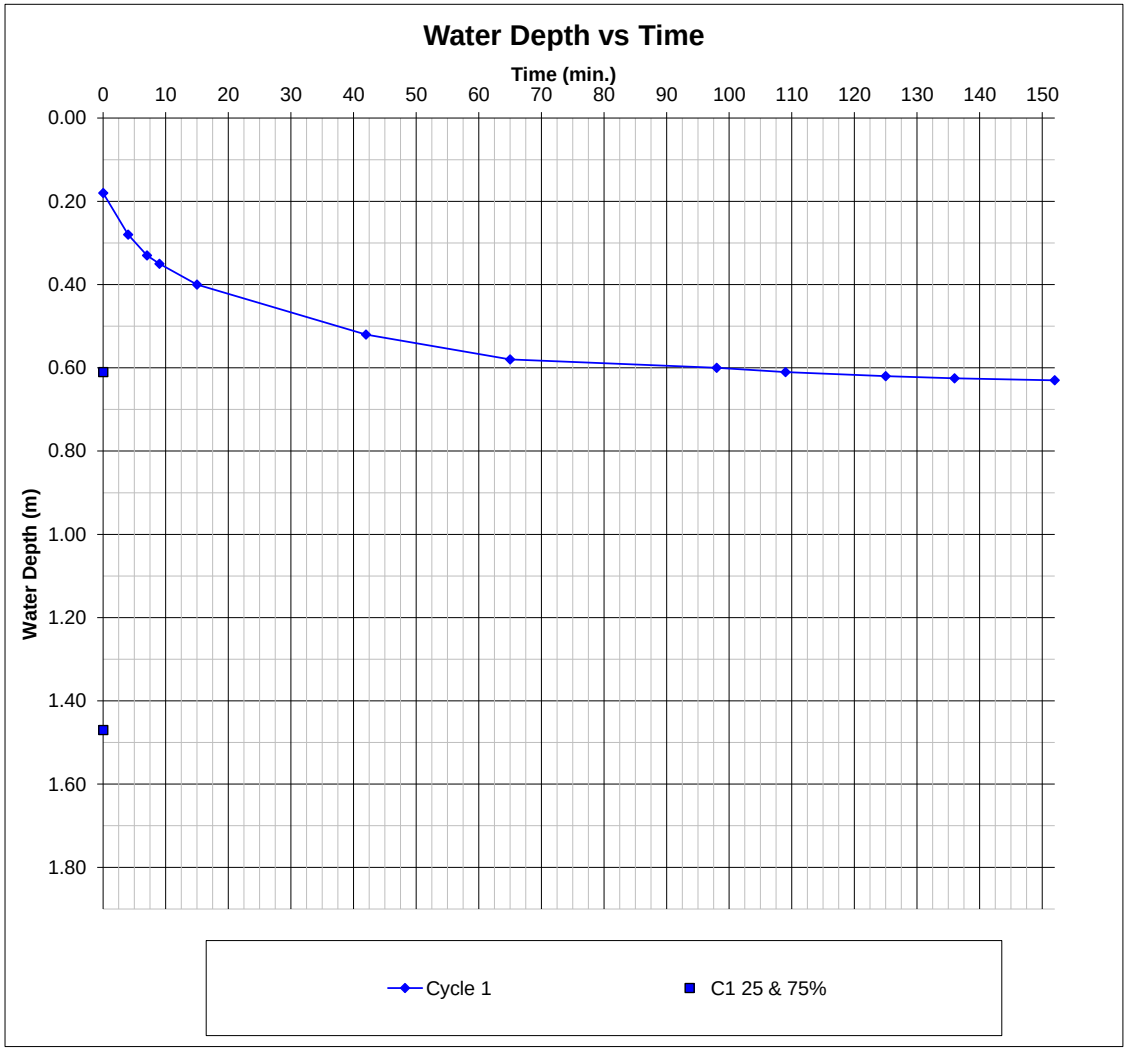
1. Test performed within granular made ground and well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.18				
4	0.28				
7	0.33				
9	0.35				
15	0.40				
42	0.52				
65	0.58				
98	0.60				
109	0.61				
125	0.62				
136	0.63				
152	0.63				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	1.90		
Water Depths (m)			
Water depth at start of test	0.18		
Water depth at end of test	0.63		
Effective depth (measured)	0.45		
% Effective storage depth	0.26		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.72		
Effective storage depth (75%)	1.29		
Effective storage depth (50%)	0.86		
Effective storage depth (25%)	0.43		
Outflow Time (min)			
Time for measured outflow	152		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.44		
Over 100% effective depth	1.69		
From 75% - 25% effective depth	0.84		
Surface Area (m^2)			
For 100% effective storage	8.20		
For 50% effective storage	4.59		
Over measured depth	2.87		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	1.7E-05		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA207

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.80
Width (m)	0.70
Depth (m)	2.00
Groundwater	Dry
Weather Conditions	Cloudy
Date	25/08/2022

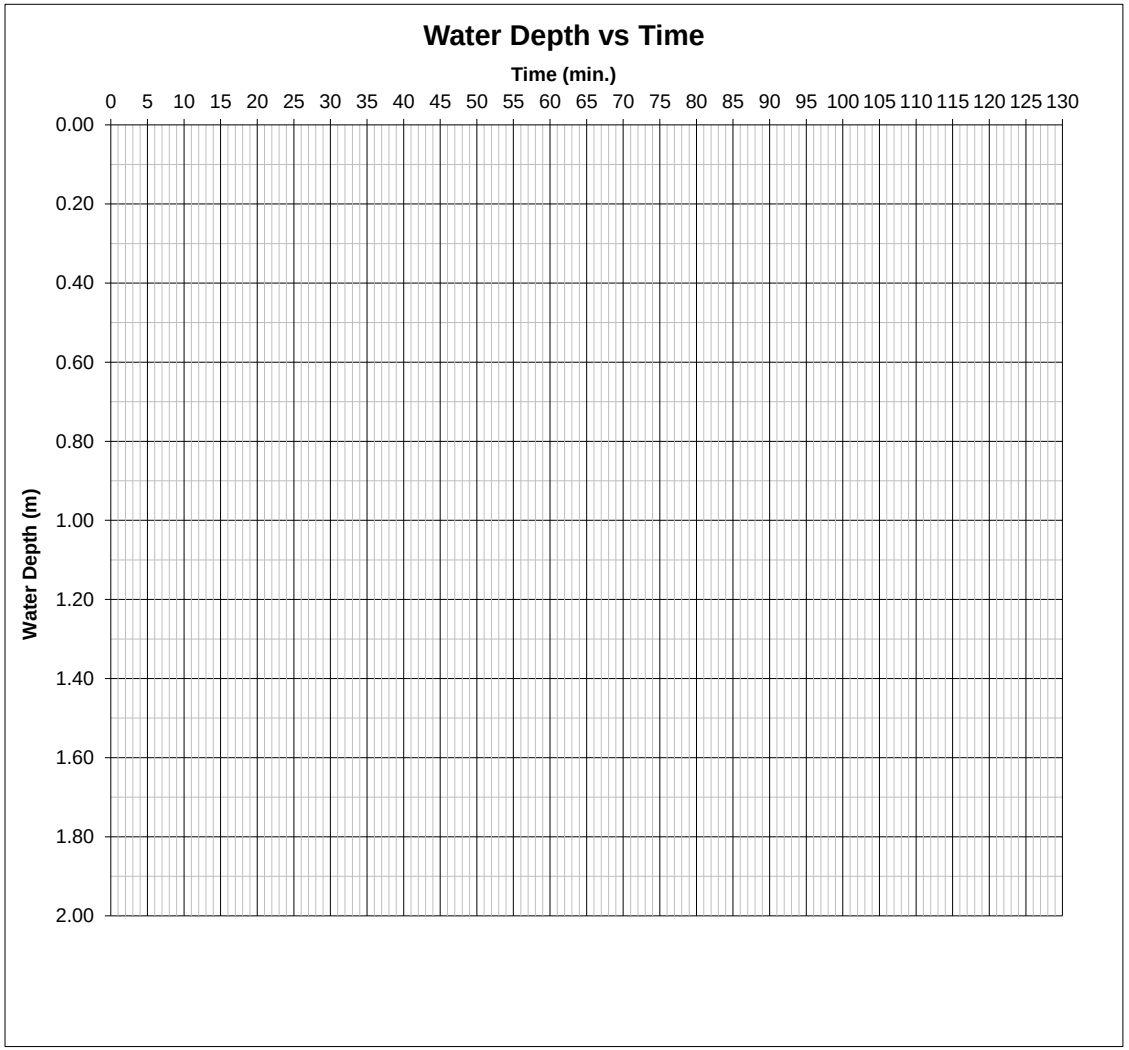
Remarks

1. Unable to carry out soil infiltration test due to unmarked broken vitreous clay pipe at 1.85m bgl.

2. Trial pit abandoned.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle			
Water Depths (m)			
Water depth at start of test			
Water depth at end of test			
Effective depth (measured)			
% Effective storage depth			
Effective Storage Depths (m)			
Effective storage depth (100%)			
Effective storage depth (75%)			
Effective storage depth (50%)			
Effective storage depth (25%)			
Outflow Time (min)			
Time for measured outflow			
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth			
Over 100% effective depth			
From 75% - 25% effective depth			
Surface Area (m^2)			
For 100% effective storage			
For 50% effective storage			
Over measured depth			
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth			
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA208

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.90
Width (m)	0.70
Depth (m)	2.20
Groundwater	Dry
Weather Conditions	Cloudy
Date	25/08/2022

Remarks

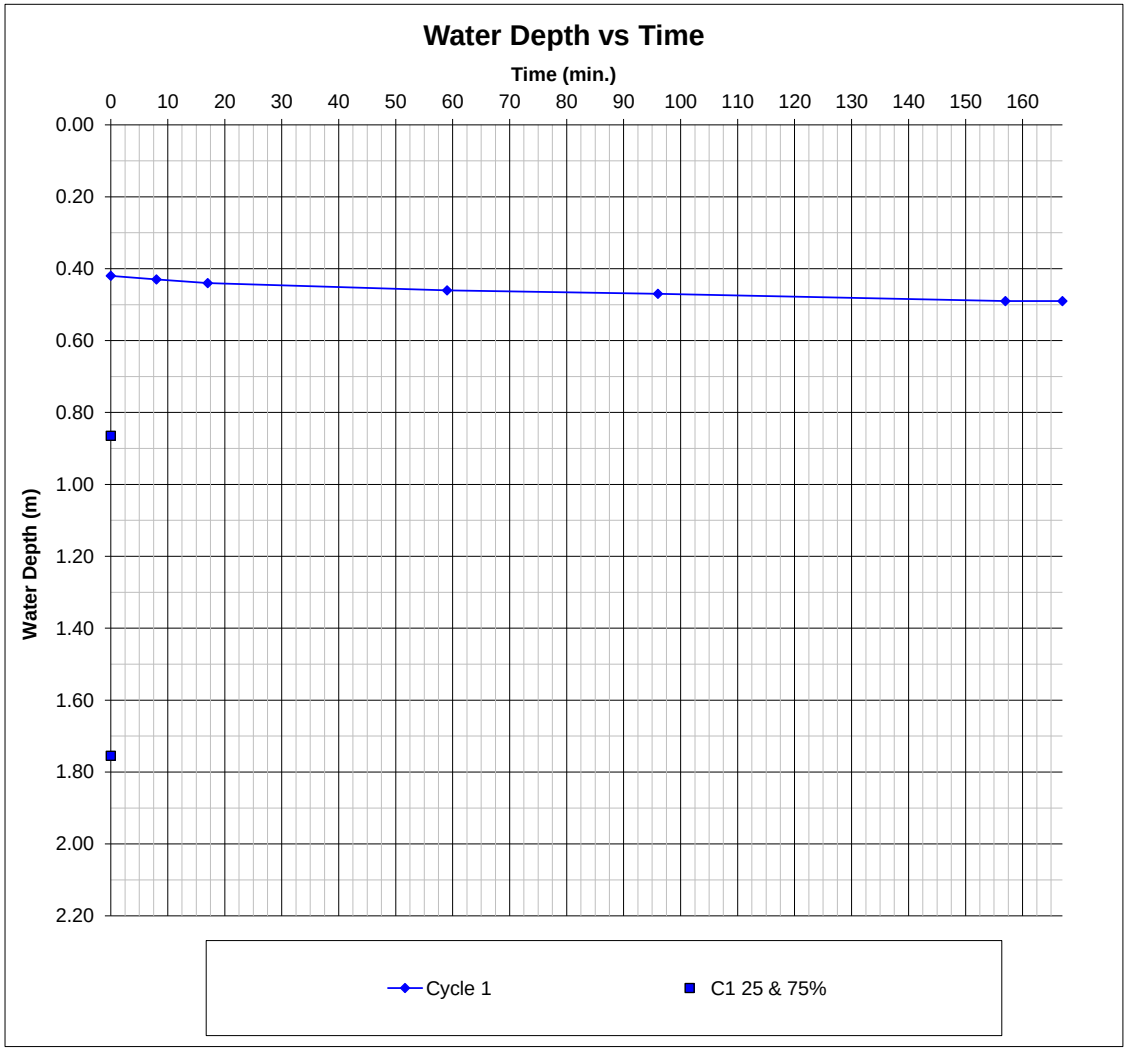
1. Test performed within cohesive made ground and well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.42				
8	0.43				
17	0.44				
59	0.46				
96	0.47				
157	0.49				
167	0.49				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.20		
Water Depths (m)			
Water depth at start of test	0.42		
Water depth at end of test	0.49		
Effective depth (measured)	0.07		
% Effective storage depth	0.04		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.78		
Effective storage depth (75%)	1.34		
Effective storage depth (50%)	0.89		
Effective storage depth (25%)	0.45		
Outflow Time (min)			
Time for measured outflow	167		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.09		
Over 100% effective depth	2.37		
From 75% - 25% effective depth	1.18		
Surface Area (m^2)			
For 100% effective storage	10.59		
For 50% effective storage	5.96		
Over measured depth	1.69		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	5.5E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA209

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.90
Width (m)	0.70
Depth (m)	2.00
Groundwater	Dry
Weather Conditions	Cloudy
Date	26/08/2022

Remarks

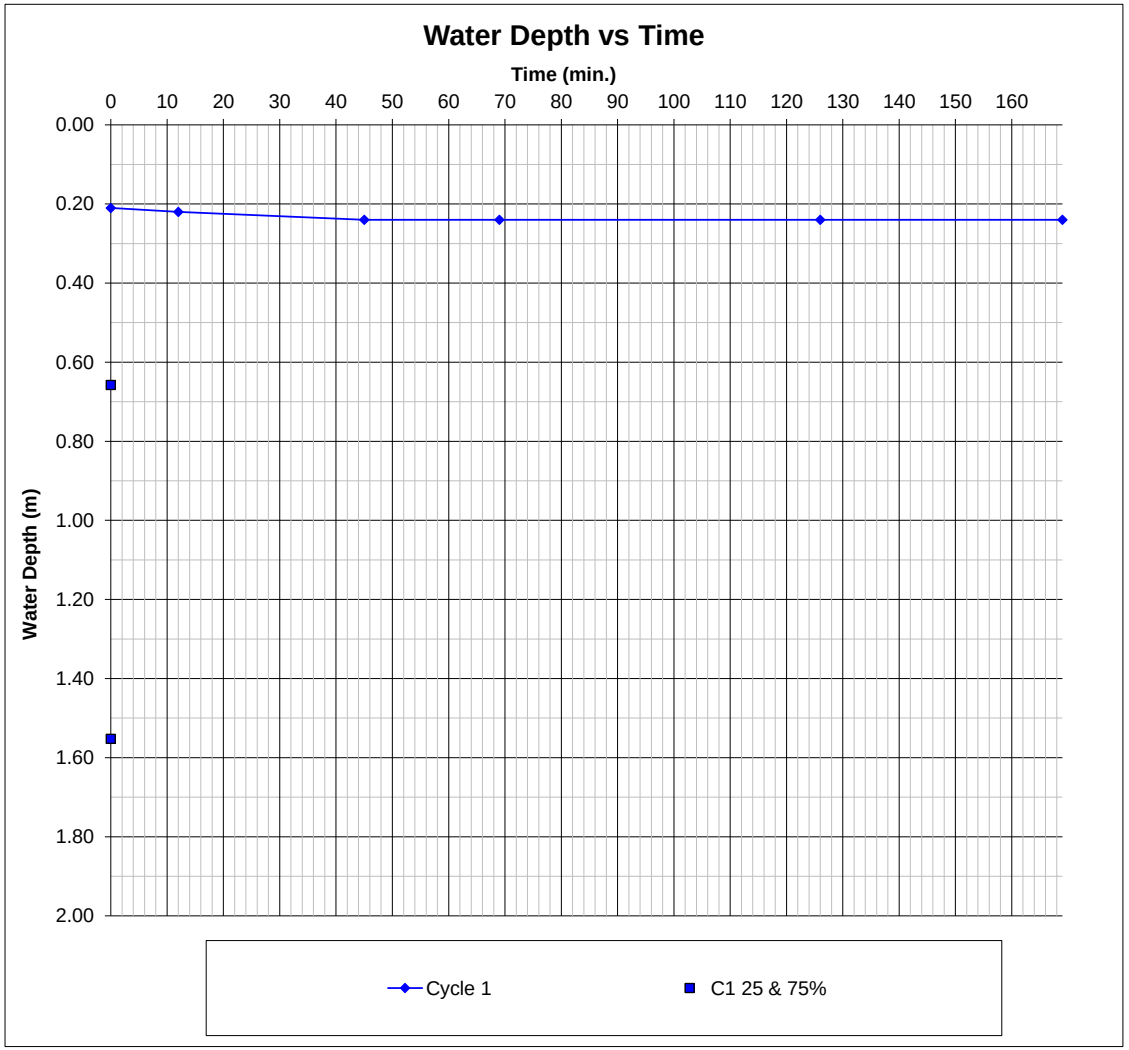
1. Test performed within cohesive made ground deposits.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.21				
12	0.22				
45	0.24				
69	0.24				
126	0.24				
169	0.24				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.21		
Water depth at end of test	0.24		
Effective depth (measured)	0.03		
% Effective storage depth	0.02		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.79		
Effective storage depth (75%)	1.34		
Effective storage depth (50%)	0.90		
Effective storage depth (25%)	0.45		
Outflow Time (min)			
Time for measured outflow	169		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.04		
Over 100% effective depth	2.38		
From 75% - 25% effective depth	1.19		
Surface Area (m^2)			
For 100% effective storage	10.64		
For 50% effective storage	5.98		
Over measured depth	1.49		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	2.6E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA210

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.80
Width (m)	0.70
Depth (m)	2.00
Groundwater	Dry
Weather Conditions	Cloudy
Date	25/08/2022

Remarks

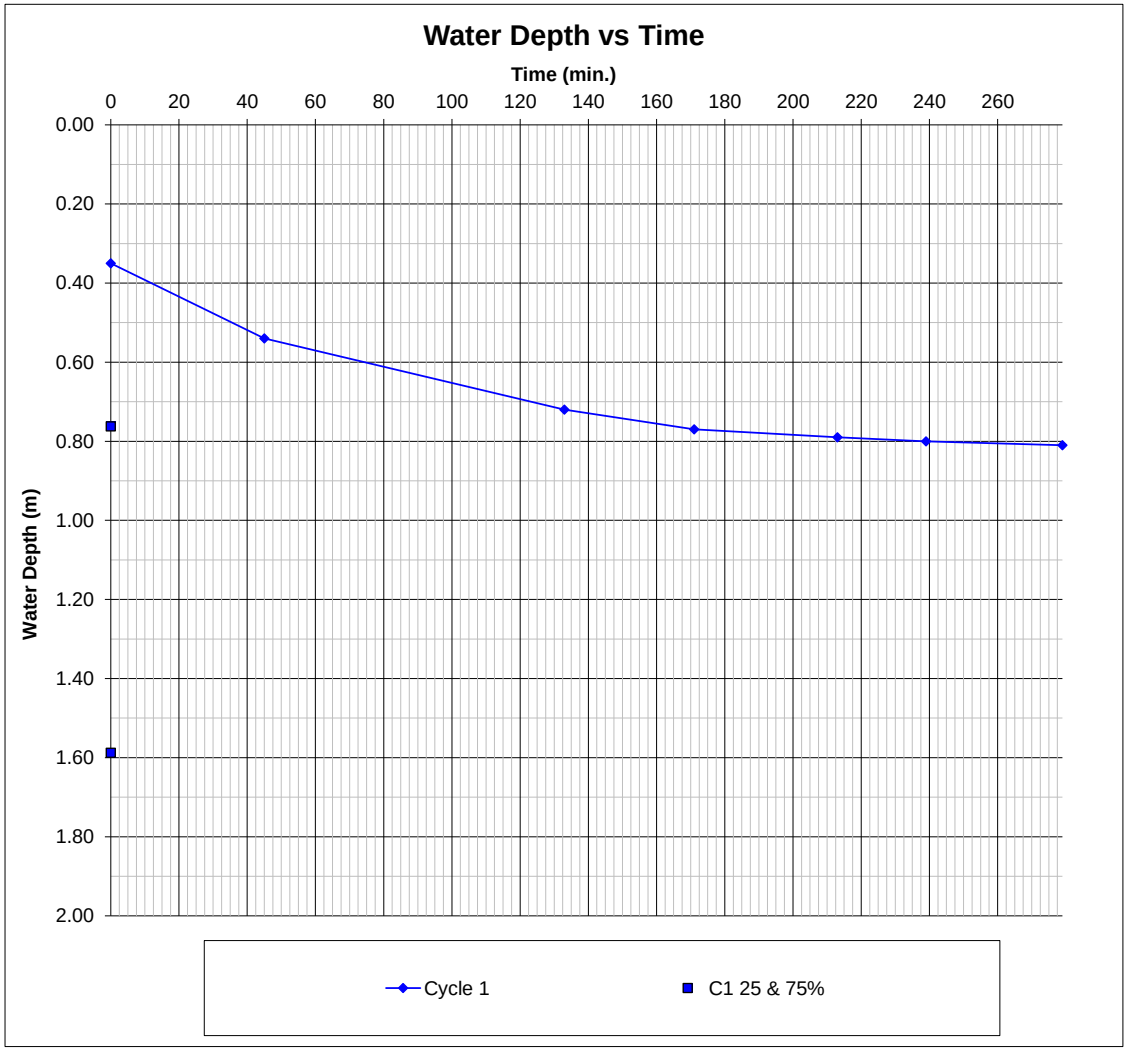
1. Test performed within cohesive made ground deposits.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.35				
45	0.54				
133	0.72				
171	0.77				
213	0.79				
239	0.80				
279	0.81				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.35		
Water depth at end of test	0.81		
Effective depth (measured)	0.46		
% Effective storage depth	0.28		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.65		
Effective storage depth (75%)	1.24		
Effective storage depth (50%)	0.83		
Effective storage depth (25%)	0.41		
Outflow Time (min)			
Time for measured outflow	279		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.58		
Over 100% effective depth	2.08		
From 75% - 25% effective depth	1.04		
Surface Area (m^2)			
For 100% effective storage	9.51		
For 50% effective storage	5.39		
Over measured depth	3.56		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	9.7E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA211

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	1.70
Width (m)	0.70
Depth (m)	2.10
Groundwater	Dry
Weather Conditions	Cloudy
Date	25/08/2022

Remarks

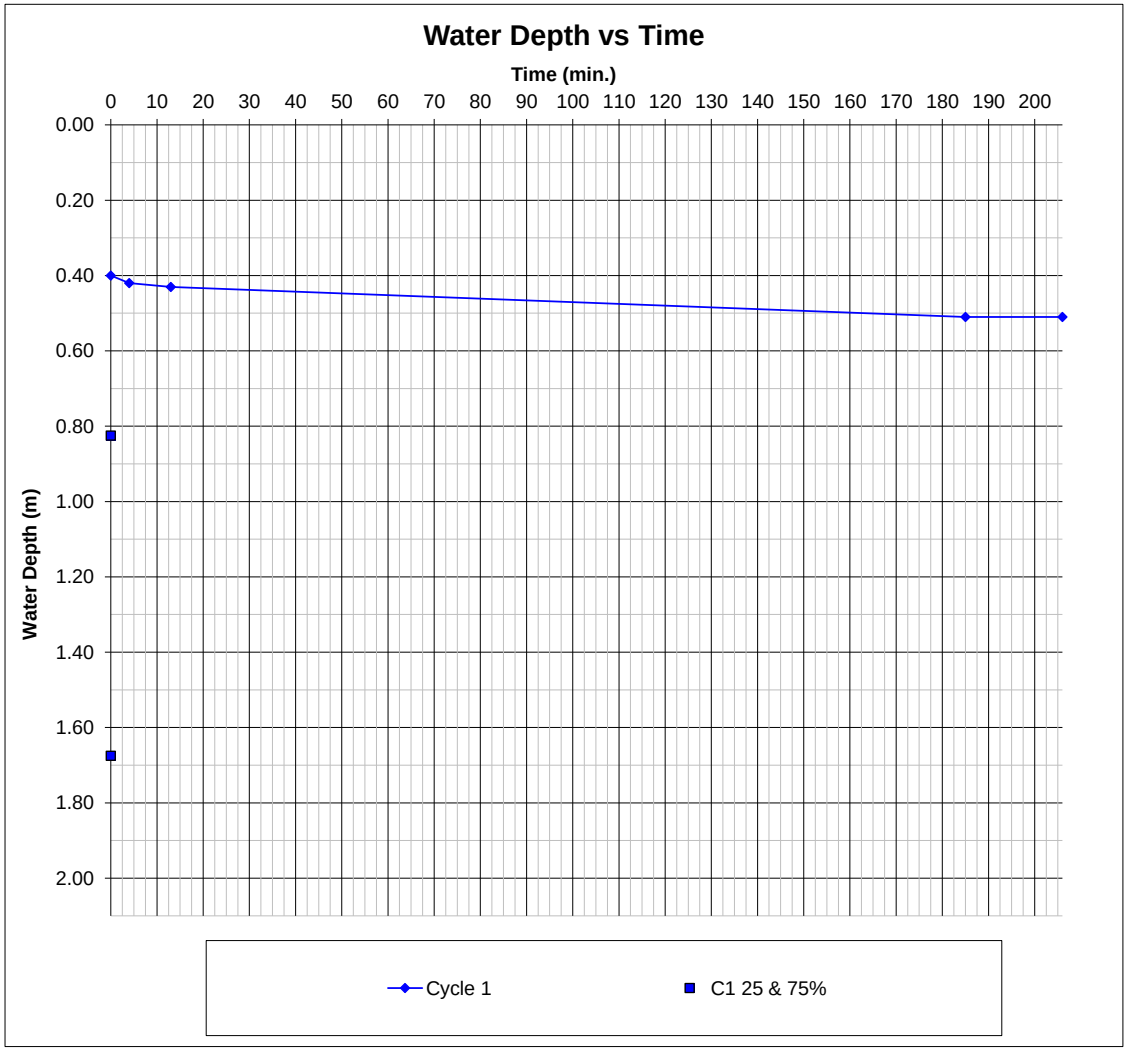
1. Test performed within cohesive made ground deposits.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.40				
4	0.42				
13	0.43				
185	0.51				
206	0.51				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.10		
Water Depths (m)			
Water depth at start of test	0.40		
Water depth at end of test	0.51		
Effective depth (measured)	0.11		
% Effective storage depth	0.06		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.70		
Effective storage depth (75%)	1.28		
Effective storage depth (50%)	0.85		
Effective storage depth (25%)	0.43		
Outflow Time (min)			
Time for measured outflow	206		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.13		
Over 100% effective depth	2.02		
From 75% - 25% effective depth	1.01		
Surface Area (m^2)			
For 100% effective storage	9.35		
For 50% effective storage	5.27		
Over measured depth	1.72		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	6.2E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA212

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.20
Width (m)	0.70
Depth (m)	2.00
Groundwater	Minor Seepage
Weather Conditions	Cloudy
Date	25/08/2022

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.40				
25	0.43				
64	0.44				
137	0.45				

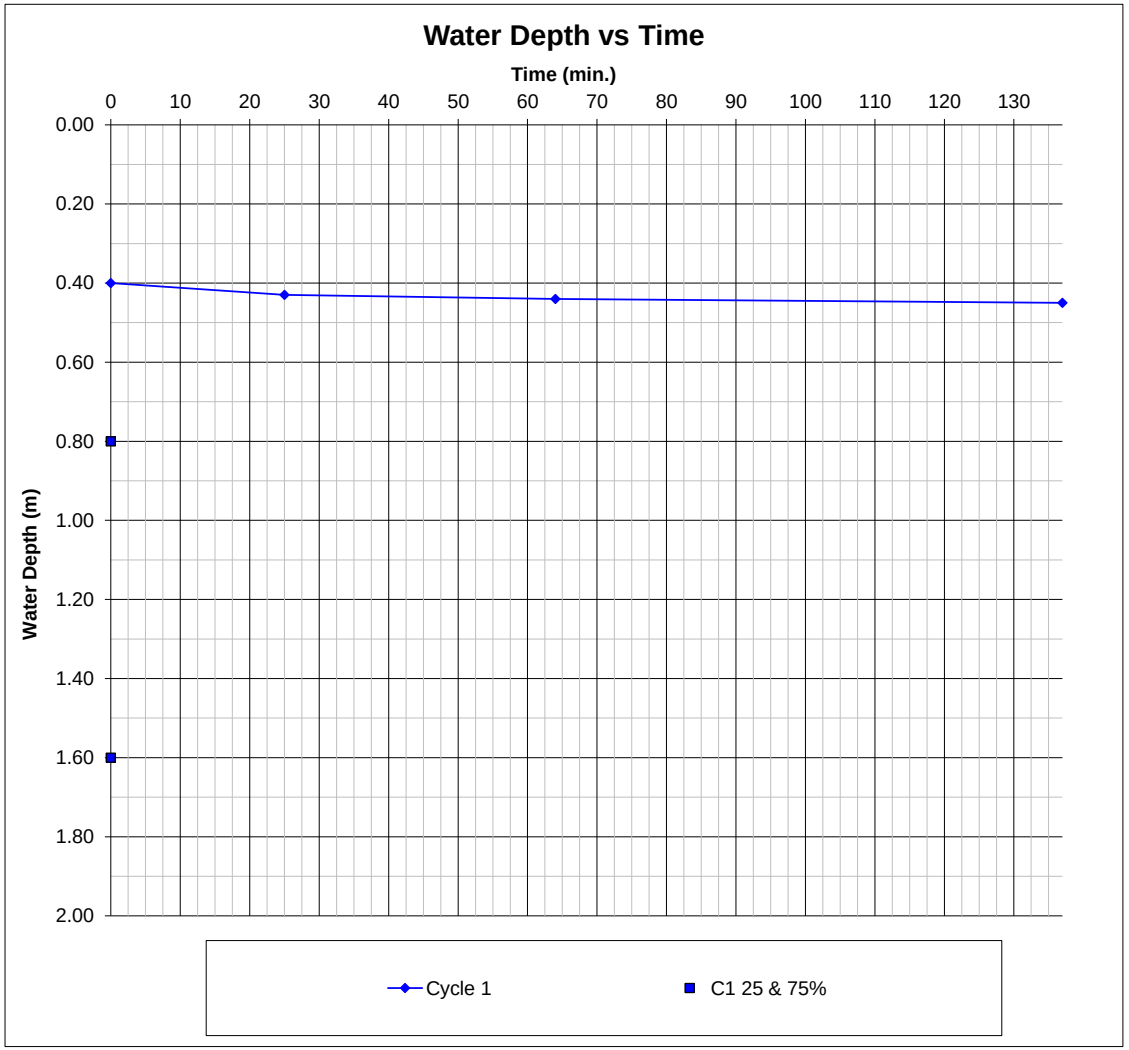
Remarks

1. Test performed within cohesive made ground and well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.00		
Water Depths (m)			
Water depth at start of test	0.40		
Water depth at end of test	0.45		
Effective depth (measured)	0.05		
% Effective storage depth	0.03		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.60		
Effective storage depth (75%)	1.20		
Effective storage depth (50%)	0.80		
Effective storage depth (25%)	0.40		
Outflow Time (min)			
Time for measured outflow	137		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.08		
Over 100% effective depth	2.46		
From 75% - 25% effective depth	1.23		
Surface Area (m^2)			
For 100% effective storage	10.82		
For 50% effective storage	6.18		
Over measured depth	1.83		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	5.1E-06		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - SA213

14075 Bishop Hedley School, Merthyr

Trial Pit Information	
Length (m)	2.00
Width (m)	0.70
Depth (m)	2.40
Groundwater	Dry
Weather Conditions	Cloudy
Date	25/08/2022

Remarks

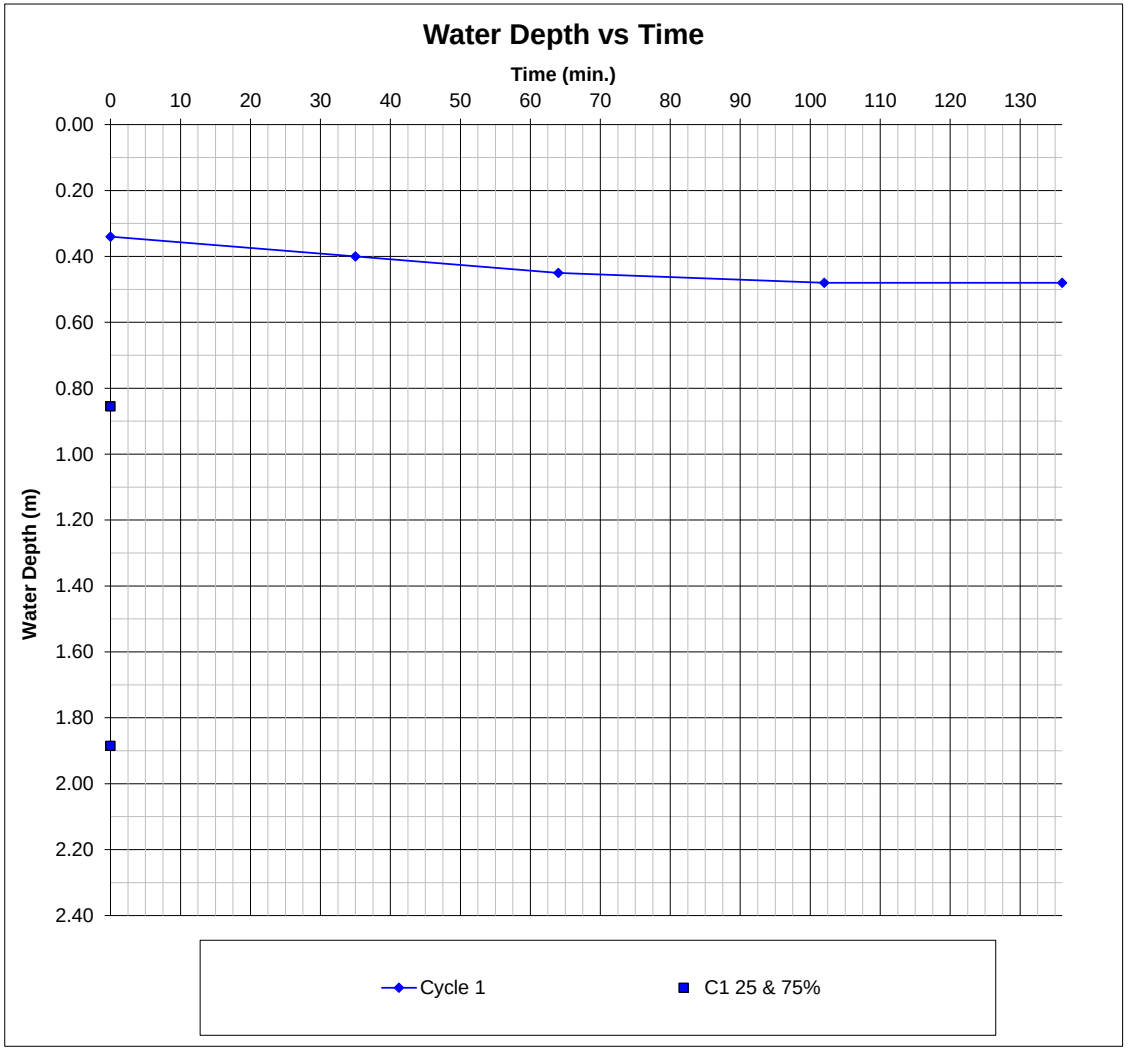
1. Test performed within well graded cohesive soil.

2. Insufficient infiltration to calculate Design Infiltration Rate.

3. Test failed.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	0.34				
35	0.40				
64	0.45				
102	0.48				
136	0.48				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.40		
Water Depths (m)			
Water depth at start of test	0.34		
Water depth at end of test	0.48		
Effective depth (measured)	0.14		
% Effective storage depth	0.07		
Effective Storage Depths (m)			
Effective storage depth (100%)	2.06		
Effective storage depth (75%)	1.55		
Effective storage depth (50%)	1.03		
Effective storage depth (25%)	0.52		
Outflow Time (min)			
Time for measured outflow	136		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.20		
Over 100% effective depth	2.88		
From 75% - 25% effective depth	1.44		
Surface Area (m^2)			
For 100% effective storage	12.52		
For 50% effective storage	6.96		
Over measured depth	2.16		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth			
Over measured depth	1.1E-05		
Over 75% - 25% effective depth			



Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - TP13

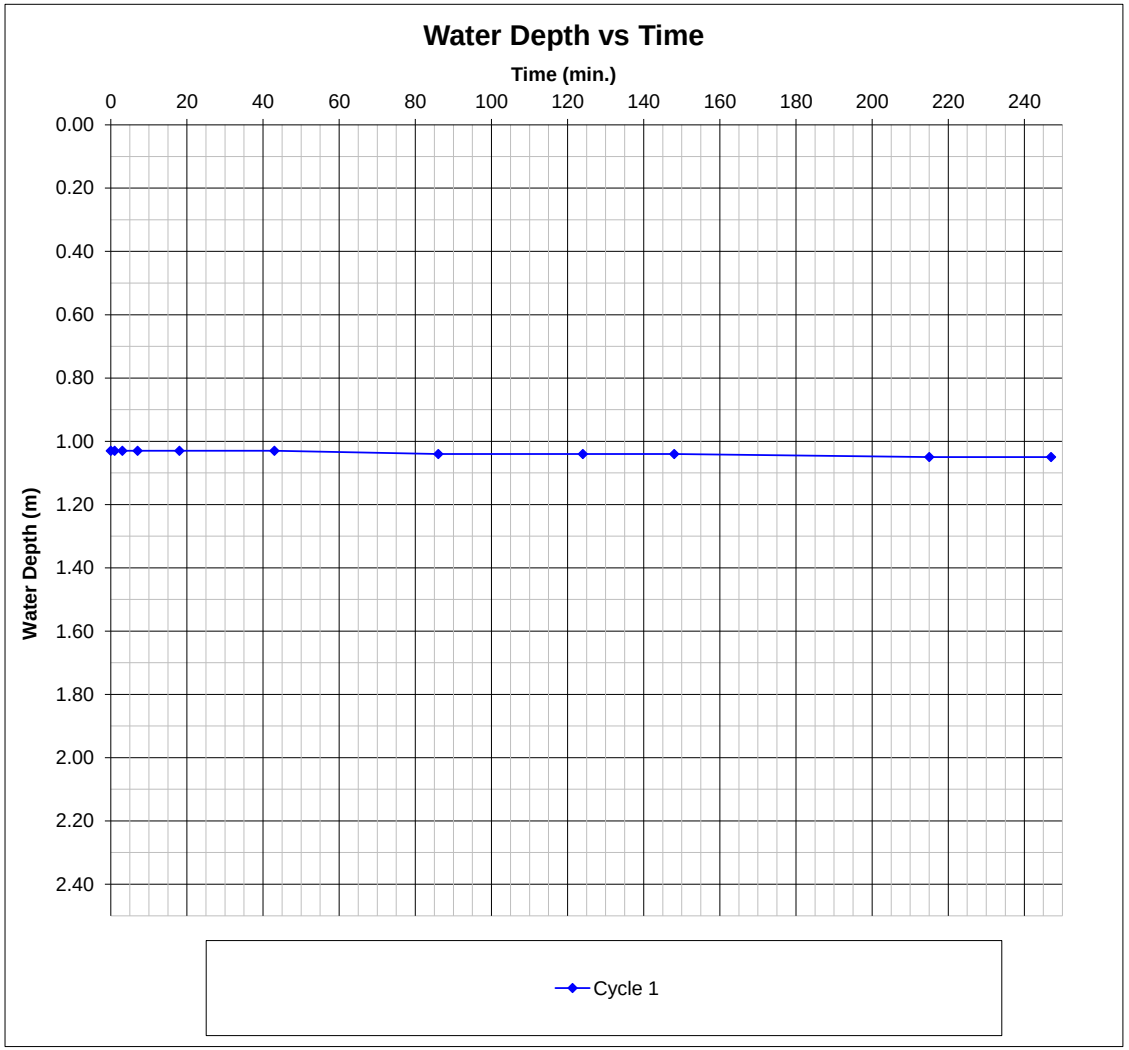
12863 3-16VA School, Merthyr

Trial Pit Information	
Length (m)	2.50
Width (m)	0.70
Depth (m)	2.50
Groundwater	Dry
Weather Conditions	Dry
Date	24-Jun-21

Remarks
Limited infiltration observed

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	1.03				
1	1.03				
3	1.03				
7	1.03				
18	1.03				
43	1.03				
86	1.04				
124	1.04				
148	1.04				
215	1.05				
247	1.05				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.50		
Water Depths (m)			
Water depth at start of test	1.03		
Water depth at end of test	1.05		
Effective depth (measured)	0.02		
% Effective storage depth	0.01		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.47		
Effective storage depth (75%)	1.10		
Effective storage depth (50%)	0.74		
Effective storage depth (25%)	0.37		
Outflow Time (min)			
Time for measured outflow	247		
Time for 100% outflow			
Time for 75-25% outflow			
Volume of Outflow (m^3)			
Over measured effective depth	0.04		
Over 100% effective depth	2.57		
From 75% - 25% effective depth	1.29		
Surface Area (m^2)			
For 100% effective storage	11.16		
For 50% effective storage	6.45		
Over measured depth	1.88		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth	#DIV/0!		
Over measured depth	1.3E-06		
Over 75% - 25% effective depth	**#DIV/0!**		



Intégral Géotechnique

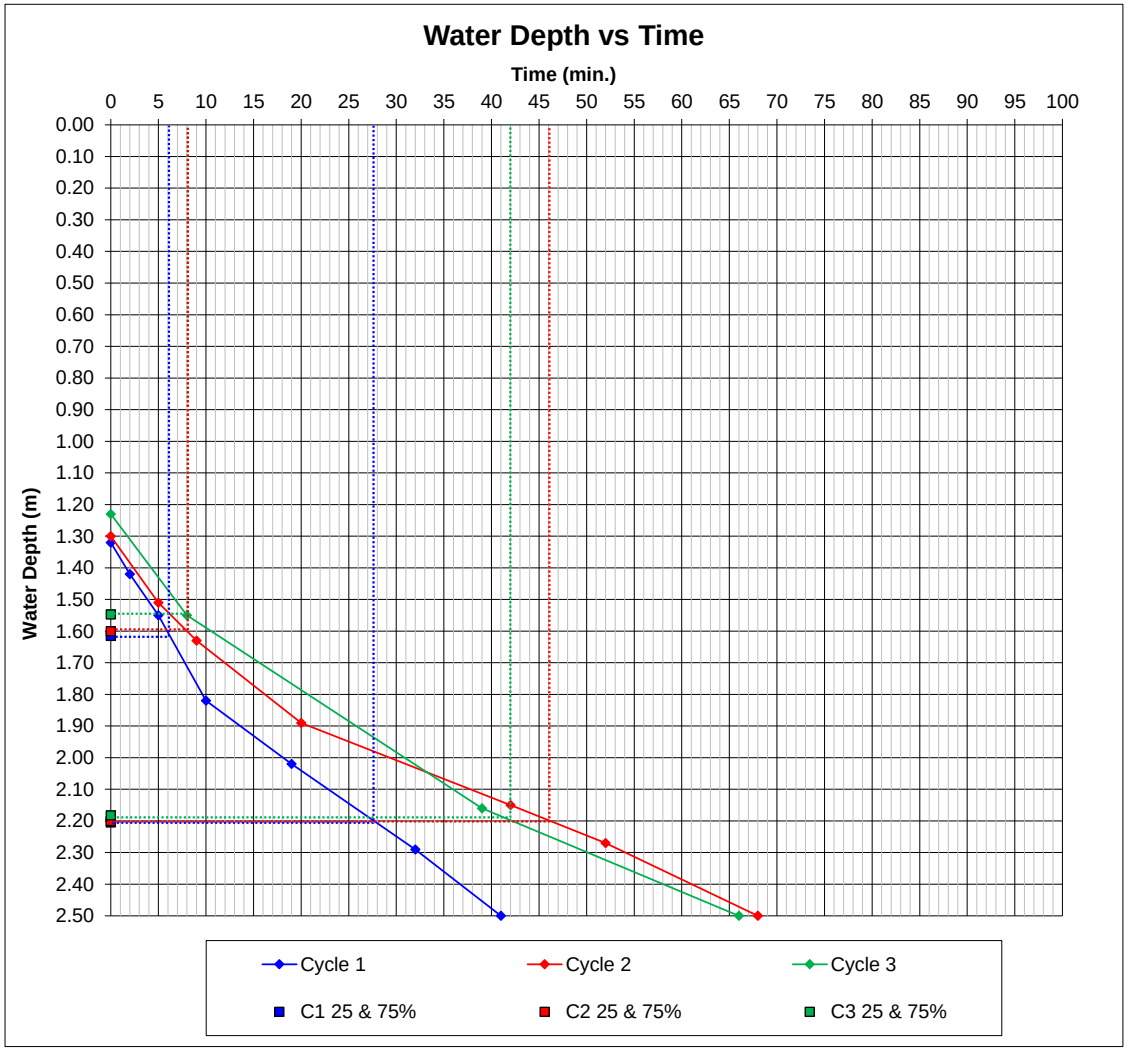
BRE365 SOIL INFILTRATION RATE TEST - TP14

Trial Pit Information	
Length (m)	2.80
Width (m)	0.70
Depth (m)	2.50
Groundwater	Dry
Weather Conditions	Sunny
Date	23-Jun-21

Remarks

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	1.32	0	1.30	0	1.23
2	1.42	5	1.51	8	1.55
5	1.55	9	1.63	39	2.16
10	1.82	20	1.89	66	2.50
19	2.02	42	2.15		
32	2.29	52	2.27		
41	2.50	68	2.50		

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.50	2.50	2.50
Water Depths (m)			
Water depth at start of test	1.32	1.30	1.23
Water depth at end of test	2.50	2.50	2.50
Effective depth (measured)	1.18	1.20	1.27
% Effective storage depth	1.00	1.00	1.00
Effective Storage Depths (m)			
Effective storage depth (100%)	1.18	1.20	1.27
Effective storage depth (75%)	0.89	0.90	0.95
Effective storage depth (50%)	0.59	0.60	0.64
Effective storage depth (25%)	0.30	0.30	0.32
Outflow Time (min)			
Time for measured outflow	41	68	66
Time for 100% outflow	41	68	66
Time for 75-25% outflow	22	38	34
Volume of Outflow (m^3)			
Over measured effective depth	2.31	2.35	2.49
Over 100% effective depth	2.31	2.35	2.49
From 75% - 25% effective depth	1.16	1.18	1.24
Surface Area (m^2)			
For 100% effective storage	10.22	10.36	10.85
For 50% effective storage	6.09	6.16	6.41
Over measured depth	10.22	10.36	10.85
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth	9.2E-05	5.6E-05	5.8E-05
Over measured depth	9.2E-05	5.6E-05	5.8E-05
Over 75% - 25% effective depth	**1.4E-04**	**8.4E-05**	**9.5E-05**



Design Soil Infiltration Rate: 8.3E-05 m/s

Intégral Géotechnique

BRE365 SOIL INFILTRATION RATE TEST - TP17

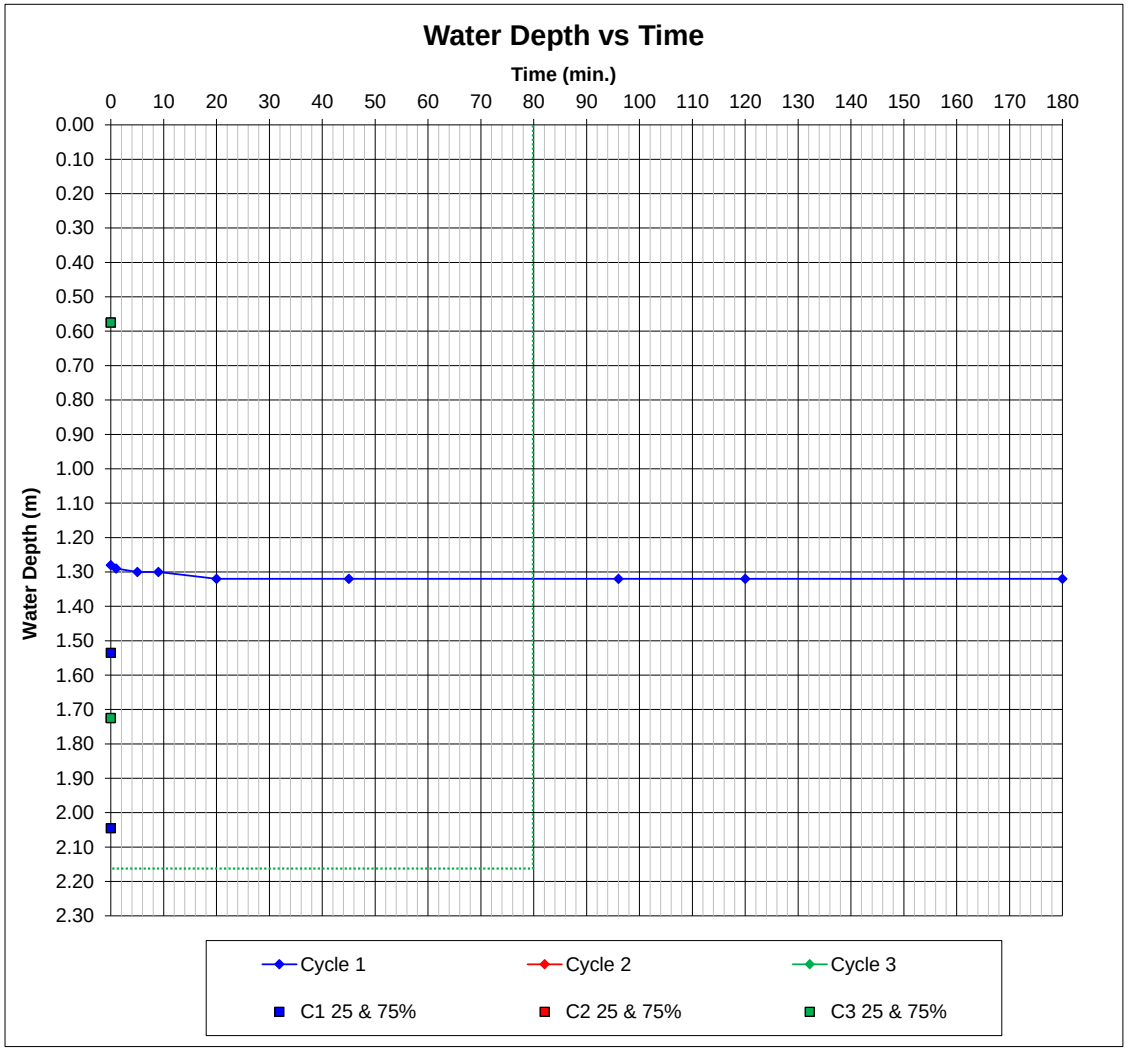
Trial Pit Information	
Length (m)	2.80
Width (m)	0.60
Depth (m)	2.30
Groundwater	Dry
Weather Conditions	Sunny
Date	23-Jun-21

Remarks

Negligible infiltration. Unable to calculate soil infiltration rate.

Cycle 1		Cycle 2		Cycle 3	
Time (min)	Depth (m)	Time (min)	Depth (m)	Time (min)	Depth (m)
0	1.28				
1	1.29				
5	1.30				
9	1.30				
20	1.32				
45	1.32				
96	1.32				
120	1.32				
180	1.32				

Final Excavation Depth (m)	Cycle 1	Cycle 2	Cycle 3
At end of testing cycle	2.30		
Water Depths (m)			
Water depth at start of test	1.28		
Water depth at end of test	1.32		
Effective depth (measured)	0.04		
% Effective storage depth	0.04		
Effective Storage Depths (m)			
Effective storage depth (100%)	1.02		
Effective storage depth (75%)	0.77		
Effective storage depth (50%)	0.51		
Effective storage depth (25%)	0.26		
Outflow Time (min)			
Time for measured outflow	180		
Time for 100% outflow	N/A		
Time for 75-25% outflow	N/A		
Volume of Outflow (m^3)			
Over measured effective depth	0.07		
Over 100% effective depth	1.71		
From 75% - 25% effective depth	0.86		
Surface Area (m^2)			
For 100% effective storage	8.62		
For 50% effective storage	5.15		
Over measured depth	1.95		
Soil Infiltration Rate (m/s)	**Cycle 1**	**Cycle 2**	**Cycle 3**
Over 100% effective depth	N/A		
Over measured depth	N/A		
Over 75% - 25% effective depth	**N/A**		



Design Soil Infiltration Rate: 0.0E+00 m/s

Intégral Géotechnique

APPENDIX K

LABORATORY CHEMICAL TEST RESULTS (SOILS)

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Analytical Report Number : 22-81880

Project / Site name:	Bishop Hedley School Merthyr	**Samples received on:**	30/08/2022
Your job number:	14075	**Samples instructed on/ Analysis started on:**	02/09/2022
Your order number:	14075 FG	**Analysis completed by:**	14/09/2022
Report Issue Number:	1	**Report issued on:**	14/09/2022
Samples Analysed:	22 soil samples		

Signed:

Rachel Bradley
Deputy Quality 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

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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: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412016	2412017	2412018	2412019	2412020
Sample Reference				WS171	WS171	WS172	WS173	WS174
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.05	0.20	0.05	0.30
Date Sampled				22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Time Taken				0830	0900	0930	1000	1100
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	1.8	8.1	1.4	16
Total mass of sample received	kg	0.001	NONE	0.9	0.5	0.8	0.5	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI	N/A	MWI	N/A	MWI

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.3	-	8.3	-	8.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1900	-	150	-	420
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.046	-	0.0041	-	0.011
Sulphide	mg/kg	1	MCERTS	1100	-	2.4	-	41
Total Sulphur	mg/kg	50	MCERTS	2400	-	140	-	500
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.6	-	0.7	-	0.9
Loss on Ignition @ 450oC	%	0.2	MCERTS	4.9	-	2.7	-	3.9

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 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	0.23	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.54	< 0.05	0.57	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.36	< 0.05	0.57	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	1.2	< 0.05	4.1	0.27
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.85	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.39	< 0.05	5.5	0.59
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.68	< 0.05	4.7	0.48
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.25	< 0.05	2.6	0.7
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.52	< 0.05	1.9	0.78
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.96	< 0.05	3.2	0.71
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.35	< 0.05	0.93	0.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.53	< 0.05	1.6	0.57
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.43	< 0.05	0.91	0.31
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.29	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.59	< 0.05	1.1	0.33

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	6.83	< 0.80	29.1	5.24

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412016	2412017	2412018	2412019	2412020
Sample Reference				WS171	WS171	WS172	WS173	WS174
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.05	0.20	0.05	0.30
Date Sampled				22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Time Taken				0830	0900	0930	1000	1100
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	-	6.7	-	9.7
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	3.5	-	0.63	-	1.3
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	-	0.3	-	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	-	< 0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	< 1.8	-	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	38	-	14	-	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	53	-	13	-	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	250	-	22	-	26
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27	-	14	-	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	76	-	20	-	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	410	-	38	-	58
Miscellaneous Organics								
Coal Tar		N/A	NONE	-	Not Identified	-	Not Identified	-
Total Residue	mg/kg	10	NONE	-	11	-	40	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412021	2412022	2412023	2412024	2412025
Sample Reference				WS175	WS179	WS182	WS183	WS184
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.80	0.10	0.50	0.30
Date Sampled				22/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Time Taken				1130	0930	1030	1100	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	54	42
Moisture Content	%	0.01	NONE	6.6	5.7	12	4.7	6.3
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI	MWI	MWI	MWI	MWI

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.5	10	6.7	9.2	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	970	2900	1100	950	220
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.16	0.51	0.014	0.27	0.0026
Sulphide	mg/kg	1	MCERTS	U/S	U/S	6	1900	6.5
Total Sulphur	mg/kg	50	MCERTS	4200	4600	420	3500	170
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.1	0.8	5.5	1.3	0.8
Loss on Ignition @ 450oC	%	0.2	MCERTS	2	1.6	10.7	2.9	2.5

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	0.66	< 0.05	0.89	< 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	0.5	< 0.05	1.1	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.86	< 0.05	1.7	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.2	4.9	0.3	8.5	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.37	1.4	< 0.05	3.3	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	3.2	5.8	0.56	13	< 0.05
Pyrene	mg/kg	0.05	MCERTS	2.5	3.9	0.46	9.7	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.1	3.4	0.57	9.6	< 0.05
Chrysene	mg/kg	0.05	MCERTS	2.1	3.1	0.64	8.1	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.3	3.3	0.79	9.1	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.93	0.96	0.35	3.8	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.5	2.4	0.66	7.6	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.91	0.92	0.27	3	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.32	0.34	< 0.05	1.1	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.98	1.1	0.3	3.1	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	18.2	33.4	4.9	83.5	< 0.80

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412021	2412022	2412023	2412024	2412025
Sample Reference				WS175	WS179	WS182	WS183	WS184
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.80	0.10	0.50	0.30
Date Sampled				22/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Time Taken				1130	0930	1030	1100	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.8	4.9	11	9.1	6.9
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	4.6	5.8	0.53	3.6	0.82
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	2.8	0.9	1.1	0.3
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	49	61	11	35	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	25	21	27	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	11	6.5	66	16	20
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	9.3	4.3	12	9.6	18
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	99	130	18	69	19
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	27	16	58	49	45

Miscellaneous Organics

Coal Tar		N/A	NONE	-	-	-	-	-
Total Residue	mg/kg	10	NONE	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412026	2412027	2412028	2412029	2412030
Sample Reference				WS273	WS274	WS274	WS275	WS277
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.05	0.15	0.10	0.80
Date Sampled				25/08/2022	26/08/2022	26/08/2022	25/08/2022	25/08/2022
Time Taken				0830	0830	0900	0900	1030
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.3	3.4	10	9	8.9
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI	N/A	MWI	MWI	MWI

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	-	8.3	7.4	9.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	410	-	980	1300	320
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.036	-	0.015	0.17	0.07
Sulphide	mg/kg	1	MCERTS	77	-	23	95	28
Total Sulphur	mg/kg	50	MCERTS	640	-	930	920	840
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1	-	1.7	3.8	0.4
Loss on Ignition @ 450oC	%	0.2	MCERTS	2.1	-	4.2	10.1	1.7

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	0.67	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	5.7	0.32	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.35	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.42	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.96	0.61	0.47	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.93	0.22	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.39	0.99	0.7	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.49	0.74	0.51	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.58	0.84	0.79	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.35	0.91	0.76	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1.3	1.6	0.96	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.33	0.52	0.31	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.59	1.4	0.61	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.47	2.5	0.32	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.8	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.95	4.5	0.32	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	13.9	16.7	5.75	< 0.80

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Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412026	2412027	2412028	2412029	2412030
Sample Reference				WS273	WS274	WS274	WS275	WS277
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.05	0.15	0.10	0.80
Date Sampled				25/08/2022	26/08/2022	26/08/2022	25/08/2022	25/08/2022
Time Taken				0830	0830	0900	0900	1030
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	-	9.2	21	5.1
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.31	-	1.1	0.86	0.55
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	-	0.4	0.9	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	-	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	7.8	-	44	22	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	-	46	28	13
Lead (aqua regia extractable)	mg/kg	1	MCERTS	41	-	27	47	16
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	10	-	14	23	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	13	-	110	41	13
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	52	-	61	82	41

Miscellaneous Organics

Coal Tar		N/A	NONE	-	Not Identified	-	-	-
Total Residue	mg/kg	10	NONE	-	23	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412031	2412032	2412033	2412034	2412035
Sample Reference				WS278	WS279	WS280	WS281	WS281
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.20	0.05	0.05	0.30
Date Sampled				25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Time Taken				1100	1200	1230	1300	1330
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	58
Moisture Content	%	0.01	NONE	7	10	5.9	0.55	0.73
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8	0.8	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI	MWI	MWI	N/A	MWI

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	7.8	8.8	-	9.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	530	950	340	-	430
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.024	0.011	-	0.2
Sulphide	mg/kg	1	MCERTS	6.8	10	220	-	U/S
Total Sulphur	mg/kg	50	MCERTS	450	450	370	-	11000
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1	0.5	0.2	-	0.6
Loss on Ignition @ 450oC	%	0.2	MCERTS	2.7	2.5	0.9	-	1.2

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	0.23	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.63	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.59	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.57	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.39	0.38	< 0.05	1.7	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.32	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.34	0.36	< 0.05	1.4	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.29	0.3	< 0.05	1.7	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.25	0.29	< 0.05	1.4	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.26	0.35	< 0.05	2.5	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.39	< 0.05	< 0.05	9.1	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.18	< 0.05	< 0.05	3.7	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.43	< 0.05	< 0.05	6.5	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.54	< 0.05	< 0.05	4.7	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.21	< 0.05	< 0.05	2.1	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.8	< 0.05	< 0.05	6	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	4.31	1.68	< 0.80	42.9	< 0.80

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Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412031	2412032	2412033	2412034	2412035
Sample Reference				WS278	WS279	WS280	WS281	WS281
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.20	0.05	0.05	0.30
Date Sampled				25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Time Taken				1100	1200	1230	1300	1330
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.4	8.3	2.9	-	3.3
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.23	0.35	0.33	-	6.7
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.4	< 0.2	-	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	-	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	43	9	-	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	32	3.2	-	13
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	23	4.4	-	1.7
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	9.2	10	3.1	-	2.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	95	120	7.3	-	59
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	25	29	7.9	-	9.4

Miscellaneous Organics

Coal Tar		N/A	NONE	-	-	-	Not Identified	-
Total Residue	mg/kg	10	NONE	-	-	-	740	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412036	2412037
Sample Reference				SA111	TP245
Sample Number				None Supplied	None Supplied
Depth (m)				0.10	0.30
Date Sampled				23/08/2022	26/08/2022
Time Taken				1300	1130
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	11
Total mass of sample received	kg	0.001	NONE	0.5	0.5

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MWI	MWI

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.5	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1100	940
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.01	0.02
Sulphide	mg/kg	1	MCERTS	84	81
Total Sulphur	mg/kg	50	MCERTS	460	560
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	5.5	0.7
Loss on Ignition @ 450oC	%	0.2	MCERTS	13.2	3.6

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.56	0.29
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.67	0.32
Pyrene	mg/kg	0.05	MCERTS	0.52	0.26
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.64	0.29
Chrysene	mg/kg	0.05	MCERTS	0.83	0.28
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1	0.4
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.36	0.17
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.72	0.35
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.29	0.54
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.32	0.77

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	5.94	3.67

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Analytical Report Number: 22-81880
Project / Site name: Bishop Hedley School Merthyr
Your Order No: 14075 FG

Lab Sample Number				2412036	2412037
Sample Reference				SA111	TP245
Sample Number				None Supplied	None Supplied
Depth (m)				0.10	0.30
Date Sampled				23/08/2022	26/08/2022
Time Taken				1300	1130
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	8.2
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.55	0.55
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	10	55
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	44
Lead (aqua regia extractable)	mg/kg	1	MCERTS	64	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	21	150
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	78	35

Miscellaneous Organics

Coal Tar		N/A	NONE	-	-
Total Residue	mg/kg	10	NONE	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 22-81880
Project / Site name: Bishop Hedley School Merthyr

* 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 *
2412016	WS171	None Supplied	0.4	Brown sand with gravel.
2412017	WS171	None Supplied	0.05	Black gravel with tar.**
2412018	WS172	None Supplied	0.2	Brown clay with gravel.
2412019	WS173	None Supplied	0.05	Black gravel with tar.**
2412020	WS174	None Supplied	0.3	Brown clay and sand with gravel.
2412021	WS175	None Supplied	0.4	Brown sandy clay with gravel.
2412022	WS179	None Supplied	1.8	Grey clay with gravel.
2412023	WS182	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2412024	WS183	None Supplied	0.5	Grey sandy clay with stones.
2412025	WS184	None Supplied	0.3	Brown clay and loam with stones.
2412026	WS273	None Supplied	0.2	Brown clay with gravel.
2412027	WS274	None Supplied	0.05	Grey sandy clay with gravel.
2412028	WS274	None Supplied	0.15	Grey sandy clay with gravel.
2412029	WS275	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2412030	WS277	None Supplied	0.8	Brown clay and sand with gravel.
2412031	WS278	None Supplied	0.2	Brown clay and sand with gravel.
2412032	WS279	None Supplied	0.2	Brown clay and sand with gravel.
2412033	WS280	None Supplied	0.05	Brown clay with gravel.
2412034	WS281	None Supplied	0.05	Black gravel with tar.**
2412035	WS281	None Supplied	0.3	Brown clay and sand with stones.
2412036	SA111	None Supplied	0.1	Brown clay and loam with gravel and vegetation.
2412037	TP245	None Supplied	0.3	Brown sandy clay with gravel.

**Non MCERTS matrix.

Analytical Report Number : 22-81880
Project / Site name: Bishop Hedley School Merthyr

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
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	L038-PL	D	MCERTS
Loss on ignition of soil @ 450oC	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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 (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
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.	L038-PL	D	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 (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Coal Tar in Soil	DCM Extraction with qualitative interpretation via GC/MS	In-house method	L064-PL	D	NONE
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

Analytical Report Number : 22-81880
Project / Site name: Bishop Hedley School Merthyr

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' 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.

Sample Deviation Report

Analytical Report Number : 22-81880
Project / Site name: Bishop Hedley School Merthyr

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.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
SA111	None Supplied	S	2412036	c	Sulphide in soil	L010-PL	c
SA111	None Supplied	S	2412036	c	Total cyanide in soil	L080-PL	c
TP245	None Supplied	S	2412037	c	Sulphide in soil	L010-PL	c
TP245	None Supplied	S	2412037	c	Total cyanide in soil	L080-PL	c
WS171	None Supplied	S	2412016	c	Sulphide in soil	L010-PL	c
WS171	None Supplied	S	2412016	c	Total cyanide in soil	L080-PL	c
WS172	None Supplied	S	2412018	c	Sulphide in soil	L010-PL	c
WS172	None Supplied	S	2412018	c	Total cyanide in soil	L080-PL	c
WS174	None Supplied	S	2412020	c	Sulphide in soil	L010-PL	c
WS174	None Supplied	S	2412020	c	Total cyanide in soil	L080-PL	c
WS175	None Supplied	S	2412021	c	Sulphide in soil	L010-PL	c
WS175	None Supplied	S	2412021	c	Total cyanide in soil	L080-PL	c
WS179	None Supplied	S	2412022	c	Sulphide in soil	L010-PL	c
WS179	None Supplied	S	2412022	c	Total cyanide in soil	L080-PL	c
WS182	None Supplied	S	2412023	c	Sulphide in soil	L010-PL	c
WS182	None Supplied	S	2412023	c	Total cyanide in soil	L080-PL	c
WS183	None Supplied	S	2412024	c	Sulphide in soil	L010-PL	c
WS183	None Supplied	S	2412024	c	Total cyanide in soil	L080-PL	c
WS184	None Supplied	S	2412025	c	Sulphide in soil	L010-PL	c
WS184	None Supplied	S	2412025	c	Total cyanide in soil	L080-PL	c
WS273	None Supplied	S	2412026	c	Sulphide in soil	L010-PL	c
WS273	None Supplied	S	2412026	c	Total cyanide in soil	L080-PL	c
WS274	None Supplied	S	2412028	c	Sulphide in soil	L010-PL	c
WS274	None Supplied	S	2412028	c	Total cyanide in soil	L080-PL	c
WS275	None Supplied	S	2412029	c	Sulphide in soil	L010-PL	c
WS275	None Supplied	S	2412029	c	Total cyanide in soil	L080-PL	c
WS277	None Supplied	S	2412030	c	Sulphide in soil	L010-PL	c
WS277	None Supplied	S	2412030	c	Total cyanide in soil	L080-PL	c
WS278	None Supplied	S	2412031	c	Sulphide in soil	L010-PL	c
WS278	None Supplied	S	2412031	c	Total cyanide in soil	L080-PL	c
WS279	None Supplied	S	2412032	c	Sulphide in soil	L010-PL	c
WS279	None Supplied	S	2412032	c	Total cyanide in soil	L080-PL	c
WS280	None Supplied	S	2412033	c	Sulphide in soil	L010-PL	c
WS280	None Supplied	S	2412033	c	Total cyanide in soil	L080-PL	c
WS281	None Supplied	S	2412035	c	Sulphide in soil	L010-PL	c
WS281	None Supplied	S	2412035	c	Total cyanide in soil	L080-PL	c

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

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Analytical Report Number : 22-82264

Project / Site name:	Bishop Hedley School, Merthyr	**Samples received on:**	06/09/2022
Your job number:	14075	**Samples instructed on/ Analysis started on:**	06/09/2022
Your order number:	14075 FG	**Analysis completed by:**	14/09/2022
Report Issue Number:	1	**Report issued on:**	14/09/2022
Samples Analysed:	2 soil samples		

Signed:

Anna Goc
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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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.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 22-82264
Project / Site name: bISHOP HEDLEY SCHOOL MERTHYR
Your Order No: 14075 FG

Lab Sample Number				2414346	2414347
Sample Reference				WS272	WS177
Sample Number				None Supplied	None Supplied
Depth (m)				0.20	0.40
Date Sampled				26/08/2022	26/08/2022
Time Taken				1600	1630
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	8.5	9.8
Total mass of sample received	kg	0.001	NONE	1.1	0.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1900	4200
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.47	1.7
Sulphide	mg/kg	1	MCERTS	140	13
Total Sulphur	mg/kg	50	MCERTS	2300	2000
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	3	1.7
Loss on Ignition @ 450oC	%	0.2	MCERTS	8.6	5

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.21	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.64	< 0.05
Fluorene	mg/kg	0.05	MCERTS	1	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	7.5	< 0.05
Anthracene	mg/kg	0.05	MCERTS	2	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	11	< 0.05
Pyrene	mg/kg	0.05	MCERTS	7.3	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	7.8	< 0.05
Chrysene	mg/kg	0.05	MCERTS	6.3	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	6.9	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	3.2	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.2	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.1	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.69	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.5	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	63.7	< 0.80

Analytical Report Number: 22-82264
Project / Site name: bISHOP HEDLEY SCHOOL MERTHYR
Your Order No: 14075 FG

Lab Sample Number				2414346	2414347
Sample Reference				WS272	WS177
Sample Number				None Supplied	None Supplied
Depth (m)				0.20	0.40
Date Sampled				26/08/2022	26/08/2022
Time Taken				1600	1630
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	16
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2	0.52
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	46	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	61	31
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	9.3
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	96	24
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	85	41

U/S = Unsuitable Sample I/S = Insufficient Sample

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 22-82264
Project / Site name: bISHOP HEDLEY SCHOOL MERTHYR

* 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 *
2414346	WS272	None Supplied	0.2	Brown clay and loam with gravel.
2414347	WS177	None Supplied	0.4	Brown clay and loam with gravel.

Analytical Report Number : 22-82264
Project / Site name: bISHOP HEDLEY SCHOOL MERTHYR

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
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	L038-PL	D	MCERTS
Loss on ignition of soil @ 450oC	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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 (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
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.	L038-PL	D	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 (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	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

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' 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.

Analytical Report Number : 22-82264
Project / Site name: bISHOP HEDLEY SCHOOL MERTHYR

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

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.

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Analytical Report Number : 21-84460

Replaces Analytical Report Number: 21-84460, issue no. 1
Report format change.
Removed samples no 1923832-1923835 as per client's request.

Project / Site name:	Merthyr Tydfil School	**Samples received on:**	28/06/2021
Your job number:	12863	**Samples instructed on/ Analysis started on:**	01/07/2021
Your order number:	12863 GS	**Analysis completed by:**	12/07/2021
Report Issue Number:	2	**Report issued on:**	19/04/2023
Samples Analysed:	2 bulk samples - 6 soil samples		

Signed:

Anna Goc
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-84460
Project / Site name: Merthyr Tydfil School
Your Order No: 12863 GS

Lab Sample Number				1923836	1923837	1923838	1923839	1923840
Sample Reference				TP09	TP10	TP12	TP14	TP15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	1.50	0.75	0.50	0.50
Date Sampled				21/06/2021	21/06/2021	21/06/2021	21/06/2021	21/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	20	18	18	18
Total mass of sample received	kg	0.001	NONE	1	0.7	0.9	1.2	0.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA	SCA	SCA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8	7.5	7.5	7.4	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	1.1	< 1.0	1.1	1.8
Total Sulphate as SO4	mg/kg	50	MCERTS	1900	5100	3200	3500	1200
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.045	1.9	1.2	1.4	0.4
Sulphide	mg/kg	1	MCERTS	25	180	52	120	350
Total Sulphur	mg/kg	50	MCERTS	960	4400	3900	3000	4200
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	81	< 0.5	39	43
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.5	4.5	3.7	4.8	4.8
Loss on Ignition @ 450oC	%	0.2	MCERTS	18	27.9	21.8	27.5	31.2

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	0.24	0.71	0.64	5.1	2.5
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	0.4	0.77
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.37	0.74
Phenanthrene	mg/kg	0.05	MCERTS	0.67	0.91	1.3	1.2	2.8
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.19	< 0.05	0.36
Fluoranthene	mg/kg	0.05	MCERTS	1.5	0.77	0.97	0.92	2.6
Pyrene	mg/kg	0.05	MCERTS	1.3	0.66	0.71	0.74	2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.3	< 0.05	0.76	1	1.7
Chrysene	mg/kg	0.05	MCERTS	1.3	< 0.05	0.89	1.2	2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.4	< 0.05	0.7	0.9	1.8
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.6	< 0.05	0.25	0.3	0.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.9	< 0.05	0.36	0.41	1.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.66	< 0.05	0.26	0.29	0.68
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.24	< 0.05	< 0.05	< 0.05	0.4
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.67	< 0.05	0.31	0.33	0.75

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	10.7	3.05	7.33	13.2	20.8

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	42	27	24	17
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.81	2.4	1.9	2	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	11	1.7	14	27
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	1.5	< 0.2	1.3	1
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	16	42	21	27	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	37	170	120	160	64
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	180	78	270	94
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.9	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	83	48	55	31
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.1	< 1.0	2.6	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	20	43	38	40	24

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Analytical Report Number: 21-84460
Project / Site name: Merthyr Tydfil School
Your Order No: 12863 GS

Lab Sample Number				1923836	1923837	1923838	1923839	1923840
Sample Reference				TP09	TP10	TP12	TP14	TP15
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	1.50	0.75	0.50	0.50
Date Sampled				21/06/2021	21/06/2021	21/06/2021	21/06/2021	21/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	240	360	160	360	170
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	12	< 1.0	17	11
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	20	< 2.0	5.8	8.3
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	45	12	26	38
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	540	59	170	200
TPH-CWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	< 10	590	71	200	240
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	< 8.4	85	44	71	62
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	MCERTS	< 10	620	73	220	260
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	700	120	290	320
TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	0.008	< 0.001	0.005	0.01
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	0.01	< 0.001	5.7	0.075
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	49	20
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	16	12
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	12	< 10	35	34
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	39	48	< 10	110	97
TPH-CWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	30	20
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	54	33
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	MCERTS	46	60	< 10	220	160
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	46	60	< 10	270	200
TPH Total C5 - C44 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	46	760	120	560	510

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

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Analytical Report Number: 21-84460
Project / Site name: Merthyr Tydfil School
Your Order No: 12863 GS

Lab Sample Number				1923842
Sample Reference				TP17
Sample Number				None Supplied
Depth (m)				0.50
Date Sampled				21/06/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	20
Total mass of sample received	kg	0.001	NONE	1.4

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EC

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.3
Total Cyanide	mg/kg	1	MCERTS	4.5
Total Sulphate as SO4	mg/kg	50	MCERTS	3700
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.5
Sulphide	mg/kg	1	MCERTS	140
Total Sulphur	mg/kg	50	MCERTS	2800
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	31
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	3.9
Loss on Ignition @ 450oC	%	0.2	MCERTS	19.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	3.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.35
Fluorene	mg/kg	0.05	MCERTS	0.5
Phenanthrene	mg/kg	0.05	MCERTS	3
Anthracene	mg/kg	0.05	MCERTS	0.67
Fluoranthene	mg/kg	0.05	MCERTS	3.3
Pyrene	mg/kg	0.05	MCERTS	2.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.5
Chrysene	mg/kg	0.05	MCERTS	2.8
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.9
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.92
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.68
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.49
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.87

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	22.8

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.1
Boron (water soluble)	mg/kg	0.2	MCERTS	2.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.6
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	92
Lead (aqua regia extractable)	mg/kg	1	MCERTS	210
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	45
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-84460
Project / Site name: Merthyr Tydfil School
Your Order No: 12863 GS

Lab Sample Number				1923842
Sample Reference				TP17
Sample Number				None Supplied
Depth (m)				0.50
Date Sampled				21/06/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	420

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	14
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	250
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	810
TPH-CWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	1100
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	160
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	MCERTS	1100
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	1200

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	MCERTS	0.006
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	MCERTS	0.017
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	38
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	12
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	290
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	710
TPH-CWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	67
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	100
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	MCERTS	1000
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	1100

TPH Total C5 - C44 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	2400

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

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Analytical Report Number: 21-84460
Project / Site name: Merthyr Tydfil School

Your Order No: 12863 GS

Lab Sample Number				1923841	1923843
Sample Reference				TP15	TP17
Sample Number				None Supplied	None Supplied
Depth (m)				2.00	1.00
Date Sampled				21/06/2021	21/06/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Asbestos Identification	Type	N/A	ISO 17025	Chrysotile - Hard/Cement Type Material	No Asbestos Detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA	EC

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

Analytical Report Number : 21-84460
Project / Site name: Merthyr Tydfil School

* 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 *
1923836	TP09	None Supplied	0.5	Brown loam with gravel and vegetation.
1923837	TP10	None Supplied	1.5	Brown loam and gravel with glass and vegetation.
1923838	TP12	None Supplied	0.75	Brown loam and gravel with glass and vegetation.
1923839	TP14	None Supplied	0.5	Brown loam and gravel with vegetation.
1923840	TP15	None Supplied	0.5	Brown loam and gravel.
1923842	TP17	None Supplied	0.5	Brown loam and clay with gravel.

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Analytical Report Number : 21-84460
Project / Site name: Merthyr Tydfil School

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	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.	L038-PL	D	MCERTS
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
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	A001-PL	D	ISO 17025
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	L038-PL	D	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
Loss on ignition of soil @ 450oC	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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 (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
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.	L038-PL	D	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 (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

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Analytical Report Number : 21-84460
Project / Site name: Merthyr Tydfil School

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method,10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 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.

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 - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Analytical Report Number : 21-84460
Project / Site name: Merthyr Tydfil School

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	None Supplied	S	1923833	c	Sulphide in soil	L010-PL	c
TP03	None Supplied	S	1923833	c	Total cyanide in soil	L080-PL	c
TP05	None Supplied	S	1923834	c	Sulphide in soil	L010-PL	c
TP05	None Supplied	S	1923834	c	Total cyanide in soil	L080-PL	c
TP07	None Supplied	S	1923835	c	Sulphide in soil	L010-PL	c
TP07	None Supplied	S	1923835	c	Total cyanide in soil	L080-PL	c
TP09	None Supplied	S	1923836	c	Sulphide in soil	L010-PL	c
TP09	None Supplied	S	1923836	c	Total cyanide in soil	L080-PL	c
TP10	None Supplied	S	1923837	c	Sulphide in soil	L010-PL	c
TP10	None Supplied	S	1923837	c	Total cyanide in soil	L080-PL	c
TP12	None Supplied	S	1923838	c	Sulphide in soil	L010-PL	c
TP12	None Supplied	S	1923838	c	Total cyanide in soil	L080-PL	c
TP14	None Supplied	S	1923839	c	Sulphide in soil	L010-PL	c
TP14	None Supplied	S	1923839	c	Total cyanide in soil	L080-PL	c
TP15	None Supplied	S	1923840	c	Sulphide in soil	L010-PL	c
TP15	None Supplied	S	1923840	c	Total cyanide in soil	L080-PL	c
TP17	None Supplied	S	1923842	c	Sulphide in soil	L010-PL	c
TP17	None Supplied	S	1923842	c	Total cyanide in soil	L080-PL	c
TT1	None Supplied	S	1923832	c	Sulphide in soil	L010-PL	c
TT1	None Supplied	S	1923832	c	Total cyanide in soil	L080-PL	c

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Analytical Report Number : 21-78793

Replaces Analytical Report Number: 21-78793, issue no. 2
Report format change.
Removeed samples no 1890912-1890918 as per client's request.

Project / Site name:	Merthyr School	**Samples received on:**	02/06/2021
Your job number:		**Samples instructed on/ Analysis started on:**	02/06/2021
Your order number:		**Analysis completed by:**	18/06/2021
Report Issue Number:	3	**Report issued on:**	19/04/2023
Samples Analysed:	8 soil samples		

Signed:

Anna Goc
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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

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.

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Analytical Report Number: 21-78793
Project / Site name: Merthyr School

Lab Sample Number				1890919	1890920	1890921	1890922	1890923
Sample Reference				WS08	WS09	WS10	WS11	WS12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.50	0.60	1.00
Date Sampled				27/05/2021	27/05/2021	28/05/2021	28/05/2021	28/05/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	13	10	21	10
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4	0.4	0.4

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-
Asbestos Analyst ID	N/A	N/A	N/A	MDB	MDB	MDB	AZU	AZU

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.8	7.6	8	7.3	5.6
Total Cyanide	mg/kg	1	MCERTS	1.5	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	710	910	1100	2900	690
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.071	0.034	0.29	1.5	0.13
Sulphide	mg/kg	1	MCERTS	3.4	< 1.0	280	70	9.3
Total Sulphur	mg/kg	50	MCERTS	520	1000	2000	3700	1900
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.2	3.4	1.8	4.1	2.8
Loss on Ignition @ 450oC	%	0.2	MCERTS	9.7	32.7	10.5	35.6	17.5

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	1.2	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.5	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	5.2	1.7	0.75
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.3	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	6.5	2	0.49
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	4.7	1.3	0.38
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.9	< 0.05	0.37
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	4.5	< 0.05	0.57
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	5.1	< 0.05	0.45
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.6	< 0.05	0.26
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.9	< 0.05	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.8	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.79	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.8	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	42.9	5.07	3.56

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Analytical Report Number: 21-78793
Project / Site name: Merthyr School

Lab Sample Number				1890919	1890920	1890921	1890922	1890923
Sample Reference				WS08	WS09	WS10	WS11	WS12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.50	0.60	1.00
Date Sampled				27/05/2021	27/05/2021	28/05/2021	28/05/2021	28/05/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	23	17	24	16
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	0.78	1.3	1.9	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	0.6	1	3.9	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	< 0.2	0.6	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	13	33	22	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	69	46	44	84	47
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120	25	110	120	50
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	61	31	21	42	39
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	33	31	50	32	19
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	290	45	160	230	150

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-78793
Project / Site name: Merthyr School

Lab Sample Number				1890924	1890925	1890926
Sample Reference				WS13	WS14	WS15
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.40
Date Sampled				28/05/2021	28/05/2021	28/05/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	28	18	16
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	AZU	AZU	AZU

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.4	5.7	6.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	970	860	360
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.035	0.0063	0.0045
Sulphide	mg/kg	1	MCERTS	18	< 1.0	< 1.0
Total Sulphur	mg/kg	50	MCERTS	1100	470	310
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.9	3.2	2.3
Loss on Ignition @ 450oC	%	0.2	MCERTS	28.6	22.3	20.9

Total Phenols

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

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	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 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	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 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

Total PAH

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

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Analytical Report Number: 21-78793
Project / Site name: Merthyr School

Lab Sample Number				1890924	1890925	1890926
Sample Reference				WS13	WS14	WS15
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.40
Date Sampled				28/05/2021	28/05/2021	28/05/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	51	16	10
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	3.6	1.1	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.6	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	36	9.8	8.7
Copper (aqua regia extractable)	mg/kg	1	MCERTS	170	52	56
Lead (aqua regia extractable)	mg/kg	1	MCERTS	310	48	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	79	38	39
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	62	25	20
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	380	44	55

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Analytical Report Number : 21-78793
Project / Site name: Merthyr School

* 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 *
1890919	WS08	None Supplied	0.2	Light brown clinker with brick.
1890920	WS09	None Supplied	0.3	Grey clinker.**
1890921	WS10	None Supplied	0.5	Brown loam and sand with gravel and metal.
1890922	WS11	None Supplied	0.6	Brown loam and sand with gravel and glass.
1890923	WS12	None Supplied	1	Brown loam and clay with gravel and vegetation.
1890924	WS13	None Supplied	0.5	Brown loam and sand with gravel.
1890925	WS14	None Supplied	0.2	Brown loam and sand with gravel.
1890926	WS15	None Supplied	0.4	Brown loam and sand with gravel.

** Non MCERTS matrix

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Analytical Report Number : 21-78793
Project / Site name: Merthyr School

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	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.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
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	L038-PL	D	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
Loss on ignition of soil @ 450oC	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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 (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
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.	L038-PL	D	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 (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025

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Analytical Report Number : 21-78793
Project / Site name: Merthyr School

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

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.

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Sample Deviation Report

Analytical Report Number : 22-82264
Project / Site name: bISHOP HEDLEY SCHOOL MERTHYR

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.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS177	None Supplied	S	2414347	c	Sulphide in soil	L010-PL	c
WS177	None Supplied	S	2414347	c	Total cyanide in soil	L080-PL	c
WS272	None Supplied	S	2414346	c	Sulphide in soil	L010-PL	c
WS272	None Supplied	S	2414346	c	Total cyanide in soil	L080-PL	c

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

APPENDIX L

LABORATORY CHEMICAL TEST RESULTS (SOIL LEACHATE)

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Analytical Report Number : 21-85614

Replaces Analytical Report Number: 21-85614, issue no. 1
Report format change.
Removed samples no 1930737-1930740 as per client's request.

Project / Site name:	Merthyr Tydfil School	**Samples received on:**	28/06/2021
Your job number:	12863	**Samples instructed on/ Analysis started on:**	08/07/2021
Your order number:	12863 GS	**Analysis completed by:**	16/07/2021
Report Issue Number:	2	**Report issued on:**	19/04/2023
Samples Analysed:	4 leachate samples		

Signed:

Anna Goc
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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

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.

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Analytical Report Number: 21-85614
Project / Site name: Merthyr Tydfil School

Your Order No: 12863 GS

Lab Sample Number				1930741	1930742	1930743	1930744
Sample Reference				TP10	TP12	TP14	TP17
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	0.75	0.50	0.50
Date Sampled				21/06/2021	21/06/2021	21/06/2021	21/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
General Inorganics							
pH (automated)	pH Units	N/A	ISO 17025	7.8	7.5	7.6	7.4
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	127000	139000	183000	144000
Total Sulphur	µg/l	15	NONE	42000	46000	61000	48000
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	9100	82	3200	1800
Total Organic Carbon (TOC)	mg/l	0.1	NONE	5.9	5.08	4.34	5.31
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	4.91	4.44	4.32	5.24
Total Phenols							
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10
Speciated PAHs							
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH							
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids							
Arsenic (dissolved)	µg/l	1	ISO 17025	3.1	< 1.0	1.9	2.3
Beryllium (dissolved)	µg/l	0.2	ISO 17025	0.2	< 0.2	< 0.2	0.3
Boron (dissolved)	µg/l	10	ISO 17025	490	58	510	110
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.2	0.4	0.7	2
Copper (dissolved)	µg/l	0.7	ISO 17025	4.9	5.5	3.2	5.6
Lead (dissolved)	µg/l	1	ISO 17025	2.5	< 1.0	< 1.0	4.1
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	5.8	4.4	9.7	8.5
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7
Zinc (dissolved)	µg/l	0.4	ISO 17025	13	39	35	53
Calcium (dissolved)	mg/l	0.012	ISO 17025	43	66	72	64
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 21-85614
Project / Site name: Merthyr Tydfil School

Your Order No: 12863 GS

Lab Sample Number				1930741	1930742	1930743	1930744
Sample Reference				TP10	TP12	TP14	TP17
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	0.75	0.50	0.50
Date Sampled				21/06/2021	21/06/2021	21/06/2021	21/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C40 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH >C5 - C44 $_{EH+HS_1D_TOTAL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH Aliphatic (C16 - C35) $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10

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

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Analytical Report Number : 21-85614
Project / Site name: Merthyr Tydfil School

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH7 (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Monohydric phenols in leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
pH at 20oC in leachate (automated)	Determination of pH in leachate by electrometric measurement.	In house method.	L099B	W	ISO 17025
Sulphide in leachate	Determination of sulphide in leachate by ion selective electrode.	In-house method	L010-PL	W	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total Sulphur in leachates	Determination of total sulphur in leachates by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	NONE
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	ISO 17025
Total cyanide in leachate	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total organic carbon in leachate	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
TPH in (Leachate)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method, TPH with carbon banding.	L070-PL	W	NONE

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 21-85614
Project / Site name: Merthyr Tydfil School

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

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.

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 - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

APPENDIX M

LABORATORY GEOTECHNICAL TEST RESULTS

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29309		

Site Ref / Hole ID:	SA111	**Depth (m):**	2.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	08 September 2022

Test Results

Moisture Content (%)	10.2

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

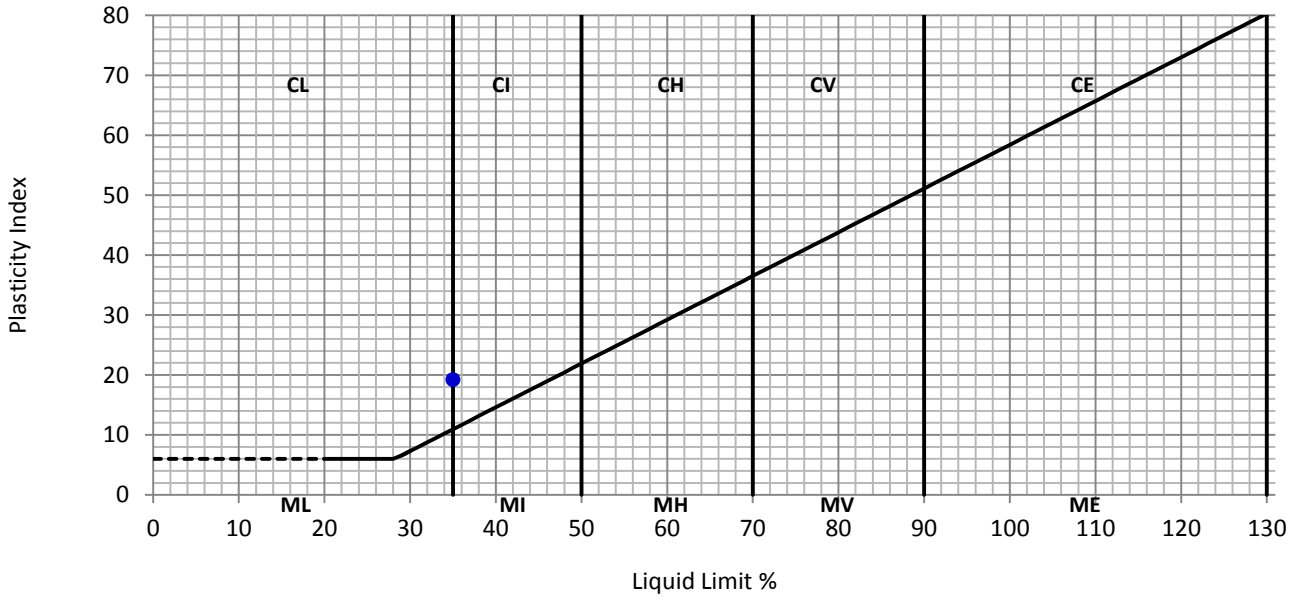
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29309		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA111	**Depth (m):**	2.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Liquid Limit	35	%
Plastic Limit	16	%
Plasticity Index	19	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	32	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29310		

Site Ref / Hole ID:	SA209	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Moisture Content (%)	18.5

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

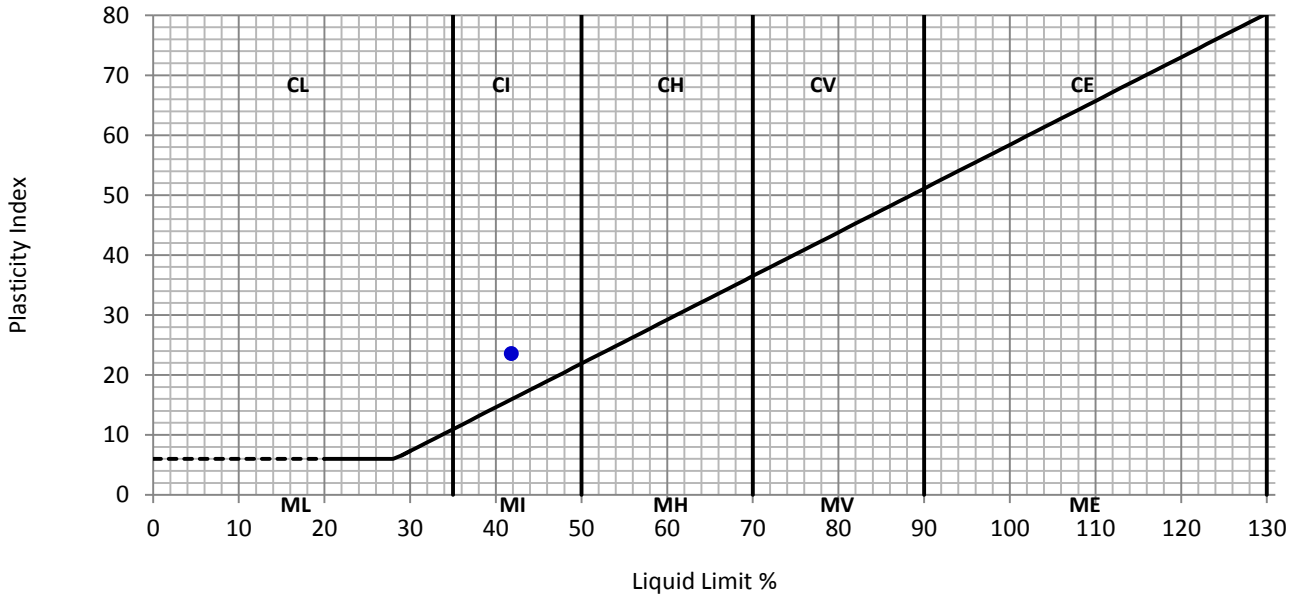
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29310		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA209	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Liquid Limit	42	%
Plastic Limit	18	%
Plasticity Index	24	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	12	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29311		

Site Ref / Hole ID:	SA211	**Depth (m):**	2.10
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Moisture Content (%)	20.0

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

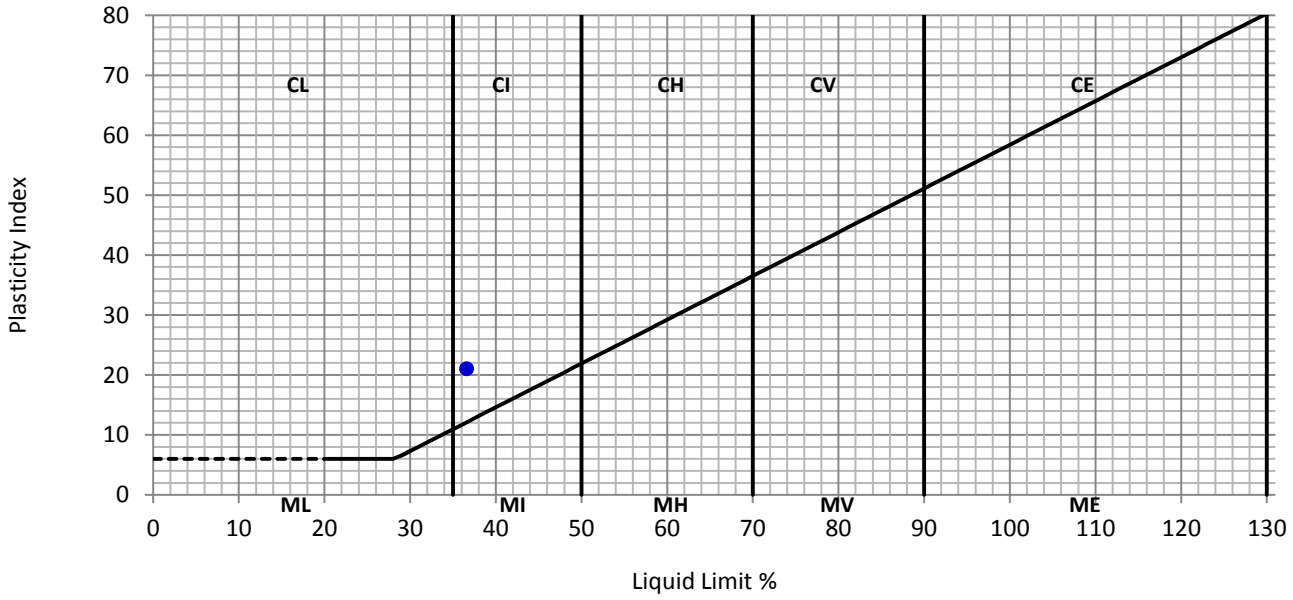
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29311		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA211	**Depth (m):**	2.10
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Liquid Limit	37	%
Plastic Limit	16	%
Plasticity Index	21	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	27	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	31/08/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29312		

Site Ref / Hole ID:	SA212	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Moisture Content (%)	18.3

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

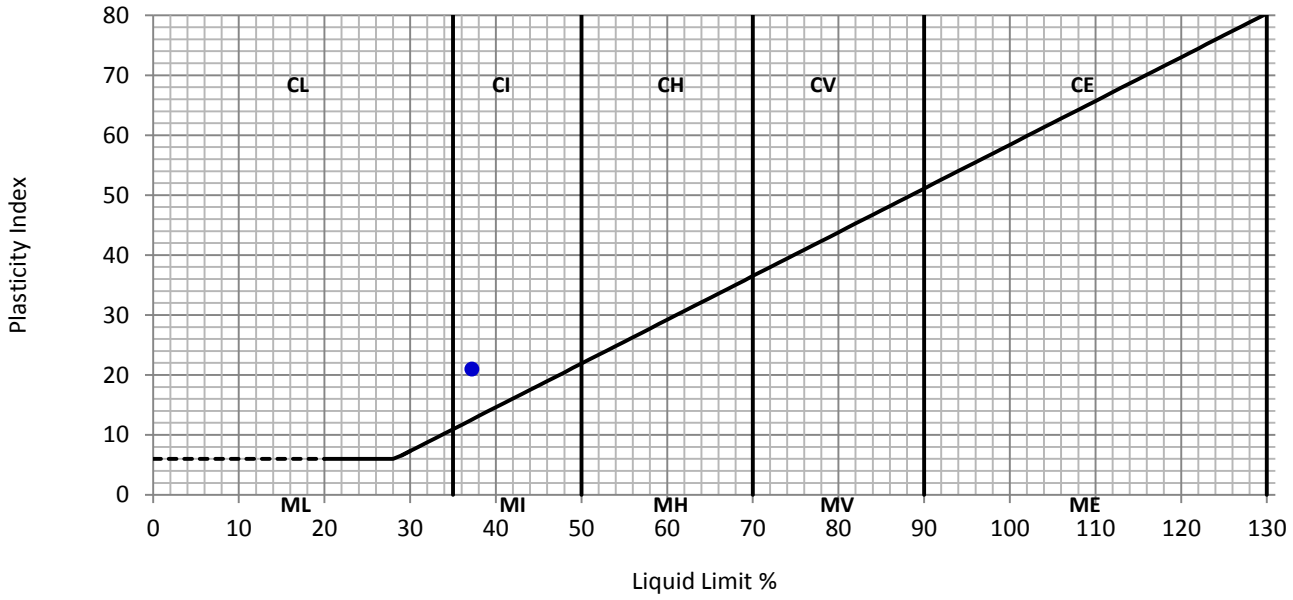
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29312		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA212	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Liquid Limit	37	%
Plastic Limit	16	%
Plasticity Index	21	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	18	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29313		

Site Ref / Hole ID:	WS172	**Depth (m):**	0.20
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Moisture Content (%)	9.6

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		**MC**

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

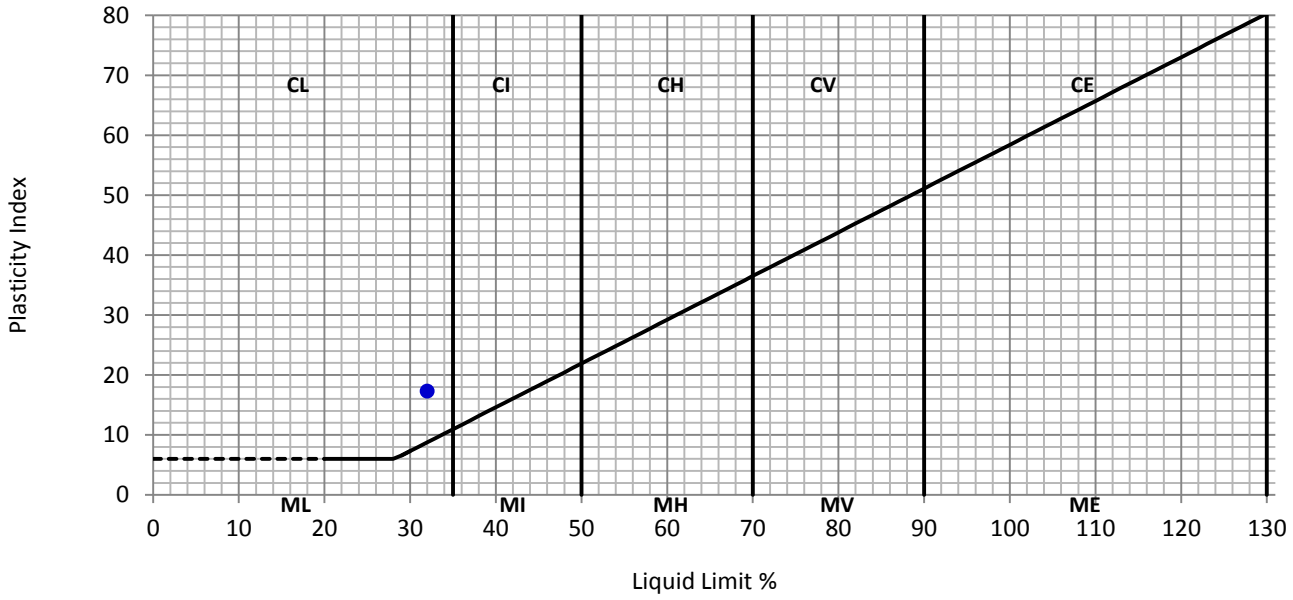
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29313		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	WS172	**Depth (m):**	0.20
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Liquid Limit	32	%
Plastic Limit	15	%
Plasticity Index	17	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	28	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29314		

Site Ref / Hole ID:	WS176	**Depth (m):**	1.80
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	08 September 2022

Test Results

Moisture Content (%)	29.3

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

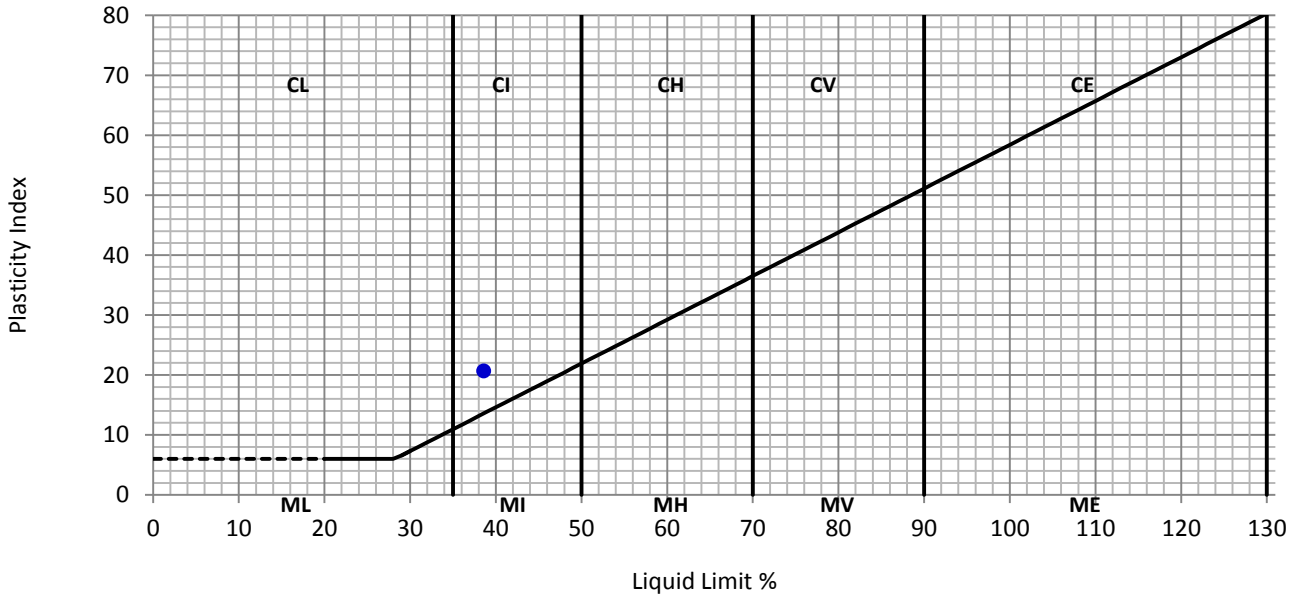
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29314		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	WS176	**Depth (m):**	1.80
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Liquid Limit	39	%
Plastic Limit	18	%
Plasticity Index	21	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	20	%



Remarks:

QA Ref.					
BS1377 - 2 Rev. 3.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver: A Grogan	Date: 08/09/2022	Fig. **ATT**
			A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29315		

Site Ref / Hole ID:	WS181	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Moisture Content (%)	14.3

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		**MC**

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

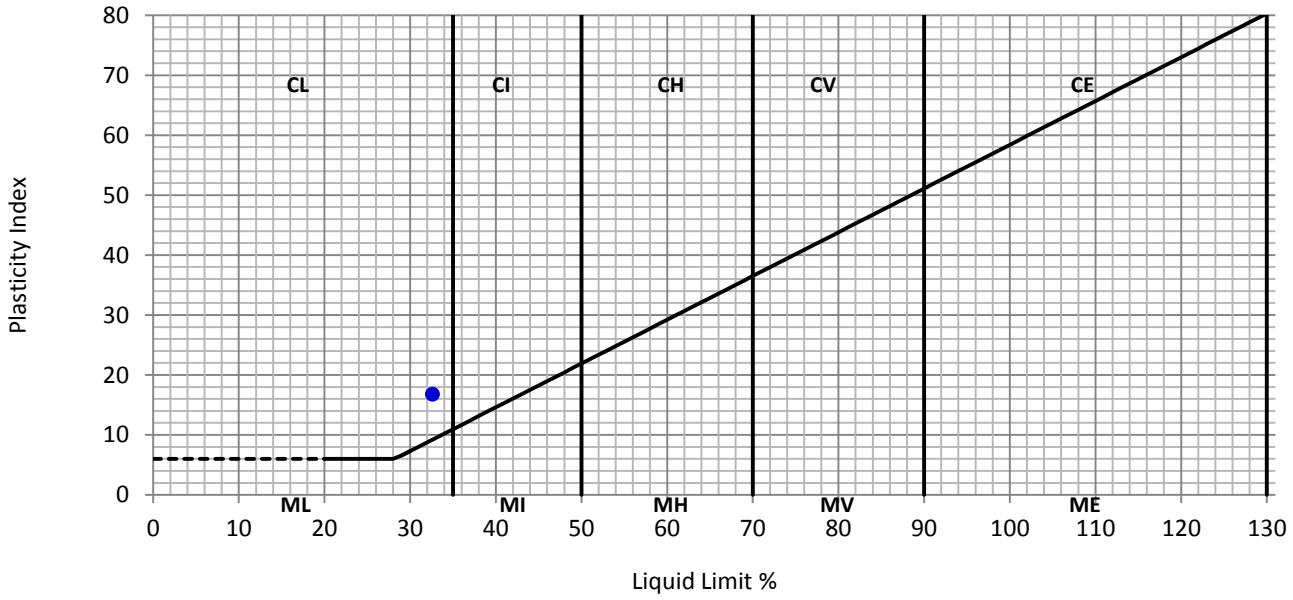
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29315		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	WS181	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07/0/2022

Test Results

Liquid Limit	33	%
Plastic Limit	16	%
Plasticity Index	17	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	24	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29316		

Site Ref / Hole ID:	WS 187	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Moisture Content (%)	26.0

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

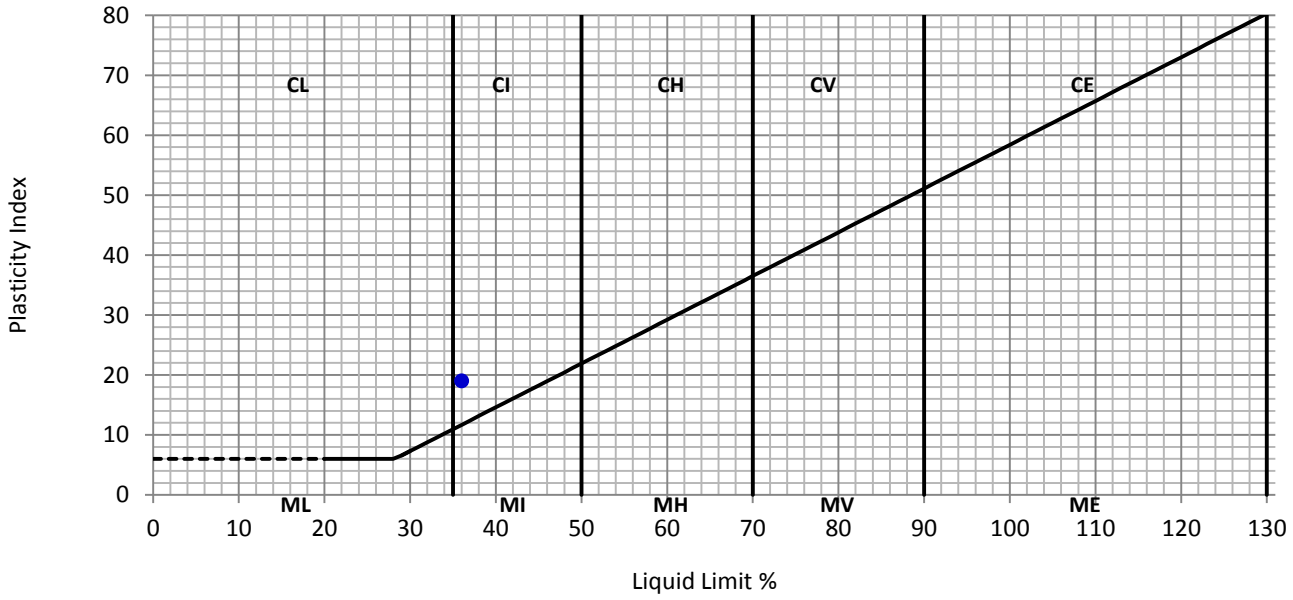
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29316		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	WS 187	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Liquid Limit	36	%
Plastic Limit	17	%
Plasticity Index	19	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	15	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29317		

Site Ref / Hole ID:	WS 271	**Depth (m):**	0.20
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Moisture Content (%)	15.2

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver K Lester	Date 09/08/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	K Lester, Senior Technician		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

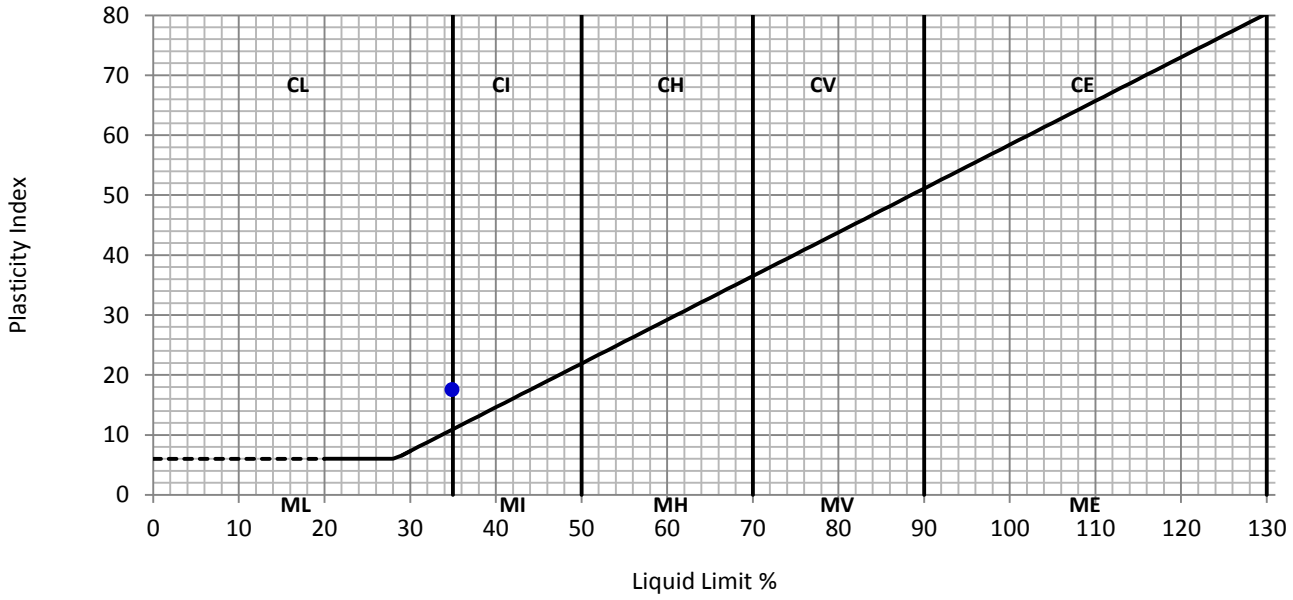
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29317		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	WS 271	**Depth (m):**	0.20
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	08 September 2022

Test Results

Liquid Limit	35	%
Plastic Limit	17	%
Plasticity Index	18	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	6	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	K Lester	09/08/2022	**ATT**
		K Lester, Senior Technician		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29318		

Site Ref / Hole ID:	SA202	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Moisture Content (%)	18.3

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

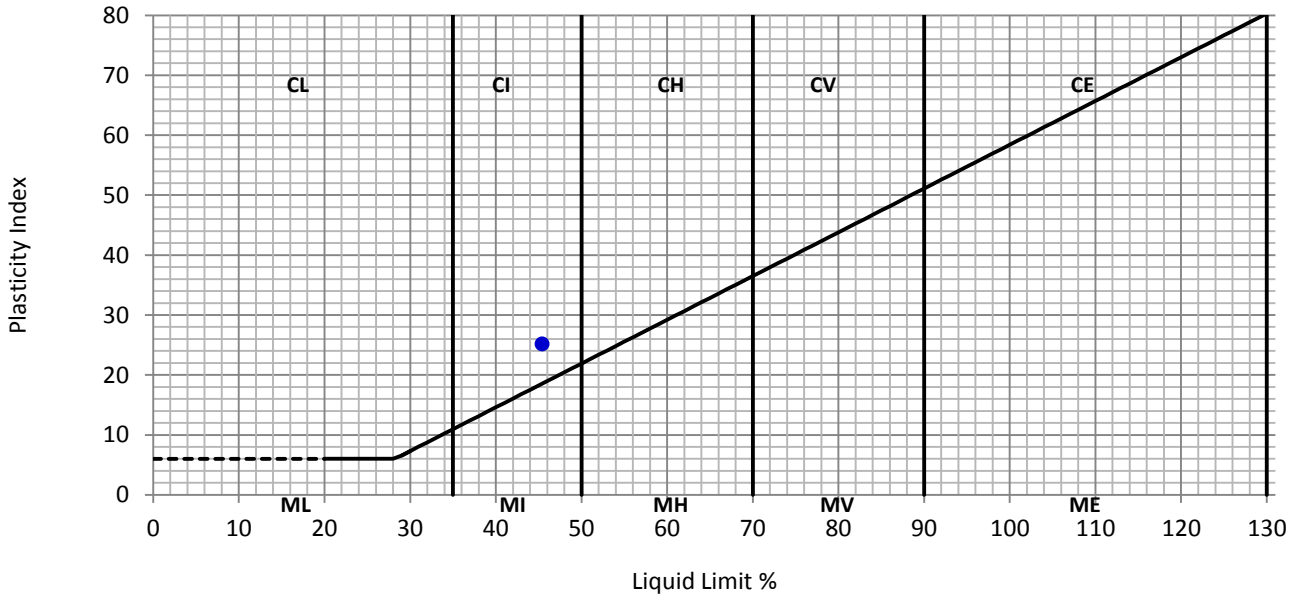
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29318		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA202	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Liquid Limit	45	%
Plastic Limit	20	%
Plasticity Index	25	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	23	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

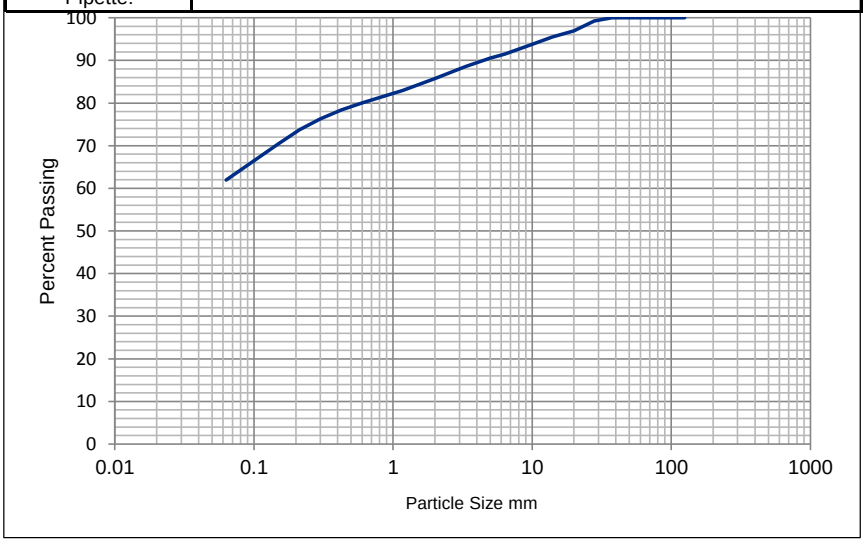
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Me	**Address**	7 Beddau Way
ATS Sample No:	29318		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA202	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	**BS1377**
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	99
20	97
14	96
10	94
6.3	91
5.0	91
3.35	89
2.00	86
1.18	83
0.600	80
0.425	78
0.300	76
0.212	74
0.150	70
0.063	62

Preparation / Pretreatment	
Sieve:	Pre dried
Pipette:	



Sample Portions		Particle Density Mg/m3	Uniformity Coefficient
Cobbles / Boulders	0	N/A	D_{60} / D_{10}
Gravel	14		
Sand	24	**Dry mass of sample, kg**	
Silt / Clay	62	8.4	n/a

Remarks:

QA Ref.					
BS1377 - 4 Rev. 2.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver: G Llewellyn	Date: 08/09/2022	Fig: **PSD**
			G Llewellyn, Senior Technician		

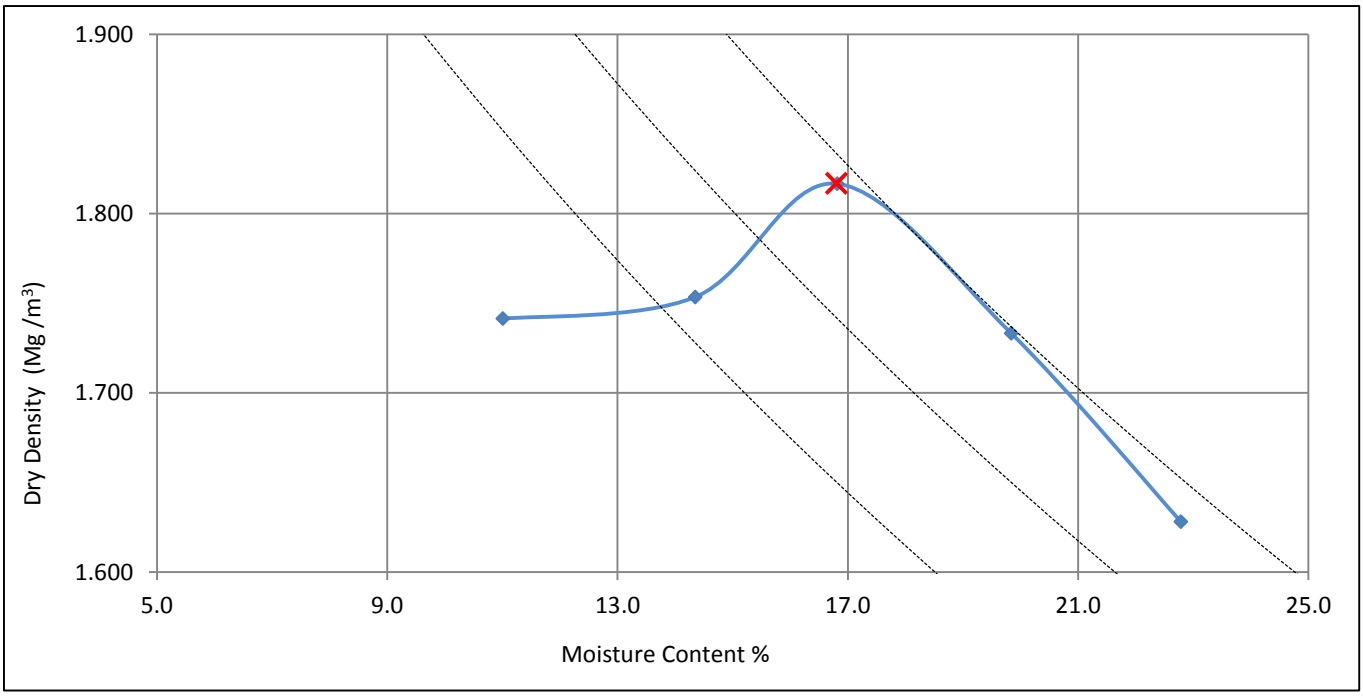
TEST REPORT

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS1377:Part 4:1990

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29318		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA202	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, separate specimens tested

Particle Density, Mg/m^3	2.65	assumed
Material > 37.5mm	0	%
Material < 37.5mm > 20mm	3	%

Derived Parameters ×	
Maximum Dry Density, Mg/m^3	1.82
Optimum Moisture Content %	16.8

Remarks:

QA Ref.					
BS1377 - 4	**Apex Testing Solutions**	Approver	Date	Fig.
Rev. 2.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	A Grogan	0/09/2022	**COMP**
			A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Merthyr	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29319		

Site Ref / Hole ID:	SA110	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022

Test Results

Moisture Content (%)	11.3

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

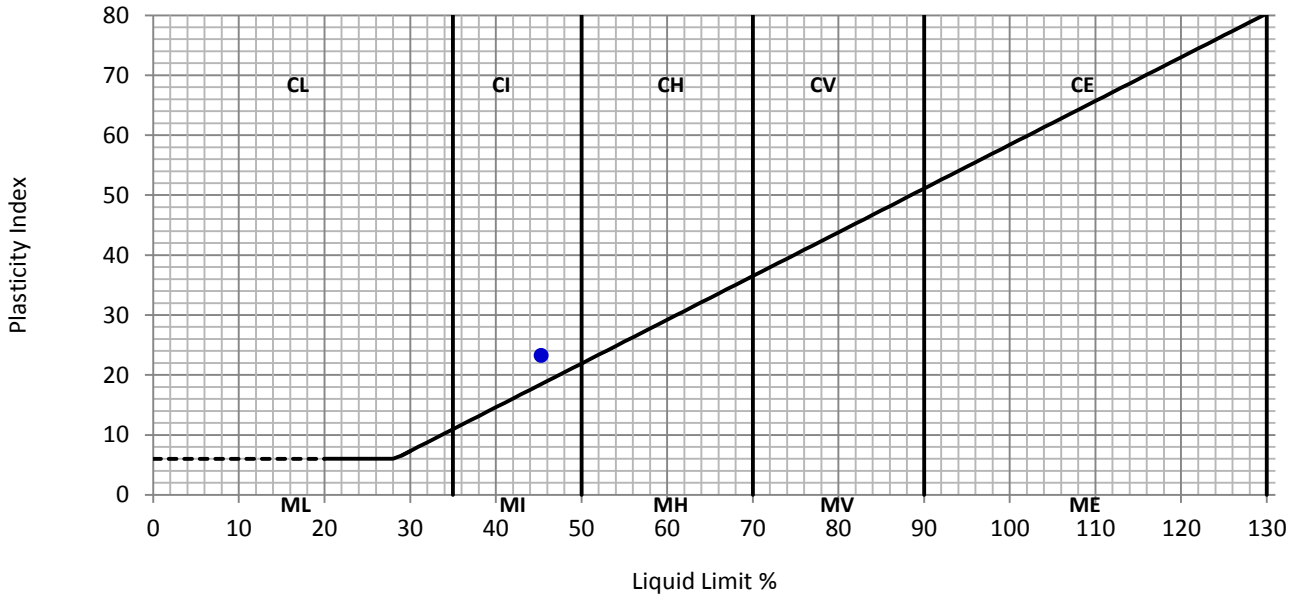
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29319		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA110	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Liquid Limit	45	%
Plastic Limit	22	%
Plasticity Index	23	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	38	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

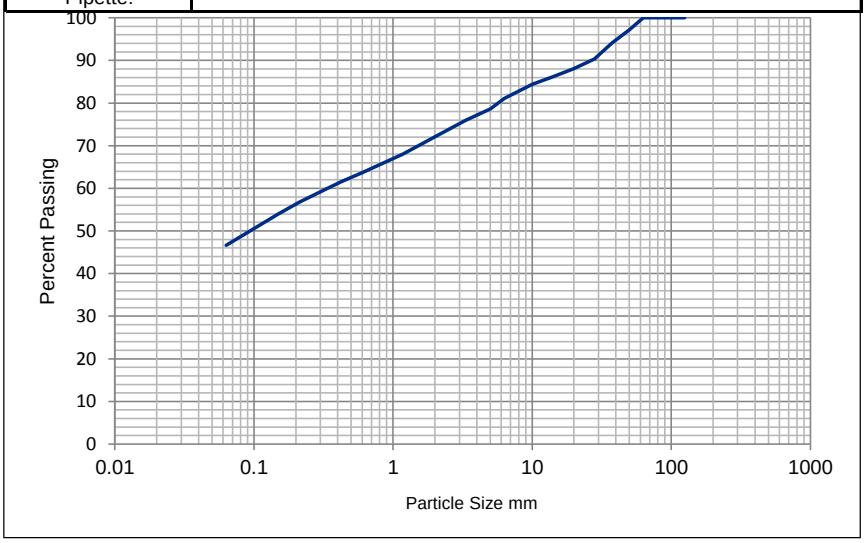
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Me	**Address**	7 Beddau Way
ATS Sample No:	29319		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA110	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	**BS1377**
Date Received:	05 September 2022	**Date Tested:**	

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
50	97
37.5	94
28	90
20	88
14	86
10	84
6.3	81
5.0	79
3.35	76
2.00	72
1.18	68
0.600	64
0.425	62
0.300	59
0.212	57
0.150	54
0.063	47

Preparation / Pretreatment	
Sieve:	Pre dried
Pipette:	



Sample Portions		Particle Density Mg/m3	Uniformity Coefficient
Cobbles / Boulders	0	N/A	D_{60} / D_{10}
Gravel	28		
Sand	25	**Dry mass of sample, kg**	
Silt / Clay	47	9.0	n/a

Remarks:

QA Ref.					
BS1377 - 4 Rev. 2.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver: G Llewellyn	Date: 08/09/2022	Fig: **PSD**
			G Llewellyn, Senior Technician		

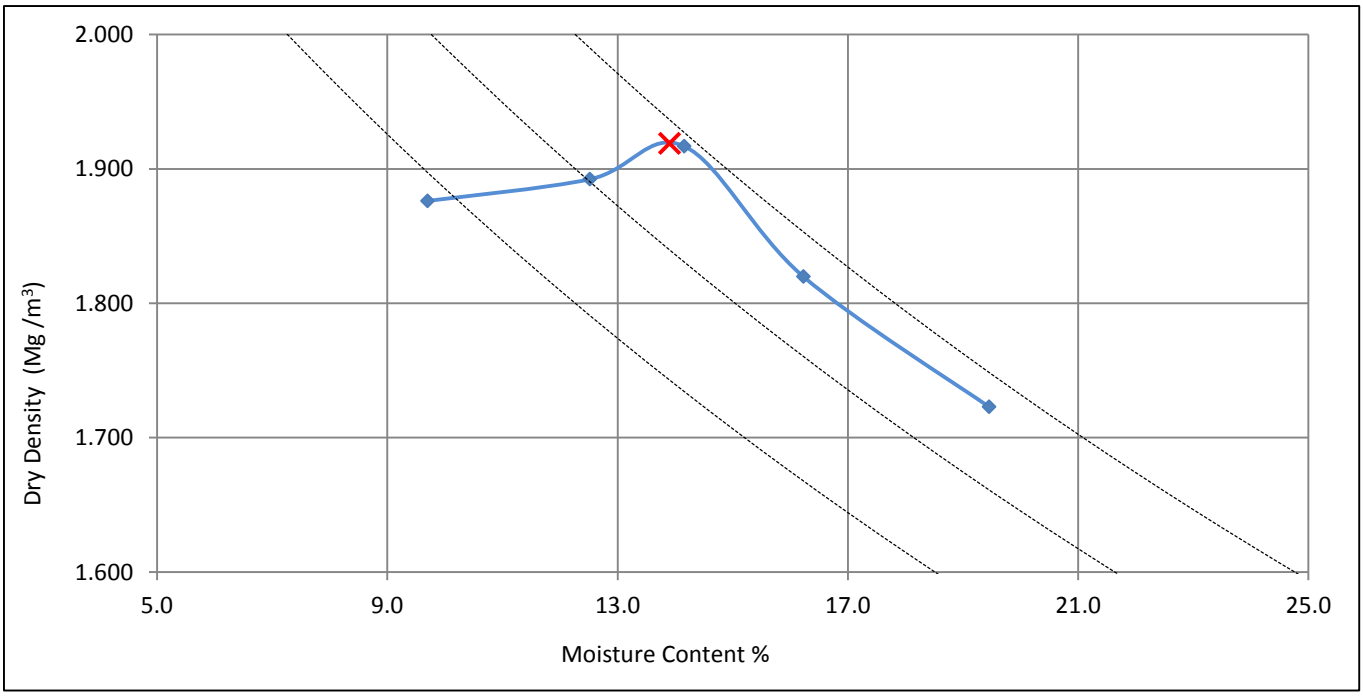
TEST REPORT

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS1377:Part 4:1990

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29319		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA110	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, separate specimens tested

Particle Density, Mg/m^3	2.65	assumed
Material > 37.5mm	6	%
Material < 37.5mm > 20mm	6	%

Derived Parameters ×	
Maximum Dry Density, Mg/m^3	1.92
Optimum Moisture Content %	13.9

Remarks:

QA Ref.					
BS1377 - 4	Apex Testing Solutions	Approver	Date	Fig.
Rev. 2.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	A Grogan	08/09/2022	COMP
	7771	A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29320		

Site Ref / Hole ID:	SA103	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	08 September 2022

Test Results

Moisture Content (%)	12.8

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		**MC**

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

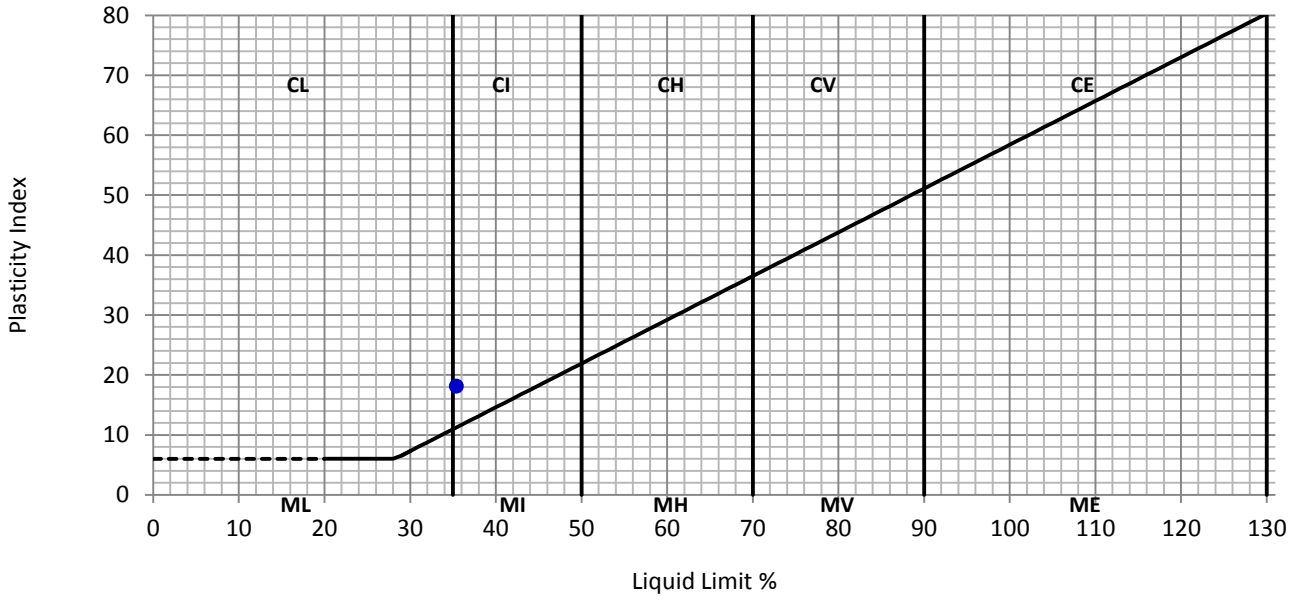
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29320		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA103	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Liquid Limit	35	%
Plastic Limit	17	%
Plasticity Index	18	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	27	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	08/09/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

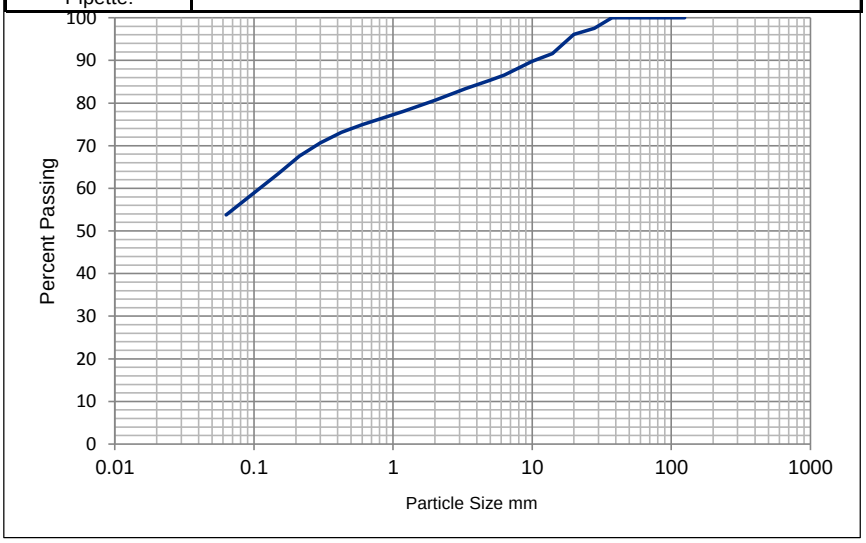
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Me	**Address**	7 Beddau Way
ATS Sample No:	29320		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA103	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	**BS1377**
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	98
20	96
14	92
10	90
6.3	87
5.0	85
3.35	83
2.00	81
1.18	78
0.600	75
0.425	73
0.300	71
0.212	68
0.150	63
0.063	54

Preparation / Pretreatment	
Sieve:	Pre dried
Pipette:	



Sample Portions		Particle Density Mg/m3	Uniformity Coefficient
Cobbles / Boulders	0	N/A	D_{60} / D_{10}
Gravel	19		
Sand	27	**Dry mass of sample, kg**	
Silt / Clay	54	8.1	n/a

Remarks:

QA Ref.					
BS1377 - 4 Rev. 2.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver: G Llewellyn	Date: 08/09/2022	Fig: **PSD**
			G Llewellyn, Senior Technician		

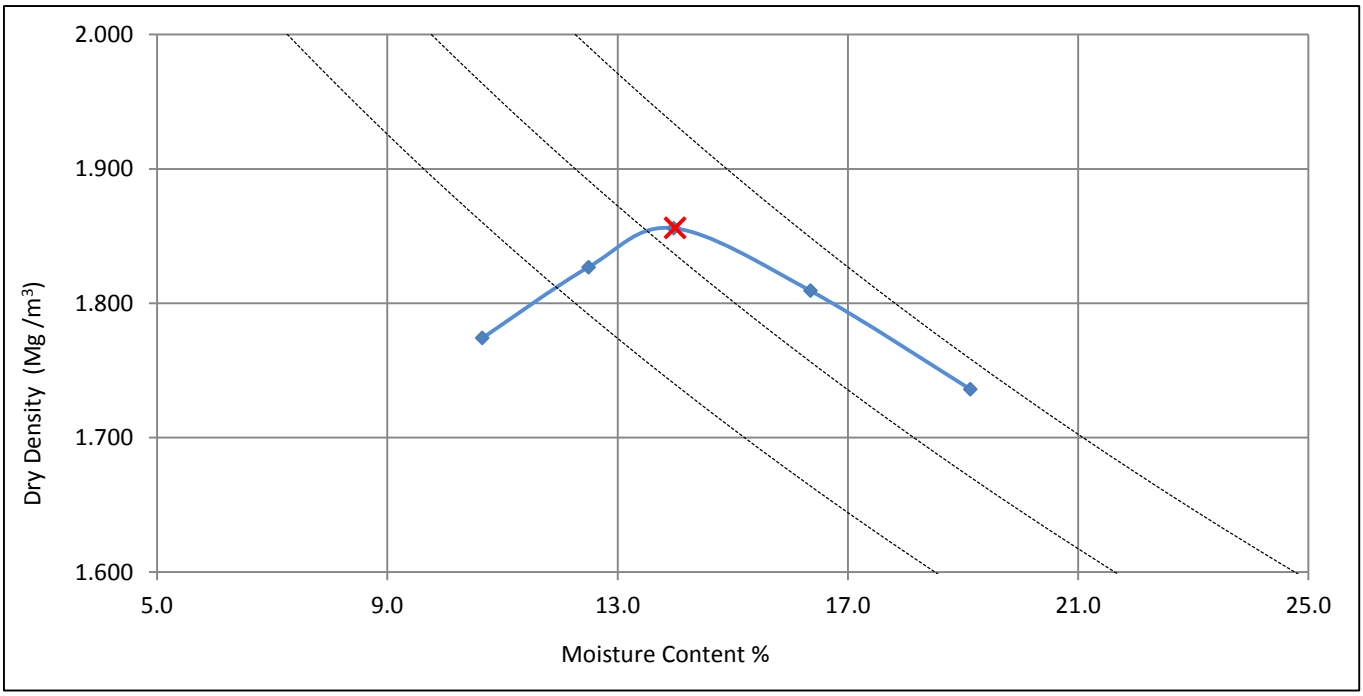
TEST REPORT

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS1377:Part 4:1990

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29320		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA103	**Depth (m):**	1.00
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	06 September 2022



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, separate specimens tested

Particle Density, Mg/m^3	2.65	assumed
Material > 37.5mm	0	%
Material < 37.5mm > 20mm	4	%

Derived Parameters ×	
Maximum Dry Density, Mg/m^3	1.86
Optimum Moisture Content %	14.0

Remarks:

QA Ref.					
BS1377 - 4	Apex Testing Solutions Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver A Grogan	Date 08/09/2022	Fig. COMP
Rev. 2.0			A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	29321		

Site Ref / Hole ID:	SA205	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	08 September 2022

Test Results

Moisture Content (%)	19.6

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 08/09/2022	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

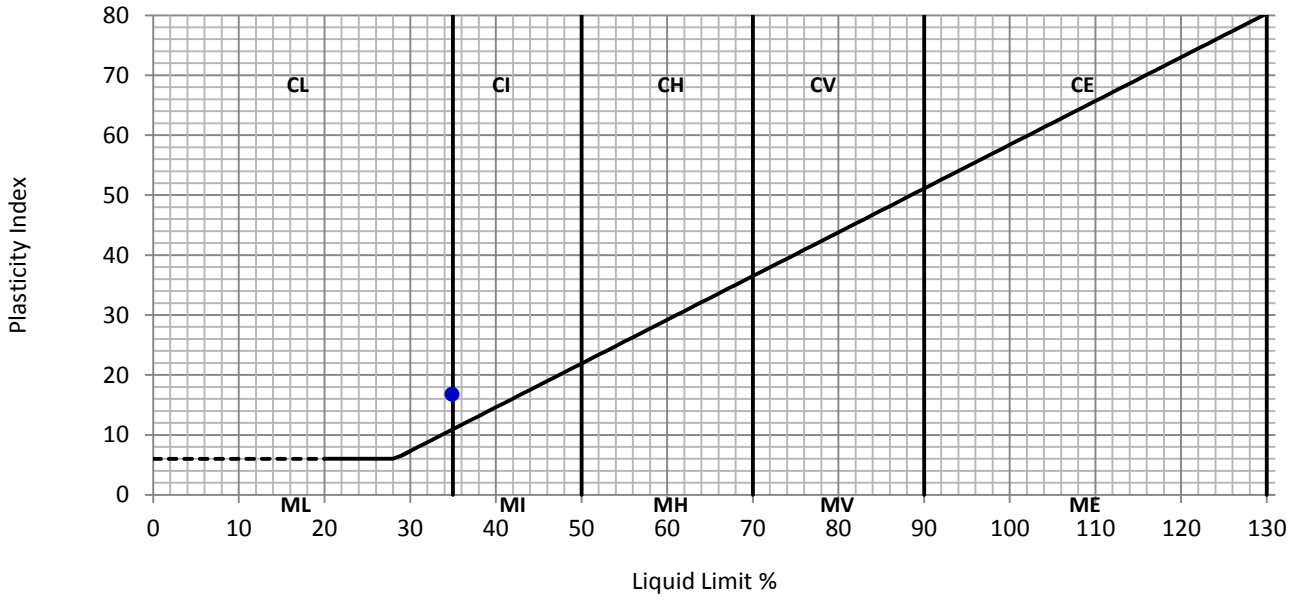
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29321		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA205	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022

Test Results

Liquid Limit	35	%
Plastic Limit	18	%
Plasticity Index	17	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	27	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	A Grogan	31/08/2022	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

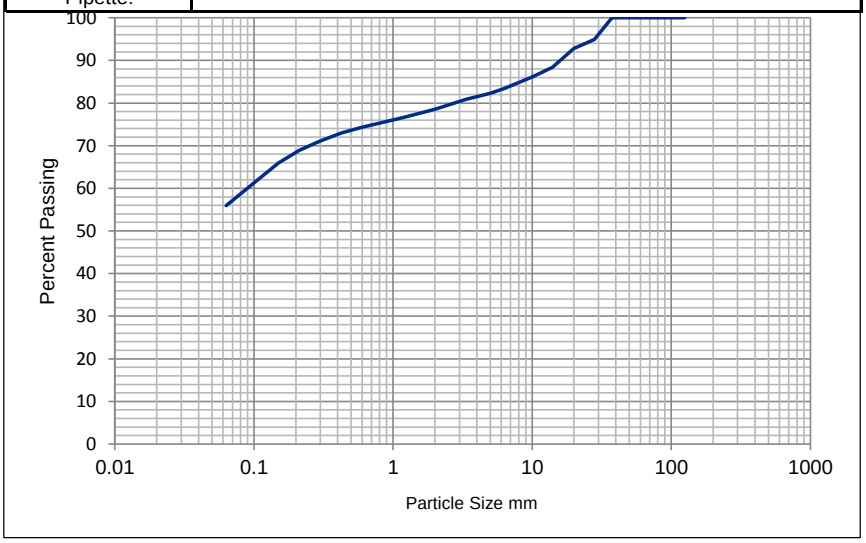
Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School, Me	**Address**	7 Beddau Way
ATS Sample No:	29321		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA205	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Gen
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	**BS1377**
Date Received:	05 September 2022	**Date Tested:**	08 September 2022

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	95
20	93
14	88
10	86
6.3	83
5.0	82
3.35	81
2.00	79
1.18	77
0.600	74
0.425	73
0.300	71
0.212	69
0.150	66
0.063	56

Preparation / Pretreatment	
Sieve:	Pre dried
Pipette:	



Sample Portions		Particle Density Mg/m3	Uniformity Coefficient
Cobbles / Boulders	0	N/A	D_{60} / D_{10}
Gravel	21		
Sand	23	**Dry mass of sample, kg**	
Silt / Clay	56	7.5	n/a

Remarks:

QA Ref.					
BS1377 - 4 Rev. 2.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver: G Llewellyn	Date: 08/09/2022	Fig: **PSD**
			G Llewellyn, Senior Technician		

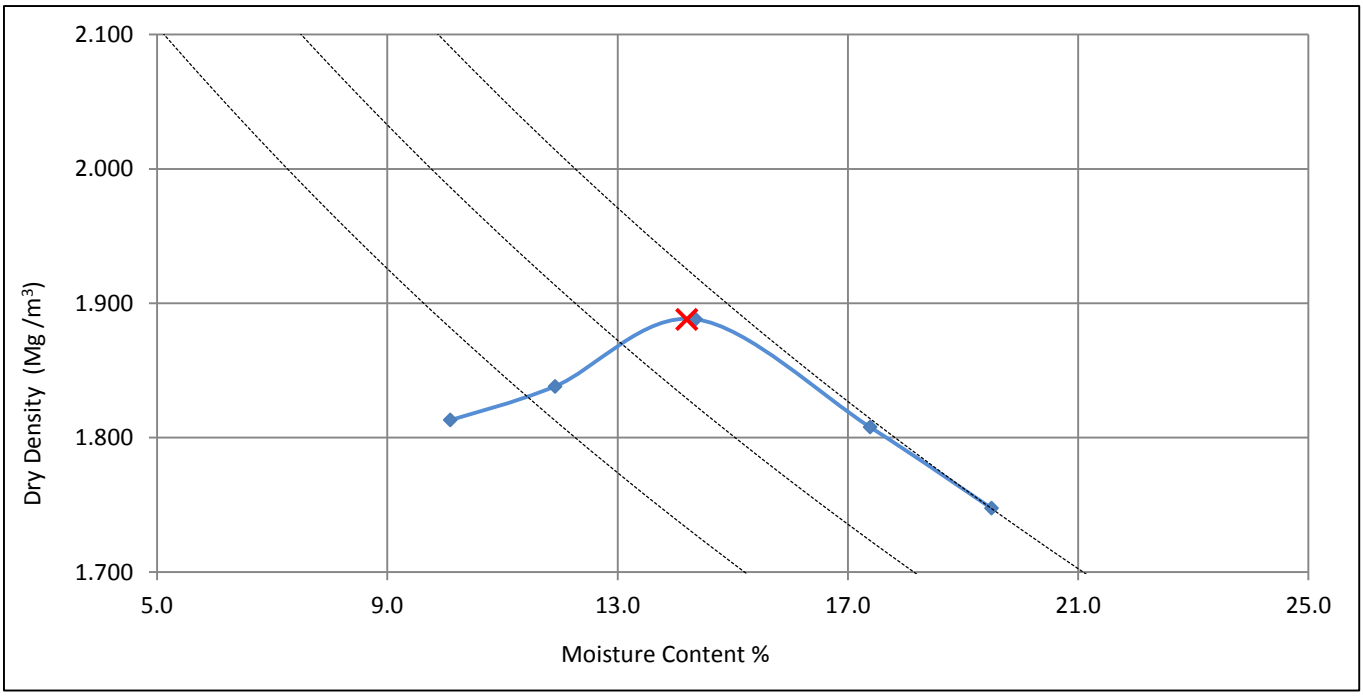
TEST REPORT

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS1377:Part 4:1990

Project No:	D22419	**Client:**	Integral Geotechnique
Project Name:	14075 - Bishop Hedley School,	**Address:**	7 Beddau Way
ATS Sample No:	29321		Castlegate Business Park
			Caerphilly
			CF83 2AX

Site Ref / Hole ID:	SA205	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey slightly sandy slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	02 September 2022	**Material Supplier:**	Site Gen
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 September 2022	**Date Tested:**	07 September 2022



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, separate specimens tested

Particle Density, Mg/m^3	2.65	assumed
Material > 37.5mm	0	%
Material < 37.5mm > 20mm	7	%

Derived Parameters ×	
Maximum Dry Density, Mg/m^3	1.89
Optimum Moisture Content %	14.2

Remarks:

QA Ref.					
BS1377 - 4	**Apex Testing Solutions**	Approver	Date	Fig.
Rev. 2.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	A Grogan	08/09/2022	**COMP**
			A Grogan, Laboratory Manager		

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Apex Testing Solutions Limited
Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ

Attention: Andrew Grogan

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 September 2022
Customer:	Apex Testing Solutions Limited
Sample Delivery Group (SDG):	220906-32
Your Reference:	D22419
Location:	Bishop Hedley School
Report No:	660941
Order Number:	ATS 1713

We received 9 samples on Tuesday September 06, 2022 and 9 of these samples were scheduled for analysis which was completed on Monday September 12, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220906-32 **Report Number:** 660941 **Superseded Report:**
Client Ref.: D22419 **Location:** Bishop Hedley School

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
26831934	SA111		2.00	05/09/2022
26831932	SA209		1.50	05/09/2022
26831912	SA211		2.10	05/09/2022
26831940	SA212		1.50	05/09/2022
26831918	WS172		0.20	05/09/2022
26831928	WS176		1.80	05/09/2022
26831937	WS181		1.00	05/09/2022
26831925	WS187		1.50	05/09/2022
26831923	WS271		0.20	05/09/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 220906-32 **Report Number:** 660941 **Superseded Report:**
Client Ref.: D22419 **Location:** Bishop Hedley School

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

		Lab Sample No(s)	26831934	26831932	26831912	26831940	26831918	26831928	26831937	26831925	26831923
		Customer Sample Reference	SA111	SA209	SA211	SA212	WS172	WS176	WS181	WS187	WS271
		AGS Reference									
		Depth (m)	2.00	1.50	2.10	1.50	0.20	1.80	1.00	1.50	0.20
		Container	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
		Sample Type	S	S	S	S	S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 9	X	X	X	X	X	X	X	X	X
pH	All	NDPs: 0 Tests: 9	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 9	X	X	X	X	X	X	X	X	X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
26831934	SA111	2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
26831932	SA209	1.50	Dark Brown	Silty Clay Loam	Stones	Vegetation
26831912	SA211	2.10	Dark Brown	Silty Clay Loam	Stones	Vegetation
26831940	SA212	1.50	Dark Brown	Clay	Stones	None
26831918	WS172	0.20	Light Brown	Sandy Clay	Stones	None
26831928	WS176	1.80	Dark Brown	Silty Clay Loam	Stones	None
26831937	WS181	1.00	Dark Brown	Clay	Stones	Vegetation
26831925	WS187	1.50	Dark Brown	Sandy Loam	Stones	Vegetation
26831923	WS271	0.20	Light Brown	Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 220906-32 **Report Number:** 660941 **Superseded Report:**
Client Ref.: D22419 **Location:** Bishop Hedley School

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			SA111	SA209	SA211	SA212	WS172	WS176
Depth (m)			2.00	1.50	2.10	1.50	0.20	1.80
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			05/09/2022	05/09/2022	05/09/2022	05/09/2022	05/09/2022	05/09/2022
Sample Time			-	-	-	-	-	-
Date Received			06/09/2022	06/09/2022	06/09/2022	06/09/2022	06/09/2022	06/09/2022
SDG Ref			220906-32	220906-32	220906-32	220906-32	220906-32	220906-32
Lab Sample No.(s)			26831934	26831932	26831912	26831940	26831918	26831928
AGS Reference								
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	9.3	19	15	11	7.2	19
pH	1 pH Units	TM133	8.72 M	7.23 M	8.48 M	8.06 M	8.85 M	7.99 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0113 M	0.0188 M	0.0219 M	0.0149 M	0.0087 M	0.023 M

15:43:03 12/09/2022

Validated

CERTIFICATE OF ANALYSIS

SDG: 220906-32 **Report Number:** 660941 **Superseded Report:**
Client Ref.: D22419 **Location:** Bishop Hedley School

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			WS181	WS187	WS271			
Depth (m)			1.00	1.50	0.20			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			05/09/2022	05/09/2022	05/09/2022			
Sample Time			-	-	-			
Date Received			06/09/2022	06/09/2022	06/09/2022			
SDG Ref			220906-32	220906-32	220906-32			
Lab Sample No.(s)			26831937	26831925	26831923			
AGS Reference								
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	12	24	13			
pH	1 pH Units	TM133	8.76 M	8.14 M	7.13 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.01 M	0.0552 M	0.0137 M			

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM243		Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM).

CERTIFICATE OF ANALYSIS

SDG: 220906-32 **Report Number:** 660941 **Superseded Report:**
Client Ref.: D22419 **Location:** Bishop Hedley School

Test Completion Dates

Lab Sample No(s)	26831934	26831932	26831912	26831940	26831918	26831928	26831937	26831925	26831923
Customer Sample Ref.	SA111	SA209	SA211	SA212	WS172	WS176	WS181	WS187	WS271
AGS Ref.									
Depth	2.00	1.50	2.10	1.50	0.20	1.80	1.00	1.50	0.20
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	12-Sep-2022	12-Sep-2022	12-Sep-2022	12-Sep-2022	12-Sep-2022	12-Sep-2022	12-Sep-2022	12-Sep-2022	12-Sep-2022
pH	08-Sep-2022	08-Sep-2022	08-Sep-2022	08-Sep-2022	08-Sep-2022	08-Sep-2022	08-Sep-2022	08-Sep-2022	08-Sep-2022
Sample description	07-Sep-2022	07-Sep-2022	07-Sep-2022	07-Sep-2022	07-Sep-2022	07-Sep-2022	07-Sep-2022	07-Sep-2022	07-Sep-2022

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24944		

Site Ref / Hole ID:	TT2	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Window
Sampling Certificate Received:	No	**Material Description:**	Grey slightly gravelly sandy CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:		**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	06 July 2021

Test Results

Moisture Content (%)	19.6

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver	Date	Fig
EN ISO 17892-1:2014 E	7771	A Grogan	09/07/2021	**MC**
		A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

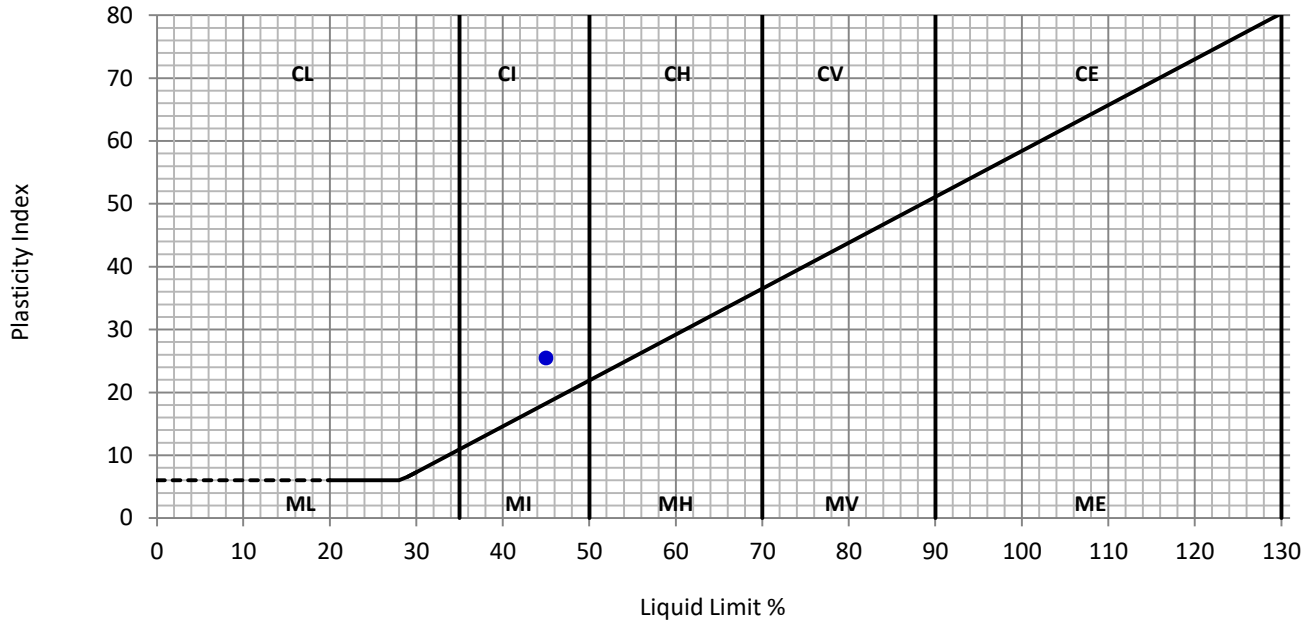
Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24944		

Site Ref / Hole ID:	TT2	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Window
Sampling Certificate Received:	No	**Material Description:**	Grey slightly gravelly sandy CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:		**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	08 July 2021

Test Results

Liquid Limit	45	%
Plastic Limit	20	%
Plasticity Index	25	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	13	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 2.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	L Davis	09/07/2021	**ATT**
		L Davis, Quality Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24956		

Site Ref / Hole ID:	TP13	**Depth (m):**	2.40 - 2.50
Sample No:		**Sample Type:**	Window
Sampling Certificate Received:	No	**Material Description:**	Greyish brown slightly gravelly sandy CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:		**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	06 July 2021

Test Results

Moisture Content (%)	10.5

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver	Date	Fig
EN ISO 17892-1:2014 E	7771	A Grogan	09/07/2021	**MC**
		A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

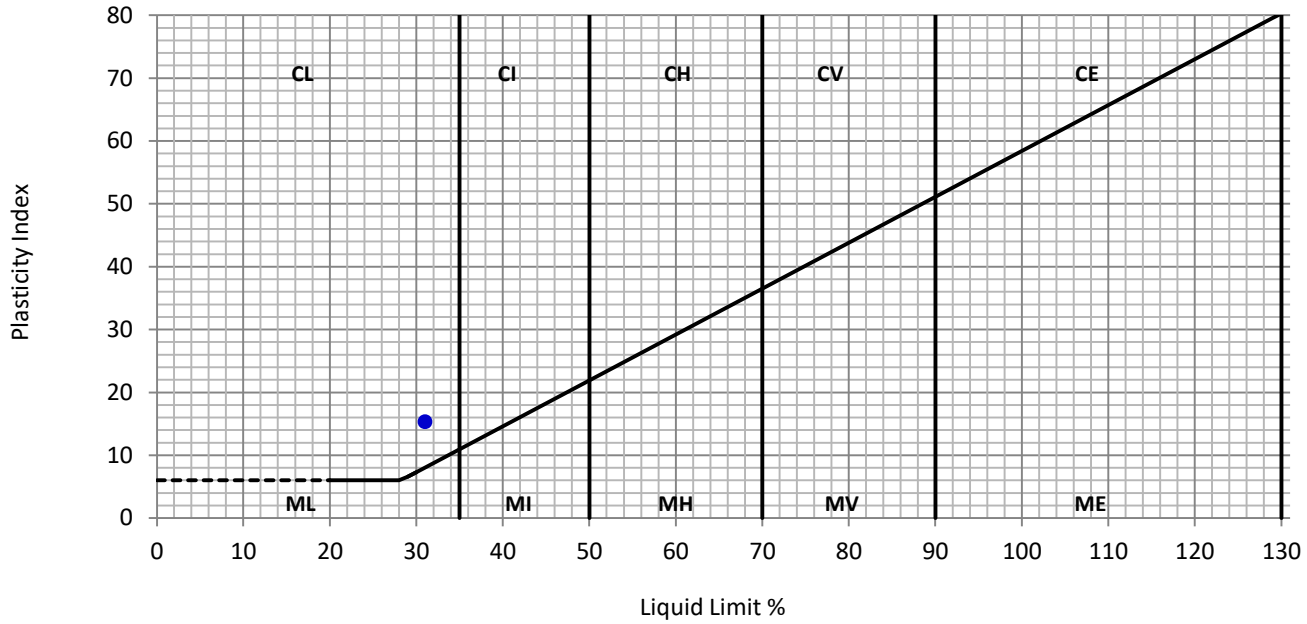
Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24956		

Site Ref / Hole ID:	TP13	**Depth (m):**	2.40 - 2.50
Sample No:		**Sample Type:**	Window
Sampling Certificate Received:	No	**Material Description:**	Greyish brown slightly gravelly sandy CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:		**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	08 July 2021

Test Results

Liquid Limit	31	%
Plastic Limit	16	%
Plasticity Index	15	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	37	%



Remarks:

QA Ref.				
BS1377 - 2 Rev. 2.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	Approver L Davis	Date 09/07/2021	Fig. **ATT**
		L Davis, Quality Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24955		

Site Ref / Hole ID:	TP11	**Depth (m):**	2.90 - 3.00
Sample No:		**Sample Type:**	Window
Sampling Certificate Received:	No	**Material Description:**	Grey brown slighlty sandy CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:		**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	12 July 2021

Test Results

Moisture Content (%)	28.4

Remarks:

QA Ref.	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	Approver A Grogan	Date 12/07/2021	Fig **MC**
EN ISO 17892-1:2014 E	7771	A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

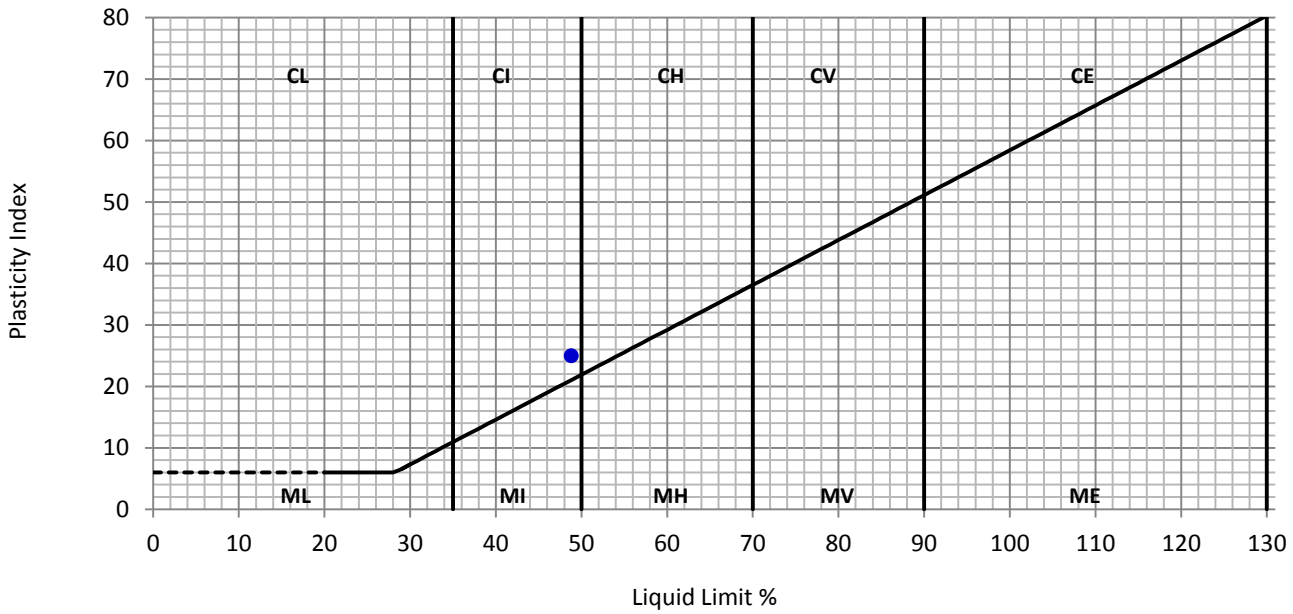
Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24955		

Site Ref / Hole ID:	TP11	**Depth (m):**	2.90 - 3.00
Sample No:		**Sample Type:**	Window
Sampling Certificate Received:	No	**Material Description:**	Grey brown slighlty sandy CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:		**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	12 July 2021

Test Results

Liquid Limit	49	%
Plastic Limit	24	%
Plasticity Index	25	%

Preparation:	4.2.3 Natural Specimen
Proportion retained on 425µm sieve:	0 %



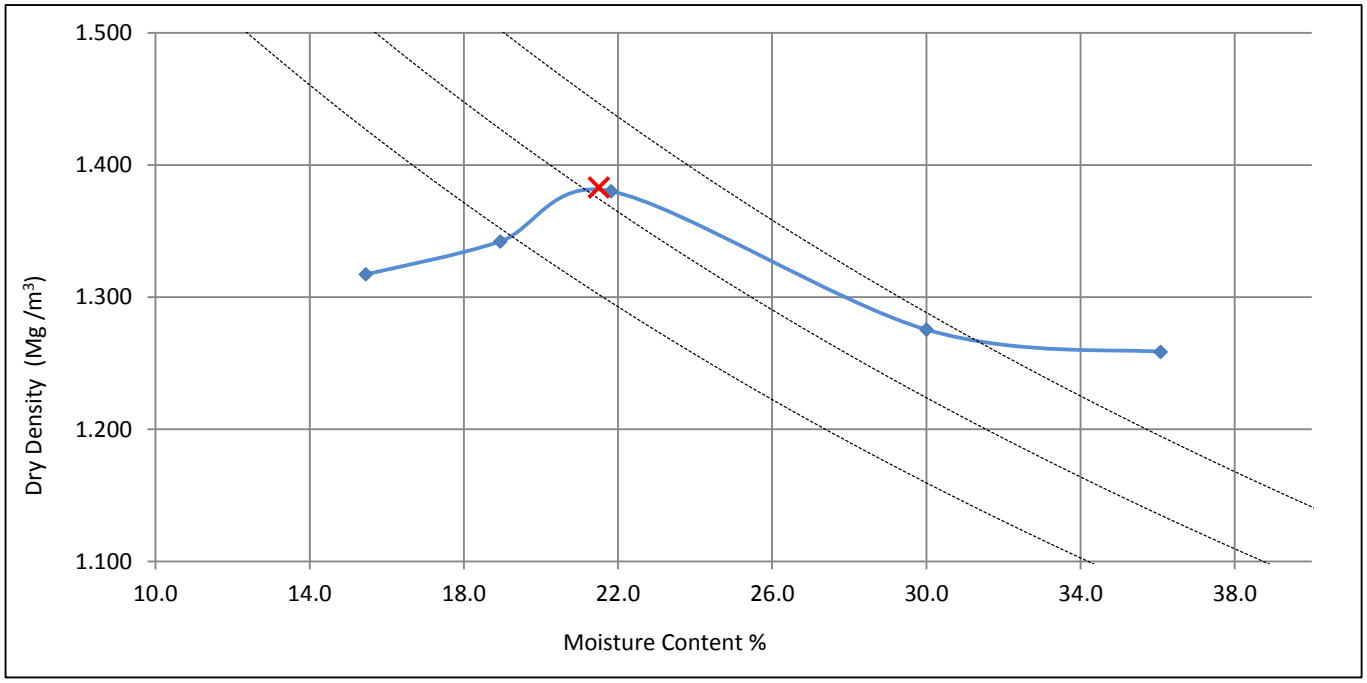
Remarks:

QA Ref.			Approver	Date	Fig.
BS1377 - 2 Rev. 2.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	L Davis	12/07/2021	**ATT**
			L Davis, Quality Manager		

TEST REPORT
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP
BS1377:Part 4:1990: Clause 3.4

Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24954		

Site Ref / Hole ID:	TP9	**Depth (m):**	1.50-1.60
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Black silty sandy GRAVEL
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unknown	**Material Supplier:**	Site
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	12 July 2021



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, single specimen tested

Particle Density, Mg/m³	2.10	assumed
Material > 37.5mm	20	%
Material < 37.5mm > 20mm	9	%

Derived Parameters ×	
Maximum Dry Density, Mg/m³	1.38
Optimum Moisture Content %	21.5

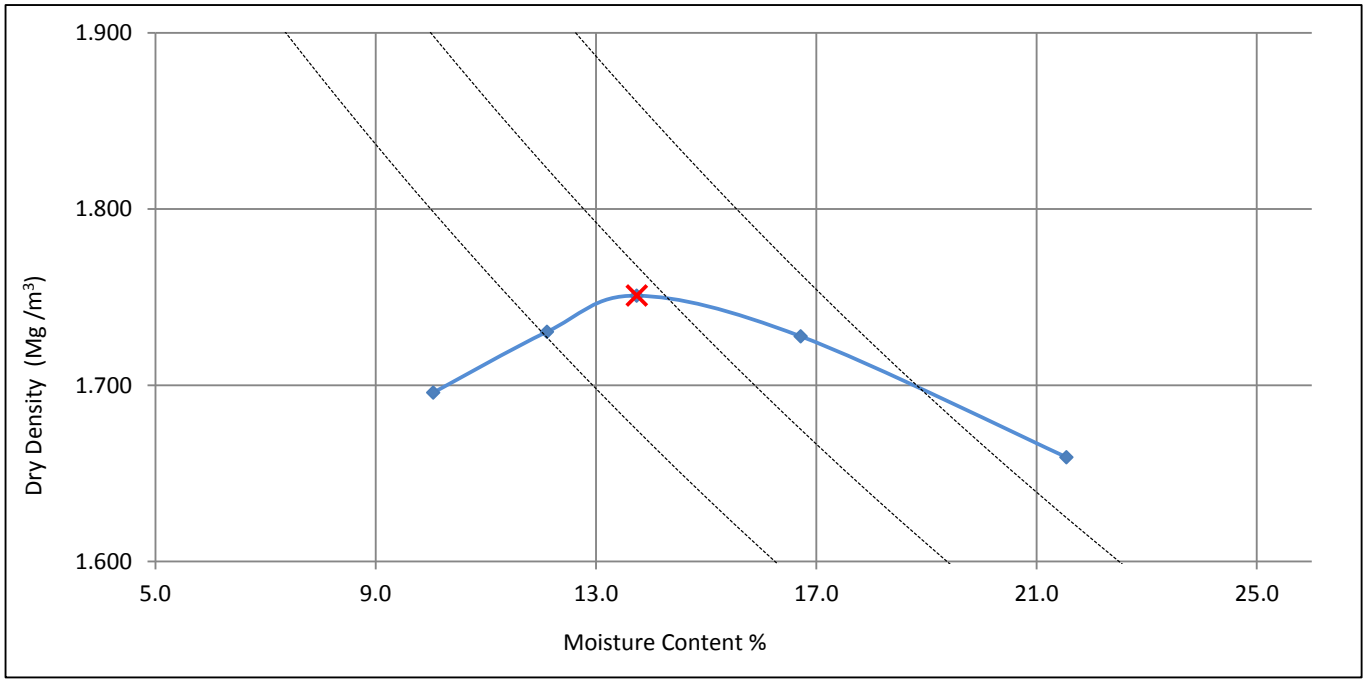
Remarks: Natural MC = 36.1%, Tested as an X sample due to oversize material

QA Ref.	Apex Testing Solutions	Approver	Date	Fig.
BS1377 - 4 Rev. 2.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	L Davis L Davis, Quality Manager	12/07/2021	COMP

TEST REPORT
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP
BS1377:Part 4:1990: Clause 3.4

Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24944		

Site Ref / Hole ID:	TT2	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Grey slightly gravelly sandy CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unknown	**Material Supplier:**	Site
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	12 July 2021



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, single specimen tested

Particle Density, Mg/m^3	2.50	assumed
Material > 37.5mm	0	%
Material < 37.5mm > 20mm	0	%

Derived Parameters ×	
Maximum Dry Density, Mg/m^3	1.75
Optimum Moisture Content %	13.7

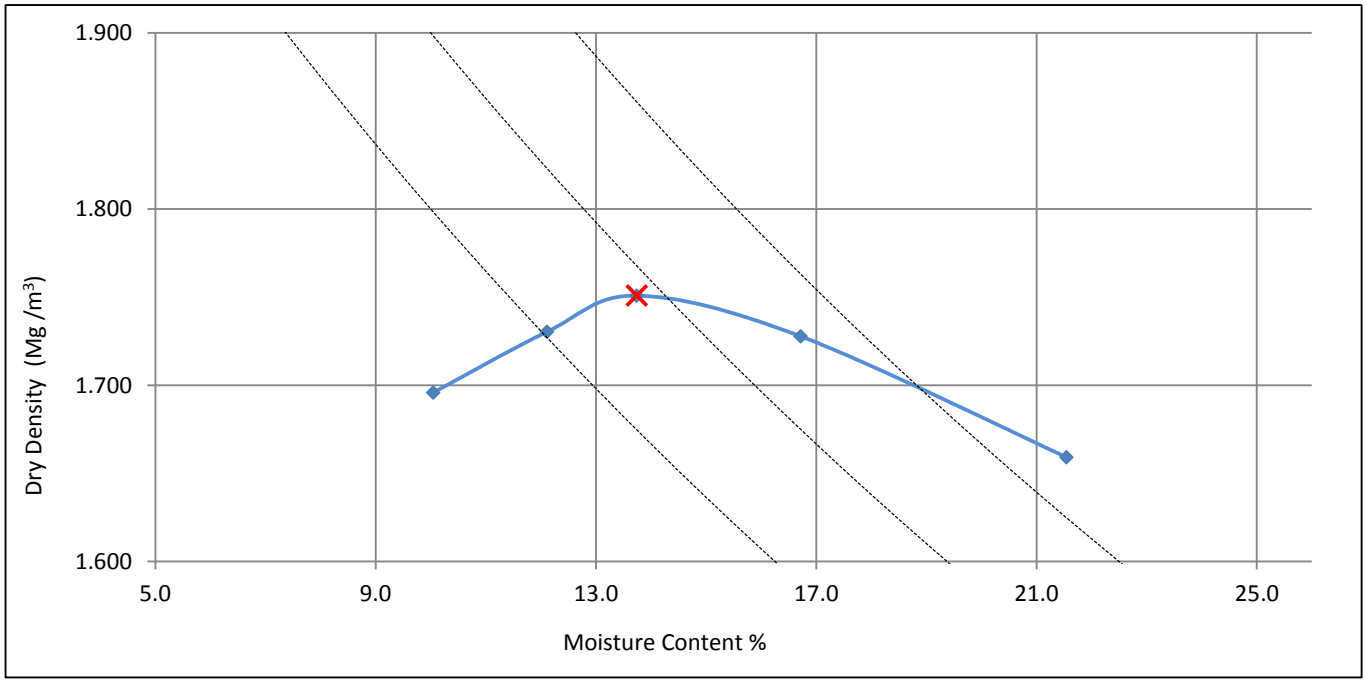
Remarks: Natural MC =19.6 %,

QA Ref.	Apex Testing Solutions	Approver	Date	Fig.
BS1377 - 4 Rev. 2.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	L Davis	12/07/2021	COMP
		L Davis, Quality Manager		

TEST REPORT
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP
BS1377:Part 4:1990: Clause 3.4

Project No:	D21362	**Client:**	Integral Geotechnique
Project Name:	Merthyr School	**Address:**	Integral House 7 Beddau Way Castlegate Business Park Caerphilly CF83 8PH
ATS Sample No:	24944		

Site Ref / Hole ID:	TT2	**Depth (m):**	1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Grey slightly gravelly sandy CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unknown	**Material Supplier:**	Site
Sampled By:	Client	**Specification:**	BS1377
Date Received:	05 July 2021	**Date Tested:**	12 July 2021



Test Method:	BS 1377: part 4: 1990: clause 3.3, 2.5kg rammer in a 1 litre mould
Preparation:	Original sample was oven dried @ 105 oC, single specimen tested

Particle Density, Mg/m^3	2.50	assumed
Material > 37.5mm	0	%
Material < 37.5mm > 20mm	0	%

Derived Parameters ×	
Maximum Dry Density, Mg/m^3	1.75
Optimum Moisture Content %	13.7

Remarks: Natural MC =19.6 %,

QA Ref.	Apex Testing Solutions	Approver	Date	Fig.
BS1377 - 4 Rev. 2.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	L Davis	12/07/2021	COMP
		L Davis, Quality Manager		

APPENDIX N

GROUNDWATER LEVEL MONITORING RESULTS

Groundwater Quality Monitoring Results

Site: Bishop Headley School
Job No: 14075
Date: 12.09.22
Weather: Cloudy
Name of Engineer: RH

Sample No.	Water level (mbgl)	Well Base Level (mbgl)	pH (pH Units)	Temperature (C)	Conductivity (uS/cm)	Total disolved solids (ppm)	Salinity (PSU)	Oxygen Reduction Potential (mV)	Disolved Oxygen (%)	Comments
WS 172	3.73	5.02								
WS 177	Dry	1.61								
WS 182	Dry	2.83								
WS 184	Dry	1.59								
WS 185	Dry	0.74								
WS 271	Dry	2.02								
WS 272	Dry	1.69								
WS 273	0.08	1.08								
WS 274	2.71	2.92								
WS 279	Dry	4.03								
WS 280	0.21	1.48								

Notes:

1. Instrument Used: HI Multiparameter
2. Typical Accuracy: Water

Temperature	+/- 0.15 ˚C	DO	+/- 1%	PSU	+/- 2% or '+/- 0.01 PSU
pH	+/- 0.01 pH	Conductivity	+/- 1% or '+/- 1uS/cm	Resistivity	+/- 1% or '+/- 1mg/L
ORP	+/- 1mV				

3. N/R = No Reading Taken

Intégral Géotechnique

Groundwater Quality Monitoring Results

Site:	Bishop Headley School	Job No:	14075
Date:	28.09.22	Weather:	Cloudy
Name of Engineer:	RH		

Sample No.	Water level (mbgl)	Well Base Level (mbgl)	pH (pH Units)	Temperature (C)	Conductivity (uS/cm)	Total disolved solids (ppm)	Salinity (PSU)	Oxygen Reduction Potential (mV)	Disolved Oxygen (%)	Comments
WS 172	3.75	5.02								
WS 177	Dry	1.61								
WS 182	Dry	2.83								
WS 184	Dry	1.59								
WS 185	Dry	0.74								
WS 271	Damp	2.02								
WS 272	Dry	1.69								
WS 273	0.14	1.08								
WS 274	2.67	2.92								
WS 279	Dry	4.03								
WS 280	0.25	1.48								

Notes:

1. Instrument Used: HI Multiparameter
2. Typical Accuracy: Water

Temperature	+/- 0.15 ˚C	DO	+/- 1%	PSU	+/- 2% or '+/- 0.01 PSU
pH	+/- 0.01 pH	Conductivity	+/- 1% or '+/- 1uS/cm	Resistivity	+/- 1% or '+/- 1mg/L
ORP	+/- 1mV				

3. N/R = No Reading Taken

Intégral Géotechnique

Groundwater Quality Monitoring Results

Site: Bishop Headley School
Job No: 14075
Date: 03.11.22
Weather: Light Rain
Name of Engineer: RH

Sample No.	Water level (mbgl)	Well Base Level (mbgl)	pH (pH Units)	Temperature (C)	Conductivity (uS/cm)	Total disolved solids (ppm)	Salinity (PSU)	Oxygen Reduction Potential (mV)	Disolved Oxygen (%)	Comments
WS 172	3.12	5.02								
WS 177	1.51	1.61								
WS 182	1.42	2.83								
WS 184	1.21	1.59								
WS 185	0.52	0.74								
WS 271	1.52	2.02								
WS 272	1.23	1.69								
WS 273	0.08	1.08								
WS 274	1.96	2.92								
WS 279	3.12	4.03								
WS 280	0.11	1.48								

Notes:

1. Instrument Used: HI Multiparameter
2. Typical Accuracy: Water

Temperature	+/- 0.15 ˚C	DO	+/- 1%	PSU	+/- 2% or '+/- 0.01 PSU
pH	+/- 0.01 pH	Conductivity	+/- 1% or '+/- 1uS/cm	Resistivity	+/- 1% or '+/- 1mg/L
ORP	+/- 1mV				

3. N/R = No Reading Taken

Intégral Géotechnique

Groundwater Quality Monitoring Results

Site: Bishop Headley School
Job No: 14075
Date: 30.11.22
Weather: Cloudy
Name of Engineer: RH

Sample No.	Water level (mbgl)	Well Base Level (mbgl)	pH (pH Units)	Temperature (C)	Conductivity (uS/cm)	Total disolved solids (ppm)	Salinity (PSU)	Oxygen Reduction Potential (mV)	Disolved Oxygen (%)	Comments
WS 172	3.05	5.02								
WS 177	1.42	1.61								
WS 182	1.45	2.83								
WS 184	1.2	1.59								
WS 185	0.48	0.74								
WS 271	1.61	2.02								
WS 272	1.21	1.69								
WS 273	0.21	1.08								
WS 274	1.87	2.92								
WS 279	3.05	4.03								
WS 280	0.25	1.48								

Notes:

1. Instrument Used: HI Multiparameter
2. Typical Accuracy: Water

Temperature	+/- 0.15 ˚C	DO	+/- 1%	PSU	+/- 2% or '+/- 0.01 PSU
pH	+/- 0.01 pH	Conductivity	+/- 1% or '+/- 1uS/cm	Resistivity	+/- 1% or '+/- 1mg/L
ORP	+/- 1mV				

3. N/R = No Reading Taken

Intégral Géotechnique

Groundwater Quality Monitoring Results

Site: Bishop Headley School
Job No: 14075
Date: 14.12.22
Weather: Light Rain
Name of Engineer: RH

Sample No.	Water level (mbgl)	Well Base Level (mbgl)	pH (pH Units)	Temperature (C)	Conductivity (uS/cm)	Total disolved solids (ppm)	Salinity (PSU)	Oxygen Reduction Potential (mV)	Disolved Oxygen (%)	Comments
WS 172	3.01	5.02								
WS 177	1.39	1.61								
WS 182	1.4	2.83								
WS 184	1.22	1.59								
WS 185	0.41	0.74								
WS 271	1.59	2.02								
WS 272	1.19	1.69								
WS 273	0.19	1.08								
WS 274	1.89	2.92								
WS 279	2.96	4.03								
WS 280	0.28	1.48								

Notes:

1. Instrument Used: HI Multiparameter
2. Typical Accuracy: Water

Temperature	+/- 0.15 ˚C	DO	+/- 1%	PSU	+/- 2% or '+/- 0.01 PSU
pH	+/- 0.01 pH	Conductivity	+/- 1% or '+/- 1uS/cm	Resistivity	+/- 1% or '+/- 1mg/L
ORP	+/- 1mV				

3. N/R = No Reading Taken

Intégral Géotechnique

APPENDIX O

IN-SITU GAS MONITORING RESULTS

FIELD GAS MONITORING RESULTS - SUMMARY

Job No.: 14075
Site: Bishop Headly School

Maximum Methane Concentration (%v/v)	Maximum Carbon Dioxide Concentration (%v/v)	Maximum Gas Concentration (%v/v)	Maximum Gas Flow Rate (l/hr)	**GSV (l/hr)**
0.60	2.30	2.30	0.40	**0.0092**

Methane							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	**Maximum**
WS 171	0.40	0.30	0.20	0.10	0.10	0.10	**0.40**
WS 174	0.60	0.50	0.30	0.20	0.10	0.10	**0.60**
WS 178	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.50**
WS 181	0.10	0.20	0.30	0.10	0.20	0.10	**0.30**
WS 275	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.50**
WS 278	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.50**
WS 277	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.50**

Carbon Dioxide							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	**Maximum**
WS 171	0.90	1.10	1.30	1.40	1.30	1.10	**1.40**
WS 174	0.70	0.90	1.10	0.80	0.70	0.40	**1.10**
WS 178	0.80	0.60	0.40	0.20	0.10	0.10	**0.80**
WS 181	2.20	2.10	2.30	1.80	1.50	1.10	**2.30**
WS 275	2.20	2.20	1.20	1.10	0.80	0.70	**2.20**
WS 278	0.80	0.60	0.40	0.20	0.10	0.10	**0.80**
WS 277	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.50**

Oxygen							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	**Minimum**
WS 171	16.40	17.40	18.20	19.20	19.60	19.10	**16.40**
WS 174	18.90	17.90	17.20	18.10	18.70	18.90	**17.20**
WS 178	19.70	19.30	19.80	20.10	20.00	19.50	**19.30**
WS 181	18.40	18.10	18.80	19.60	19.10	19.40	**18.10**
WS 275	17.80	18.10	20.10	19.60	19.20	19.50	**17.80**
WS 278	19.40	19.10	19.80	17.80	18.40	19.10	**17.80**
WS 277	18.20	18.10	17.50	18.50	19.10	19.60	**17.50**

Gas Flow Rate							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	**Maximum**
WS 171	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	**<0.30**
WS 174	0.30	0.40	0.20	0.30	0.10	0.10	**0.40**
WS 178	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	**<0.30**
WS 181	<0.3	<0.3	<0.3	0.10	0.20	0.10	**<0.30**
WS 275	<0.3	<0.3	<0.3	<0.3	0.10	0.10	**<0.30**
WS 278	<0.3	<0.3	<0.3	0.10	0.20	0.10	**<0.30**
WS 277	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	**<0.30**

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Headly School
Monitoring Date:	12.09.22
Monitoring Round:	1

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Cloudy		**On Arrival:**	981
Ambient Temp:	19	°C	**During Monitoring:**	981
Instrument:	GA5000		**End of Monitoring:**	982

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady			
WS 171	2.06	1.08	0.40	0.40	8.00	8.00	16.40	16.40	0.90	0.70	2.00	<1	<0.3
WS 174	4.04	0.61	0.60	0.60	12.00	12.00	18.90	18.90	0.70	0.60	7.00	<1	0.30
WS 178	2.03	Dry	<0.5	<0.5			19.70	19.70	0.80	0.50	<1	<1	<0.3
WS 181	2.04	1.43	0.10	0.10	2.00	2.00	18.40	18.40	2.20	2.00	3.00	<1	<0.3
WS 275	1.74	Dry	<0.5	<0.5			17.80	17.80	2.20	2.20	1.00	<1	<0.3
WS 278	2.81	2.34	<0.5	<0.5			19.40	19.40	0.80	0.70	1.00	<1	<0.3
WS 277	1.38	0.22	<0.5	<0.5			18.20	18.40	<0.5	<0.5	13.00	<1	<0.3

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Headly School
Monitoring Date:	28.09.22
Monitoring Round:	2

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Cloudy/Light Rain		**On Arrival:**	982
Ambient Temp:	14	°C	**During Monitoring:**	982
Instrument:	GA5000		**End of Monitoring:**	983

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady			
WS 171	2.06	1.07	0.30	0.20	6.00	4.00	17.40	17.40	1.10	1.10	3.00	<1	<0.3
WS 174	4.04	0.63	0.50	0.50	10.00	10.00	17.90	17.90	0.90	0.90	4.00	<1	0.40
WS 178	2.03	Dry	<0.5	<0.5			19.30	19.30	0.60	0.60	<1	<1	<0.3
WS 181	2.04	1.44	0.20	0.20	4.00	4.00	18.10	18.20	2.10	2.10	2.00	<1	<0.3
WS 275	1.74	Dry	<0.5	<0.5			18.10	18.10	2.20	2.10	1.10	<1	<0.3
WS 278	2.81	2.21	<0.5	<0.5			19.10	19.10	0.60	0.60	1.20	<1	<0.3
WS 277	1.38	0.23	<0.5	<0.5			18.10	18.10	<0.5	<0.5	12.00	<1	<0.3

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Headly School
Monitoring Date:	19.10.22
Monitoring Round:	3

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Light Rain		**On Arrival:**	967
Ambient Temp:	12	°C	**During Monitoring:**	967
Instrument:	GA5000		**End of Monitoring:**	967

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady			
WS 171	2.06	1.02	0.20	0.20	4.00	4.00	18.20	18.20	1.30	1.30	2.00	<1	<0.3
WS 174	4.04	0.42	0.30	0.30	6.00	6.00	17.20	17.20	1.10	1.00	2.00	<1	0.20
WS 178	2.03	1.56	<0.5	<0.5			19.80	19.80	0.40	0.30	<1	<1	<0.3
WS 181	2.04	1.21	0.30	0.20	6.00	4.00	18.80	18.90	2.30	2.30	1.00	<1	<0.3
WS 275	1.74	1.38	<0.5	<0.5			20.10	20.10	1.20	1.20	1.30	<1	<0.3
WS 278	2.81	2.04	<0.5	<0.5			19.80	19.80	0.40	0.40	0.90	<1	<0.3
WS 277	1.38	0.17	<0.5	<0.5			17.50	17.90	<0.5	<0.5	14.00	<1	<0.3

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Headly School
Monitoring Date:	03.11.22
Monitoring Round:	4

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Cloudy		**On Arrival:**	993
Ambient Temp:	12	°C	**During Monitoring:**	993
Instrument:	GA5000		**End of Monitoring:**	993

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady			
WS 171	2.06	1.08	0.10	0.10	2.00	2.00	19.20	19.20	1.40	1.20	1.00	<1	<0.3
WS 174	4.04	0.49	0.20	0.20	4.00	4.00	18.10	18.10	0.80	0.80	1.00	<1	0.30
WS 178	2.03	1.49	<0.5	<0.5			20.10	20.10	0.20	0.20	<1	<1	<0.3
WS 181	2.04	1.18	0.10	0.10	2.00	2.00	19.60	19.60	1.80	1.80	2.00	<1	0.10
WS 275	1.74	1.31	<0.5	<0.5			19.60	19.90	1.10	1.00	1.20	<1	<0.3
WS 278	2.81	1.96	<0.5	<0.5			17.80	17.90	0.20	0.20	1.10	<1	0.10
WS 277	1.38	0.24	<0.5	<0.5			18.50	18.80	<0.5	<0.5	11.00	<1	<0.3

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Headly School
Monitoring Date:	30.11.22
Monitoring Round:	5

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Light Rain		**On Arrival:**	994
Ambient Temp:	12	°C	**During Monitoring:**	994
Instrument:	GA5000		**End of Monitoring:**	994

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady			
WS 171	2.06	1.04	0.10	0.10	2.00	2.00	19.60	19.60	1.30	1.20	1.00	<1	<0.3
WS 174	4.04	0.43	0.10	0.10	2.00	2.00	18.70	18.70	0.70	0.60	1.00	<1	0.10
WS 178	2.03	1.47	<0.5	<0.5			20.00	20.00	0.10	0.10	<1	<1	<0.3
WS 181	2.04	1.15	0.20	0.10	4.00	2.00	19.10	19.40	1.50	1.50	3.00	<1	0.20
WS 275	1.74	1.34	<0.5	<0.5			19.20	19.50	0.80	0.70	1.10	<1	0.10
WS 278	2.81	1.92	<0.5	<0.5			18.40	18.50	0.10	0.10	0.70	<1	0.20
WS 277	1.38	0.18	<0.5	<0.5			19.10	19.10	<0.5	<0.5	8.00	<1	<0.3

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Headly School
Monitoring Date:	14.12.22
Monitoring Round:	6

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Light Rain		**On Arrival:**	982
Ambient Temp:	8	°C	**During Monitoring:**	982
Instrument:	GA5000		**End of Monitoring:**	982

Location	Well Base Level	Water Level	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO)	Hydrogen Sulphide (H2S)	Peak Gas Flow
	(mbgl)	(mbgl)	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	(ppm)	(ppm)	(l/hr)
WS 171	2.06	1.01	0.10	0.10	2.00	2.00	19.10	19.30	1.10	1.10	1.00	<1	<0.3
WS 174	4.04	0.41	0.10	0.10	2.00	2.00	18.90	18.90	0.40	0.40	1.00	<1	0.10
WS 178	2.03	1.43	<0.5	<0.5			19.50	19.80	0.10	0.10	<1	<1	<0.3
WS 181	2.04	1.09	0.10	0.10	2.00	2.00	19.40	19.50	1.10	1.10	2.00	<1	0.10
WS 275	1.74	1.12	<0.5	<0.5			19.50	19.50	0.70	0.70	0.90	<1	0.10
WS 278	2.81	1.87	<0.5	<0.5			19.10	19.40	0.10	0.10	0.60	<1	0.10
WS 277	1.38	0.17	<0.5	<0.5			19.60	19.60	<0.5	<0.5	5.00	<1	<0.3

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

Intégral Géotechnique

FIELD GAS MONITORING RESULTS - SUMMARY

Job No.: 14075
Site: Bishop Hedley School - Land West of Galon Uchaf Road

Maximum Methane Concentration (%v/v)	Maximum Carbon Dioxide Concentration (%v/v)	Maximum Gas Concentration (%v/v)	Maximum Gas Flow Rate (l/hr)	**GSV (l/hr)**
9.40	5.80	9.40	<0.3	**<0.0282**

Methane							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	**Maximum**
WS 8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<0.50**
WS 10	9.40	8.10	7.50	5.20	6.10	6.30	**9.40**
WS 14	1.50	1.20	1.30	0.80	0.60	0.40	**1.50**
WS 15	5.60	6.10	4.50	3.20	3.10	2.60	**6.10**

Carbon Dioxide							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	**Maximum**
WS 8	3.10	3.20	2.90	3.20	3.50	3.60	**3.60**
WS 10	5.80	5.60	5.20	4.80	5.20	4.80	**5.80**
WS 14	3.70	3.10	2.80	2.50	2.10	2.50	**3.70**
WS 15	4.60	4.10	3.20	3.10	2.70	2.80	**4.60**

Oxygen							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	**Minimum**
WS 8	16.10	17.50	18.10	18.50	19.80	18.70	**16.10**
WS 10	1.20	1.50	1.60	1.80	3.60	3.20	**1.20**
WS 14	9.40	13.10	15.50	13.50	12.80	11.40	**9.40**
WS 15	3.80	5.60	4.80	8.60	10.50	11.60	**3.80**

Gas Flow Rate							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	**Maximum**
WS 8	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	**<0.30**
WS 10	0.10	0.10	0.10	0.10	0.10	0.10	**0.10**
WS 14	0.10	0.10	0.10	0.10	<0.3	<0.3	**<0.30**
WS 15	0.10	0.10	0.10	0.10	0.10	0.10	**0.10**

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Hedley School - Land West of Galon Uchaf Road
Monitoring Date:	15.06.21
Monitoring Round:	1

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Sunny		**On Arrival:**	989
Ambient Temp:	21	°C	**During Monitoring:**	989
Instrument:	GA5000		**End of Monitoring:**	989

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
WS 8	5.06	Dry	<0.5	<0.5			16.10	16.10	3.10	3.10	<1	<1	<0.3	<0.1
WS 10	2.56	Dry	9.40	9.40	>100	>100	1.20	2.40	5.80	5.20	2.00	<1	0.10	0.20
WS 14	5.11	Dry	1.50	1.50	30.00	30.00	9.40	9.50	3.70	3.70	1.00	<1	0.10	0.20
WS 15	5.14	Dry	5.60	5.10	>100	>100	3.80	4.20	4.60	4.20	3.00	<1	0.10	0.10

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	
PH06	0-60% +/- 0.5%	0-5000ppm +/- 2.0%	0-5000ppm +/- 2.0%	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

***WS 5 Obstrustion in BH pipe**

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Hedley School - Land West of Galon Uchaf Road
Monitoring Date:	05.07.21
Monitoring Round:	2

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Cloudy		**On Arrival:**	1001
Ambient Temp:	15	°C	**During Monitoring:**	1001
Instrument:	GA5000		**End of Monitoring:**	1001

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
WS 8	5.06	Dry	<0.5	<0.5			17.50	17.80	3.20	2.90	<1	<1	<0.3	0.10
WS 10	2.56	Dry	8.10	8.10	>100	>100	1.50	1.90	5.60	5.60	1.00	<1	0.10	0.30
WS 14	5.11	Dry	1.20	1.10	24.00	22.00	13.10	13.60	3.10	3.10	2.00	<1	0.10	0.10
WS 15	5.14	Dry	6.10	5.50	>100	>100	5.60	5.90	4.10	3.70	2.00	<1	0.10	0.10

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	
PH06	0-60% +/- 0.5%	0-5000ppm +/- 2.0%	0-5000ppm +/- 2.0%	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

***WS 5 Obstrustion in BH pipe**

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Hedley School - Land West of Galon Uchaf Road
Monitoring Date:	23.07.21
Monitoring Round:	3

Monitoring Conditions		**Barometric Pressure (mb)**	
Weather:	Sunny	**On Arrival:**	1001
Ambient Temp:	21 °C	**During Monitoring:**	1001
Instrument:	GA5000	**End of Monitoring:**	1001

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
WS 8	5.06	Dry	<0.5	<0.5			18.10	18.50	2.90	2.70	<1	<1	<0.3	0.10
WS 10	2.56	Dry	7.50	7.40	>100	>100	1.60	1.20	5.20	4.50	1.00	<1	0.10	0.20
WS 14	5.11	Dry	1.30	0.90	26.00	18.00	15.50	15.10	2.80	2.80	1.00	<1	0.10	0.10
WS 15	5.14	Dry	4.50	4.50	90.00	90.00	4.80	4.70	3.20	3.20	1.00	<1	0.10	0.10

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	LEL = Lower Explosive Limit
PH06	0-60% +/- 0.5%	0-5000ppm +/- 2.0%	0-5000ppm +/- 2.0% FS	N/R = No Reading Taken
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	FS = Full Scale

Notes:

***WS 5 Obstrustion in BH pipe**

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Hedley School - Land West of Galon Uchaf Road
Monitoring Date:	09.08.21
Monitoring Round:	4

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Raining		**On Arrival:**	984
Ambient Temp:	15	°C	**During Monitoring:**	984
Instrument:	GA5000		**End of Monitoring:**	984

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
WS 8	5.06	Dry	<0.5	<0.5			18.50	18.80	3.20	3.20	<1	<1	<0.3	0.10
WS 10	2.56	Dry	5.20	5.20	>100	>100	1.80	1.80	4.80	4.90	1.00	<1	0.10	0.30
WS 14	5.11	Dry	0.80	0.80	16.00	16.00	13.50	13.60	2.50	2.40	1.00	<1	0.10	0.20
WS 15	5.14	Dry	3.20	3.30	64.00	66.00	8.60	8.80	3.10	3.20	2.00	<1	0.10	0.20

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

***WS 5 Obstrustion in BH pipe**

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Hedley School - Land West of Galon Uchaf Road
Monitoring Date:	02.09.21
Monitoring Round:	5

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Cloudy		**On Arrival:**	1001
Ambient Temp:	14	°C	**During Monitoring:**	1001
Instrument:	GA5000		**End of Monitoring:**	1001

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
WS 8	5.06	Dry	<0.5	<0.5			19.80	19.80	3.50	3.50	<1	<1	<0.3	0.20
WS 10	2.56	Dry	6.10	6.10	>100	>100	3.60	3.60	5.20	5.10	<1	<1	0.10	0.10
WS 14	5.11	Dry	0.60	0.60	12.00	12.00	12.80	12.90	2.10	2.10	<1	<1	<0.3	0.10
WS 15	5.14	Dry	3.10	3.10	62.00	62.00	10.50	10.90	2.70	2.80	1.00	<1	0.10	0.30

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

***WS 5 Obstrustion in BH pipe**

Intégral Géotechnique

FIELD GAS MONITORING RESULTS

Job No.:	14075
Site:	Bishop Hedley School - Land West of Galon Uchaf Road
Monitoring Date:	15.09.21
Monitoring Round:	6

Monitoring Conditions			**Barometric Pressure (mb)**	
Weather:	Sunny		**On Arrival:**	994
Ambient Temp:	20	°C	**During Monitoring:**	994
Instrument:	GA5000		**End of Monitoring:**	994

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
WS 8	5.06	Dry	<0.5	<0.5			18.70	18.90	3.60	3.40	<1	<1	<0.3	0.10
WS 10	2.56	Dry	6.30	6.30	>100	>100	3.20	3.20	4.80	4.70	<1	<1	0.10	0.20
WS 14	5.11	Dry	0.40	0.40	8.00	8.00	11.40	11.40	2.50	2.10	<1	<1	<0.3	0.10
WS 15	5.14	Dry	2.60	2.20	52.00	44.00	11.60	11.80	2.80	2.50	<1	<1	0.10	0.10

Typical Instrument Accuracy:

$\%CH_4$	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS
$\%CO_2$	0-60% +/- 0.5%	H_2S	0-5000ppm +/- 2.0% FS
$\%O_2$	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h

LEL = Lower Explosive Limit
N/R = No Reading Taken
FS = Full Scale

Notes:

***WS 5 Obstrustion in BH pipe**

Intégral Géotechnique

APPENDIX P

SUMMARY OF CHEMICAL TEST RESULTS (MADE GROUND)

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Made Ground/Reworked Ground

Soil Organic Matter: 1%

METALS AND SEMI-METALS

No.	Location	Depth (m)	Arsenic (mg/kg)	Boron (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (Elemental) (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
1	WS171	0.40	15	0.3	3.5	1.1	38	< 1.8	53	250	< 0.3	27	< 1.0	76	410
2	WS172	0.20	6.7	0.3	0.63	< 0.2	14	< 1.8	13	22	< 0.3	14	< 1.0	20	38
3	WS174	0.30	9.7	0.3	1.3	< 0.2	18	< 1.8	26	26	< 0.3	24	< 1.0	29	58
4	WS175	0.40	6.8	0.9	4.6	< 0.2	49	< 1.8	22	11	< 0.3	9.3	< 1.0	99	27
5	WS179	1.80	4.9	2.8	5.8	< 0.2	61	< 1.8	25	6.5	< 0.3	4.3	< 1.0	130	16
6	WS183	0.50	9.1	1.1	3.6	< 0.2	35	< 1.8	27	16	< 0.3	9.6	< 1.0	69	49
7	WS184	0.30	6.9	0.3	0.82	< 0.2	13	< 1.8	16	20	< 0.3	18	< 1.0	19	45
8	WS273	0.20	11	0.4	0.31	0.5	7.8	< 1.8	18	41	< 0.3	10	< 1.0	13	52
9	WS274	0.15	9.2	0.4	1.1	< 0.2	44	< 1.8	46	27	< 0.3	14	< 1.0	110	61
10	WS277	0.80	5.1	0.4	0.55	< 0.2	11	< 1.8	13	16	< 0.3	17	< 1.0	13	41
11	WS278	0.20	8.4	0.4	0.23	< 0.2	35	< 1.8	29	26	< 0.3	9.2	< 1.0	95	25
12	WS279	0.20	8.3	0.4	0.35	< 0.2	43	< 1.8	32	23	< 0.3	10	< 1.0	120	29
13	WS280	0.05	2.9	< 0.2	0.33	< 0.2	9	< 1.8	3.2	4.4	< 0.3	3.1	< 1.0	7.3	7.9
14	WS281	0.30	3.3	0.2	6.7	< 0.2	26	< 1.8	13	1.7	< 0.3	2.7	< 1.0	59	9.4
15	TP245	0.30	8.2	0.6	0.55	< 0.2	55	< 1.8	44	18	< 0.3	12	< 1.0	150	35
16	WS272	0.20	22	0.7	2	< 0.2	46	< 1.8	31	61	< 0.3	17	< 1.0	96	85
		Screening Criteria Value	40.0	11000.0	1.7	85.0	-	6.0	7100.0	310.0	1.2	180.0	430.0	1200.0	40000.0
		Source of Screening Criteria Value	S4UL	S4UL	S4UL	S4UL	-	S4UL	S4UL	C4SL	S4UL	S4UL	S4UL	S4UL	S4UL

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Made Ground/Reworked Ground

Soil Organic Matter: 1%

INORGANIC CHEMICALS & OTHERS

No.	Location	Depth (m)	Cyanide (mg/kg)	Loss on ignition, dried solids (%)	Moisture content at 30 C (%)	Phenol (mg/kg)	pH (pH units)	Water Soluble Sulphate (g/l)	Sulphate Total as SO4 (mg/kg)	Sulphide (mg/kg)	Total Sulphur (mg/kg)	TOC by Ignition in O2 (%)	Equivalent SOM (%)	Asbestos in Soil	Asbestos Quantification (%)
1	WS171	0.40	< 1.0	4.90	13.00	< 1.0	9.30	0.046	1900.00	1100.00	2400.00	1.60	2.75	Not-detected	#N/A
2	WS172	0.20	< 1.0	2.70	8.10	< 1.0	8.30	0.004	150.00	2.40	140.00	0.70	1.20	Not-detected	#N/A
3	WS174	0.30	< 1.0	3.90	16.00	< 1.0	8.60	0.011	420.00	41.00	500.00	0.90	1.55	Not-detected	#N/A
4	WS175	0.40	< 1.0	2.00	6.60	< 1.0	9.50	0.160	970.00	U/S	4200.00	1.10	1.89	Not-detected	#N/A
5	WS179	1.80	< 1.0	1.60	5.70	< 1.0	10.00	0.510	2900.00	U/S	4600.00	0.80	1.38	Not-detected	#N/A
6	WS183	0.50	< 1.0	2.90	4.70	< 1.0	9.20	0.270	950.00	1900.00	3500.00	1.30	2.24	Not-detected	#N/A
7	WS184	0.30	< 1.0	2.50	6.30	< 1.0	8.40	0.003	220.00	6.50	170.00	0.80	1.38	Not-detected	#N/A
8	WS273	0.20	< 1.0	2.10	7.30	< 1.0	8.40	0.036	410.00	77.00	640.00	1.00	1.72	Not-detected	#N/A
9	WS274	0.15	< 1.0	4.20	10.00	< 1.0	8.30	0.015	980.00	23.00	930.00	1.70	2.92	Not-detected	#N/A
10	WS277	0.80	< 1.0	1.70	8.90	< 1.0	9.40	0.070	320.00	28.00	840.00	0.40	0.69	Not-detected	#N/A
11	WS278	0.20	< 1.0	2.70	7.00	< 1.0	8.40	0.014	530.00	6.80	450.00	1.00	1.72	Not-detected	#N/A
12	WS279	0.20	< 1.0	2.50	10.00	< 1.0	7.80	0.024	950.00	10.00	450.00	0.50	0.86	Not-detected	#N/A
13	WS280	0.05	< 1.0	0.90	5.90	< 1.0	8.80	0.011	340.00	220.00	370.00	0.20	0.34	Not-detected	#N/A
14	WS281	0.30	< 1.0	1.20	0.73	< 1.0	9.40	0.200	430.00	U/S	11000.00	0.60	1.03	Not-detected	#N/A
15	TP245	0.30	< 1.0	3.60	11.00	< 1.0	7.90	0.020	940.00	81.00	560.00	0.70	1.20	Not-detected	#N/A
16	WS272	0.20	< 1.0	8.60	8.50	< 1.0	8.10	0.470	1900.00	140.00	2300.00	3.00	5.16	Not-detected	#N/A
		Screening Criteria Value	34.0	-	-	440.0	-	-	-	-	-	-	-	-	0.001
		Source of Screening Criteria Value	ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

POLYAROMATIC HYDROCARBONS (PAH)

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Made Ground/Reworked Ground

Soil Organic Matter: 1%

No.	Location	Depth (m)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo(ah)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(123cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
1	WS171	0.40	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2	WS172	0.20	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
3	WS174	0.30	< 0.05	< 0.05	< 0.05	0.7	0.57	0.71	0.33	0.5	0.78	< 0.05	0.59	< 0.05	0.31	< 0.05	0.27	0.48
4	WS175	0.40	< 0.05	< 0.05	0.37	2.1	1.5	2.3	0.98	0.93	2.1	0.32	3.2	< 0.05	0.91	< 0.05	1.2	2.5
5	WS179	1.80	0.5	< 0.05	1.4	3.4	2.4	3.3	1.1	0.96	3.1	0.34	5.8	0.86	0.92	0.66	4.9	3.9
6	WS183	0.50	1.1	< 0.05	3.3	9.6	7.6	9.1	3.1	3.8	8.1	1.1	13	1.7	3	0.89	8.5	9.7
7	WS184	0.30	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
8	WS273	0.20	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
9	WS274	0.15	< 0.05	0.32	0.22	0.84	1.4	1.6	4.5	0.52	0.91	0.8	0.99	< 0.05	2.5	0.67	0.61	0.74
10	WS277	0.80	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
11	WS278	0.20	< 0.05	< 0.05	< 0.05	0.25	0.43	0.39	0.8	0.18	0.26	0.21	0.34	< 0.05	0.54	0.23	0.39	0.29
12	WS279	0.20	< 0.05	< 0.05	< 0.05	0.29	< 0.05	< 0.05	< 0.05	< 0.05	0.35	< 0.05	0.36	< 0.05	< 0.05	< 0.05	0.38	0.3
13	WS280	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
14	WS281	0.30	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
15	TP245	0.30	< 0.05	< 0.05	< 0.05	0.29	0.35	0.4	0.77	0.17	0.28	< 0.05	0.32	< 0.05	0.54	< 0.05	0.29	0.26
16	WS272	0.20	0.64	0.21	2	7.8	4.2	6.9	2.5	3.2	6.3	0.69	11	1	2.1	< 0.05	7.5	7.3
Screening Criteria Value			3000.0	2900.0	31000.0	11.0	3.2	3.9	360.0	110.0	30.0	0.31	1500.0	2800.0	45.0	2.3	1300.0	3700.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

Site: Bishop Hedley School - Land West of Galon Uchaf Road

Soil Type: Made Ground

Soil Organic Matter: 1%

METALS AND SEMI-METALS

No.	Location	Depth (m)	Arsenic (mg/kg)	Boron (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (Elemental) (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
1	TP09	0.50	16	0.3	0.81	< 0.2	16	< 4.0	37	110	< 0.3	19	< 1.0	20	240
2	TP10	1.50	42	11	2.4	1.5	42	< 4.0	170	180	0.9	83	2.1	43	360
3	TP12	0.75	27	1.7	1.9	< 0.2	21	< 4.0	120	78	< 0.3	48	< 1.0	38	160
4	TP14	0.50	24	14	2.0	1.3	27	< 4.0	160	270	< 0.3	55	2.6	40	360
5	TP15	0.50	17	27	1.1	1.0	17	< 4.0	64	94	< 0.3	31	< 1.0	24	170
6	TP17	0.50	22	2.7	2.1	1.6	29	< 4.0	92	210	< 0.3	45	< 1.0	38	420
7	WS08	0.20	14	1.2	1.1	0.8	28	< 4.0	69	120	< 0.3	61	< 1.0	33	290
8	WS09	0.30	23	0.6	0.78	< 0.2	13	< 4.0	46	25	< 0.3	31	< 1.0	31	45
9	WS10	0.50	17	1.0	1.3	0.6	33	< 4.0	44	110	< 0.3	21	< 1.0	50	160
10	WS11	0.60	24	3.9	1.9	< 0.2	22	< 4.0	84	120	< 0.3	42	< 1.0	32	230
11	WS12	1.00	16	0.8	1.1	< 0.2	11	< 4.0	47	50	< 0.3	39	< 1.0	19	150
12	WS13	0.50	51	1.1	3.6	< 0.2	36	< 4.0	170	310	< 0.3	79	< 1.0	62	380
13	WS14	0.20	16	0.6	1.1	< 0.2	9.8	< 4.0	52	48	< 0.3	38	< 1.0	25	44
14	WS15	0.40	10	0.6	1.2	< 0.2	8.7	< 4.0	56	18	< 0.3	39	< 1.0	20	55
		Screening Criteria Value	40.0	11000.0	1.7	85.0	-	6.0	7100.0	310.0	1.2	180.0	430.0	1200.0	40000.0
		Source of Screening Criteria Value	S4UL	S4UL	S4UL	S4UL	-	S4UL	S4UL	C4SL	S4UL	S4UL	S4UL	S4UL	S4UL

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

INORGANIC CHEMICALS & OTHERS

Site: Bishop Hedley School - Land West of Galon Uchaf Road

Soil Type: Made Ground

Soil Organic Matter: 1%

No.	Location	Depth (m)	Cyanide (mg/kg)	Loss on ignition, dried solids (%)	Moisture content at 30 C (%)	Phenol (mg/kg)	pH (pH units)	Water Soluble Sulphate (g/l)	Sulphate Total as SO4 (mg/kg)	Sulphide (mg/kg)	Total Sulphur (mg/kg)	TOC by Ignition in O2 (%)	Equivalent SOM (%)	Asbestos in Soil	Asbestos Quantification (%)
1	TP09	0.50	< 1.0	18.0	19	< 1.0	8.0	0.045	1900	25	960	4.5	7.74	Not-detected	#N/A
2	TP10	1.50	1.1	27.9	20	< 1.0	7.5	1.9	5100	180	4400	4.5	7.74	Not-detected	#N/A
3	TP12	0.75	< 1.0	21.8	18	< 1.0	7.5	1.2	3200	52	3900	3.7	6.36	Not-detected	#N/A
4	TP14	0.50	1.1	27.5	18	< 1.0	7.4	1.4	3500	120	3000	4.8	8.26	Not-detected	#N/A
5	TP15	0.50	1.8	31.2	18	< 1.0	7.7	0.40	1200	350	4200	4.8	8.26	Not-detected	#N/A
6	TP17	0.50	4.5	19.5	20	3.1	7.3	1.5	3700	140	2800	3.9	6.71	Not-detected	#N/A
7	WS08	0.20	1.5	9.7	21	< 1.0	7.8	0.071	710	3.4	520	2.2	3.78	Not-detected	#N/A
8	WS09	0.30	< 1.0	32.7	13	< 1.0	7.6	0.034	910	< 1.0	1000	3.4	5.85	Not-detected	#N/A
9	WS10	0.50	< 1.0	10.5	10	< 1.0	8.0	0.29	1100	280	2000	1.8	3.10	Not-detected	#N/A
10	WS11	0.60	< 1.0	35.6	21	< 1.0	7.3	1.5	2900	70	3700	4.1	7.05	Detected	#N/A
11	WS12	1.00	< 1.0	17.5	10	< 1.0	5.6	0.13	690	9.3	1900	2.8	4.82	Not-detected	#N/A
12	WS13	0.50	< 1.0	28.6	28	< 1.0	6.4	0.035	970	18	1100	4.9	8.43	Not-detected	#N/A
13	WS14	0.20	< 1.0	22.3	18	< 1.0	5.7	0.0063	860	< 1.0	470	3.2	5.50	Not-detected	#N/A
14	WS15	0.40	< 1.0	20.9	16	< 1.0	6.1	0.0045	360	< 1.0	310	2.3	3.96	Not-detected	#N/A
		Screening Criteria Value	34.0	-	-	440.0	-	-	-	-	-	-	-	-	0.001
		Source of Screening Criteria Value	ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

POLYAROMATIC HYDROCARBONS (PAH)

Site: Bishop Hedley School - Land West of Galon Uchaf Road

Soil Type: Made Ground

Soil Organic Matter: 1%

No.	Location	Depth (m)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo(ah)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(123cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
1	TP09	0.50	< 0.05	< 0.05	< 0.05	1.3	0.90	1.4	0.67	0.60	1.3	0.24	1.5	< 0.05	0.66	0.24	0.67	1.3
2	TP10	1.50	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.77	< 0.05	< 0.05	0.71	0.91	0.66
3	TP12	0.75	< 0.05	< 0.05	0.19	0.76	0.36	0.70	0.31	0.25	0.89	< 0.05	0.97	< 0.05	0.26	0.64	1.3	0.71
4	TP14	0.50	0.40	< 0.05	< 0.05	1.0	0.41	0.90	0.33	0.30	1.2	< 0.05	0.92	0.37	0.29	5.1	1.2	0.74
5	TP15	0.50	0.77	< 0.05	0.36	1.7	1.1	1.8	0.75	0.70	2.0	0.40	2.6	0.74	0.68	2.5	2.8	2.0
6	TP17	0.50	0.35	< 0.05	0.67	2.5	1.1	1.9	0.87	0.92	2.8	0.49	3.3	0.50	0.68	1.1	3.0	2.7
7	WS08	0.20	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
8	WS09	0.30	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
9	WS10	0.50	1.2	< 0.05	1.3	3.9	2.9	5.1	1.8	1.6	4.5	0.79	6.5	1.5	1.8	< 0.05	5.2	4.7
10	WS11	0.60	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	2.0	< 0.05	< 0.05	< 0.05	1.7	1.3
11	WS12	1.00	< 0.05	< 0.05	< 0.05	0.37	0.29	0.45	< 0.05	0.26	0.57	< 0.05	0.49	< 0.05	< 0.05	< 0.05	0.75	0.38
12	WS13	0.50	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
13	WS14	0.20	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
14	WS15	0.40	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
		Screening Criteria Value	3000.0	2900.0	31000.0	11.0	3.2	3.9	360.0	110.0	30.0	0.31	1500.0	2800.0	45.0	2.3	1300.0	3700.0
		Source of Screening Criteria Value	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

PETROLEUM HYDROCARBONS

Site: Bishop Hedley School - Land West of Galon Uchaf Road

Soil Type: Made Ground

Soil Organic Matter: 1%

No.	Location	Depth (m)	Aliphatic C5-C6 (mg/kg)	Aliphatic C6-C8 (mg/kg)	Aliphatic C8-C10 (mg/kg)	Aliphatic C10-C12 EPH (mg/kg)	Aliphatic C12-C16 EPH (mg/kg)	Aliphatic C16-C35 EPH (mg/kg)	Aliphatic C35-C44 EPH (mg/kg)	Aromatic C5-C7 (mg/kg)	Aromatic C7-C8 (mg/kg)	Aromatic C8-C10 (mg/kg)	Aromatic C10-C12 EPH (mg/kg)	Aromatic C12-C16 EPH (mg/kg)	Aromatic C16-C21 EPH (mg/kg)	Aromatic C21-C35 EPH (mg/kg)	Aromatic C35-C40 EPH (mg/kg)
1	TP09	0.50	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 8.4	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	39	< 8.4
2	TP10	1.50	< 0.001	< 0.001	< 0.001	12	20	590	85	0.008	< 0.001	0.010	< 1.0	< 2.0	12	48	< 8.4
3	TP12	0.75	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	71	44	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 10	< 8.4
4	TP14	0.50	< 0.001	< 0.001	< 0.001	17	5.8	200	71	0.005	< 0.001	5.7	49	16	35	110	54
5	TP15	0.50	< 0.001	< 0.001	< 0.001	11	8.3	240	62	0.010	< 0.001	0.075	20	12	34	97	33
6	TP17	0.50	< 0.001	< 0.001	< 0.001	< 1.0	14	1100	160	0.006	< 0.001	0.017	38	12	290	710	100
7	WS08	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	WS09	0.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	WS10	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	WS11	0.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	WS12	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	WS13	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	WS14	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	WS15	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Screening Criteria Value			**42.0**	**100.0**	**27.0**	**130.0**	**1100.0**	**65000.0**	**65000.0**	**0.4**	**880.0**	**47.0**	**250.0**	**1800.0**	**1900.0**	**1900.0**	**1900.0**
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

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APPENDIX Q

SUMMARY OF CHEMICAL TEST RESULTS (TOPSOIL)

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Topsoil

Soil Organic Matter: 1%

METALS AND SEMI-METALS

No.	Location	Depth (m)	Arsenic (mg/kg)	Boron (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (Elemental) (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
1	**WS182**	**0.10**	11	0.9	0.53	< 0.2	11	< 1.8	21	66	< 0.3	12	< 1.0	18	58
2	**WS275**	**0.10**	21	0.9	0.86	< 0.2	22	< 1.8	28	47	< 0.3	23	< 1.0	41	82
3	**SA111**	**0.10**	20	0.6	0.55	< 0.2	10	< 1.8	22	64	< 0.3	11	< 1.0	21	78
Screening Criteria Value			**40.0**	**11000.0**	**1.7**	**85.0**	**-**	**6.0**	**7100.0**	**310.0**	**1.2**	**180.0**	**430.0**	**1200.0**	**40000.0**
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	-	S4UL	S4UL	C4SL	S4UL	S4UL	S4UL	S4UL	S4UL

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Topsoil

Soil Organic Matter: 1%

INORGANIC CHEMICALS & OTHERS

No.	Location	Depth (m)	Cyanide (mg/kg)	Loss on ignition, dried solids (%)	Moisture content at 30 C (%)	Phenol (mg/kg)	pH (pH units)	Water Soluble Sulphate (g/l)	Sulphate Total as SO4 (mg/kg)	Sulphide (mg/kg)	Total Sulphur (mg/kg)	TOC by Ignition in O2 (%)	Equivalent SOM (%)	Asbestos in Soil	Asbestos Quantification (%)
1	**WS182**	**0.10**	< 1.0	10.70	12.00	< 1.0	6.70	0.014	1100.00	6.00	420.00	5.50	9.46	Not-detected	#N/A
2	**WS275**	**0.10**	< 1.0	10.10	9.00	< 1.0	7.40	0.170	1300.00	95.00	920.00	3.80	6.54	Not-detected	#N/A
3	**SA111**	**0.10**	< 1.0	13.20	11.00	< 1.0	6.50	0.010	1100.00	84.00	460.00	5.50	9.46	Not-detected	#N/A
Screening Criteria Value			**34.0**	-	-	**440.0**	-	-	-	-	-	-	-	-	**0.001**
Source of Screening Criteria Value			ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

POLYAROMATIC HYDROCARBONS (PAH)

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Topsoil

Soil Organic Matter: 1%

No.	Location	Depth (m)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo(ah)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(123cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
1	**WS182**	**0.10**	< 0.05	< 0.05	< 0.05	0.57	0.66	0.79	0.3	0.35	0.64	< 0.05	0.56	< 0.05	0.27	< 0.05	0.3	0.46
2	**WS275**	**0.10**	< 0.05	< 0.05	< 0.05	0.79	0.61	0.96	0.32	0.31	0.76	< 0.05	0.7	< 0.05	0.32	< 0.05	0.47	0.51
3	**SA111**	**0.10**	< 0.05	< 0.05	< 0.05	0.64	0.72	1	0.32	0.36	0.83	< 0.05	0.67	< 0.05	0.29	< 0.05	0.56	0.52
Screening Criteria Value			**3000.0**	**2900.0**	**31000.0**	**11.0**	**3.2**	**3.9**	**360.0**	**110.0**	**30.0**	**0.31**	**1500.0**	**2800.0**	**45.0**	**2.3**	**1300.0**	**3700.0**
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

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Intégral Géotechnique

APPENDIX R

SUMMARY OF CHEMICAL TEST RESULTS (NATURAL SOILS)

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Natural Ground

Soil Organic Matter: 1%

METALS AND SEMI-METALS

No.	Location	Depth (m)	Arsenic (mg/kg)	Boron (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (Elemental) (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
1	WS177	0.40	16	0.6	0.52	< 0.2	13	< 1.8	12	31	< 0.3	9.3	< 1.0	24	41
Screening Criteria Value			40.0	11000.0	1.7	85.0	-	6.0	7100.0	310.0	1.2	180.0	430.0	1200.0	40000.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	-	S4UL	S4UL	C4SL	S4UL	S4UL	S4UL	S4UL	S4UL

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Natural Ground

Soil Organic Matter: 1%

INORGANIC CHEMICALS & OTHERS

No.	Location	Depth (m)	Cyanide (mg/kg)	Loss on ignition, dried solids (%)	Moisture content at 30 C (%)	Phenol (mg/kg)	pH (pH units)	Water Soluble Sulphate (g/l)	Sulphate Total as SO4 (mg/kg)	Sulphide (mg/kg)	Total Sulphur (mg/kg)	TOC by Ignition in O2 (%)	Equivalent SOM (%)	Asbestos in Soil	Asbestos Quantification (%)
1	WS177	0.40	< 1.0	5.00	9.80	< 1.0	8.10	1.700	4200.00	13.00	2000.00	1.70	2.92	Not-detected	#N/A
Screening Criteria Value			34.0	-	-	440.0	-	-	-	-	-	-	-	-	0.001
Source of Screening Criteria Value			ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

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Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14075

POLYAROMATIC HYDROCARBONS (PAH)

Site: Bishop Hedley School Campus, Merthyr Tydfil

Soil Type: Natural Ground

Soil Organic Matter: 1%

No.	Location	Depth (m)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo(ah)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(123cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
1	WS177	0.40	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Screening Criteria Value			3000.0	2900.0	31000.0	11.0	3.2	3.9	360.0	110.0	30.0	0.31	1500.0	2800.0	45.0	2.3	1300.0	3700.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

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APPENDIX S

SUMMARY OF SOIL LEACHATE TEST RESULTS

	Determinand	Unit	Sample Location				Guideline Value		
			21/06/2021	21/06/2021	21/06/2021	21/06/2021	MAC-EQS Inland Surface Water C3 50 - <100mg/lCaCO3	Freshwater AA-EQS 0-50mg/l CaCO3	UK (England and Wales) Drinking Water Standards
			TP10 @ 1.50m	**TP12 @ 0.75m**	**TP14 @ 0.50m**	**TP17 @ 0.50m**			
Metals and Non-Metals	Ammoniacal Nitrogen	ug/l	**9100.00**	82.00	**3200.00**	**1800.00**	-	200	-
	Arsenic	ug/l	3.10	< 1.0	1.90	2.30	-	50	10
	Beryllium	ug/l	0.20	< 0.2	< 0.2	0.30	-	-	-
	Boron	ug/l	490.00	58.00	510.00	110.00	-	2000	1000
	Cadmium	ug/l	< 0.08	< 0.08	< 0.08	< 0.08	0.6	0.08	5
	Calcium	mg/l	43.00	66.00	72.00	64.00	-	-	-
	Chromium	ug/l	1.20	0.40	0.70	2.00	32	3.4	50
	Copper	ug/l	**4.90**	**5.50**	**3.20**	**5.60**	-	1	2000
	Cyanide	ug/l	< 10	< 10	< 10	< 10	5	1	50
	Lead	ug/l	**2.50**	< 1.0	< 1.0	**4.10**	14	1.2	10
	Mercury	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	0.07	-	1
	Nickel	ug/l	**5.80**	**4.40**	**9.70**	**8.50**	34	4	20
	pH	pH Units	7.80	7.50	7.60	7.40	-	-	-
	Phenol	ug/l	<10	<10	<10	<10	46	7.7	0.5
	Selenium	ug/l	< 4.0	< 4.0	< 4.0	< 4.0	-	-	10
	Sulphate as SO4	ug/l	127000.00	139000.00	183000.00	144000.00	-	400000	250000
	Sulphide	ug/l	< 5.0	< 5.0	< 5.0	< 5.0	-	0.25	-
	Vanadium	ug/l	< 1.7	< 1.7	< 1.7	< 1.7	-	20	-
	Zinc	ug/l	**13.00**	**39.00**	**35.00**	**53.00**	-	10.9	5000
PAH	Acenaphthene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	10	-
	Acenaphthylene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	10	-
	Anthracene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	0.1	0.1	-
	Benzo (a) anthracene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	10	-
	Benzo (g,h,i) perylene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	0.0082	-	-
	Benzo (a) pyrene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	0.27	0.00017	0.01
	Benzo (b) fluoranthene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	0.017	-	-
	Benzo (k) fluoranthene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	0.017	-	-
	Chrysene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	10	-
	Dibenz (a,h) anthracene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	10	-
	Fluoranthene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	0.12	0.0063	-
	Fluorene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	10	-
	Indeno (1,2,3) cd pyrene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	-	-
	Naphthalene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	130	2	-
	Phenanthrene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	10	-
	Pyrene	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	-	10	-
	PAH, Total	ug/l	< 0.2	< 0.2	< 0.2	< 0.2	-	0.00017	0.1
VPH/EPH	Aliphatic VPH >C5 - C6	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	50	-	1
	Aliphatic VPH >C6 - C8	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	50	-	1
	Aliphatic VPH >C8 - 10	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	50	-	1
	Aliphatic EPH >C10 - C12	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aliphatic EPH >C12 - C16	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aliphatic EPH >C16 - C21	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aliphatic EPH >C21 - C35	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aliphatic EPH >C35 - C44	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aromatic VPH >C5 - C7	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	50	-	1
	Aromatic VPH >C7 - C8	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	50	-	1
	Aromatic VPH >C8 - C10	ug/l	< 1.0	< 1.0	< 1.0	< 1.0	50	-	1
	Aromatic EPH >C10 - C12	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aromatic EPH >C12 - C16	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aromatic EPH >C16 - C21	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aromatic EPH >C21 - C35	ug/l	< 10	< 10	< 10	< 10	50	-	1
	Aromatic EPH >C35 - C44	ug/l	< 10	< 10	< 10	< 10	50	-	1

Notes:
Benzo(a)pyrene is used as an indicator for PAH contamination.
EQS for Benzene used for all VPH/EPH compounds

Worst case scenario used to determine MAC-EQS Class and Freshwater EQS Hardness Band.

Results exceeding the AA-EQS value, or the most conservative EQS/UKDWS guideline value where AA-EQS values are unavailable, are highlighted in **red bold type**

Sources:
MAC-EQS and AA-EQS values sourced from the Environment Agency/Water Framework Directive
Drinking Water Standards sourced from The Water Supply (Water Quality) Regulations 2018 Water, England and Wales: 2018 No.647 (W.121)

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Metal Bioavailability Assessment Tool (M-BAT)

Back

Calculate

Clear Data

INPUT DATA											RESULTS (Copper)				RESULTS (Zinc)			
ID	Location	Waterbody	Date	Measured Cu Concentration (dissolved) (µg l^{-1})	Measured Zn Concentration (dissolved) (µg l^{-1})	Measured Mn Concentration (dissolved) (µg l^{-1})	Measured Ni Concentration (dissolved) (µg l^{-1})	pH	DOC	Ca	Site-specific PNEC Dissolved Copper (µg l^{-1})	BioF	Bioavailable Copper Concentration (µg l^{-1})	Risk Characterisation Ratio	Site-specific PNEC Dissolved Zinc (µg l^{-1})	BioF	Bioavailable Zinc Concentration (µg l^{-1})	Risk Characterisation Ratio
1	TP10	Land West of Galon Uchaf Road		4.9	13		5.8	7.8	4.91	43	18.40	0.05	0.27	0.27	27.44	0.40	5.16	0.47
2	TP12	Land West of Galon Uchaf Road		5.5	39		4.4	7.5	4.44	66	19.14	0.05	0.29	0.29	25.18	0.43	16.83	1.55
3	TP14	Land West of Galon Uchaf Road		3.2	35		9.7	7.6	4.32	72	17.92	0.06	0.18	0.18	25.27	0.43	15.11	1.38
4	TP17	Land West of Galon Uchaf Road		5.6	53		8.5	7.4	5.24	64	23.50	0.04	0.24	0.24	26.94	0.40	21.47	1.97

Pb Screening Tool 1.0

Back

Calculate

Clear Data

INPUT DATA						RESULTS (Pb)			
ID	Location	Waterbody	Date	Measured Pb Concentration (dissolved) (µg l^{-1})	DOC	Site Specific PNEC Dissolved Pb (µg l^{-1})	BioF	Available Pb (µg l^{-1})	Risk Characterisation Ratio
1	TP10	Land West of Galon Uchaf		2.50	4.91	5.89	0.20	0.51	0.42
2	TP17	Land West of Galon Uchaf		4.10	5.24	6.29	0.19	0.78	0.65

APPENDIX T

HAZWASTE ONLINE PRELIMINARY WASTE CLASSIFICATION REPORT

HazWasteOnline™

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:

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

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

2OX1N-98WWD-VINQQ

Job name

14075 Bishop Hedley School

Description/Comments

Project

14075 Bishop Hedley School

Site

14075 Bishop Hedley School

Classified by

Name:
Jack Jones
Date:
20 Apr 2023 14:01 GMT
Telephone:
02920 807991

Company:
Intégral Géotechnique (Wales) Limited
Intégral House, 7 Beddau Way, Castlegate Business Park
Caerphilly
CF83 2AX

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: -

Course	Date
Hazardous Waste Classification	50% complete

Purpose of classification

2 - Material Characterisation

Address of the waste

Bishop Hedley School, Gwaunfarren Rd, Merthyr Tydfil **Post Code** CF47 9AN

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Redevelopment of Bishop Hedley School campus.

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

Waste created during excavation of soil during redevelopment and site reprofiling earthworks.

Description of the waste

Excavated soil arisings.

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS08	0.2	Non Hazardous		3
2	WS09	0.3	Non Hazardous		5
3	WS10	0.5	Non Hazardous		7
4	WS11	0.6	Non Hazardous		9
5	WS12	1	Non Hazardous		11
6	WS13	0.5	Non Hazardous		13
7	WS14	0.2	Non Hazardous		15
8	WS15	0.4	Non Hazardous		17
9	TP09	0.5	Non Hazardous		19
10	TP10	1.5	Non Hazardous		21
11	TP12	075	Non Hazardous		23
12	TP14	0.5	Non Hazardous		25
13	TP15	0.5	Non Hazardous		27
14	TP17	0.5	Hazardous	HP 7, HP 11	29

Related documents

#	Name	Description
1	Made Ground	waste stream template used to create this Job

Report

Created by: Jack Jones

Created date: 20 Apr 2023 14:01 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	32
Appendix B: Rationale for selection of metal species	33
Appendix C: Version	33

Classification of sample: WS08

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

Sample details

Sample name:
WS08
Sample Depth:
0.2 m
Moisture content:
21%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 21% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	18.485	mg/kg	0.00185 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	3.053	mg/kg	0.000305 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.2	mg/kg	13.43	16.116	mg/kg	0.00161 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.8	mg/kg	1.285	1.028	mg/kg	0.00008 %		
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		69	mg/kg	1.126	77.686	mg/kg	0.00777 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				1.5	mg/kg	1.884	2.826	mg/kg	0.000283 %		
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	120	mg/kg	1.56	187.178	mg/kg	0.012 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		61	mg/kg	1.579	96.349	mg/kg	0.00963 %		
25		pH			PH		7.8	pH		7.8	pH	7.8 pH		
26		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		290	mg/kg	2.469	716.096	mg/kg	0.0716 %		
											Total:	0.106 %		

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 Deteminand - 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: WS09

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

Sample details

Sample name:
WS09
Sample Depth:
0.3 m
Moisture content:
13%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		23	mg/kg	1.32	30.367	mg/kg	0.00304 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.78	mg/kg	2.775	2.165	mg/kg	0.000216 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	8.058	mg/kg	0.000806 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		46	mg/kg	1.126	51.791	mg/kg	0.00518 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	25	mg/kg	1.56	38.995	mg/kg	0.0025 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		31	mg/kg	1.579	48.964	mg/kg	0.0049 %		
25		pH			PH		7.6	pH		7.6	pH	7.6 pH		
26		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		45	mg/kg	2.469	111.118	mg/kg	0.0111 %		
											Total:	0.0291 %		

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 Deteminand - 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: WS10

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

Sample details

Sample name:
WS10
Sample Depth:
0.5 m
Moisture content:
10%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		1.2	mg/kg		1.2	mg/kg	0.00012 %		
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		1.3	mg/kg		1.3	mg/kg	0.00013 %		
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		3.9	mg/kg		3.9	mg/kg	0.00039 %		
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		2.9	mg/kg		2.9	mg/kg	0.00029 %		
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		5.1	mg/kg		5.1	mg/kg	0.00051 %		
8		benzo[ghi]perylene		205-883-8	191-24-2		1.8	mg/kg		1.8	mg/kg	0.00018 %		
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.6	mg/kg		1.6	mg/kg	0.00016 %		
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.3	mg/kg	2.775	3.608	mg/kg	0.000361 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1	mg/kg	13.43	13.43	mg/kg	0.00134 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.6	mg/kg	1.285	0.771	mg/kg	0.00006 %		
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		4.5	mg/kg		4.5	mg/kg	0.00045 %		
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		44	mg/kg	1.126	49.539	mg/kg	0.00495 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.79	mg/kg		0.79	mg/kg	0.000079 %		
18		fluoranthene		205-912-4	206-44-0		6.5	mg/kg		6.5	mg/kg	0.00065 %		
19		fluorene		201-695-5	86-73-7		1.5	mg/kg		1.5	mg/kg	0.00015 %		
20		indeno[123-cd]pyrene		205-893-2	193-39-5		1.8	mg/kg		1.8	mg/kg	0.00018 %		
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	110	mg/kg	1.56	171.58	mg/kg	0.011 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		21	mg/kg	1.579	33.169	mg/kg	0.00332 %		
25		pH			PH		8	pH		8	pH	8pH		
26		phenanthrene		201-581-5	85-01-8		5.2	mg/kg		5.2	mg/kg	0.00052 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		4.7	mg/kg		4.7	mg/kg	0.00047 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		160	mg/kg	2.469	395.087	mg/kg	0.0395 %		
											Total:	0.0683 %		

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 Deteminand - 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: WS11

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

Sample details

Sample name:
WS11
Sample Depth:
0.6 m
Moisture content:
21%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 21% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		24	mg/kg	1.32	31.688	mg/kg	0.00317 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.9	mg/kg	2.775	5.273	mg/kg	0.000527 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		3.9	mg/kg	13.43	52.377	mg/kg	0.00524 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		84	mg/kg	1.126	94.575	mg/kg	0.00946 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		2	mg/kg		2	mg/kg	0.0002 %		
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	120	mg/kg	1.56	187.178	mg/kg	0.012 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		42	mg/kg	1.579	66.339	mg/kg	0.00663 %		
25		pH			PH		7.3	pH		7.3	pH	7.3 pH		
26		phenanthrene		201-581-5	85-01-8		1.7	mg/kg		1.7	mg/kg	0.00017 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		1.3	mg/kg		1.3	mg/kg	0.00013 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		230	mg/kg	2.469	567.938	mg/kg	0.0568 %		
											Total:	0.0956 %		

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 Deteminand - 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: WS12

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

Sample details

Sample name:
WS12
Sample Depth:
1 m
Moisture content:
10%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	21.125	mg/kg	0.00211 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.37	mg/kg		0.37	mg/kg	0.000037 %		
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.29	mg/kg		0.29	mg/kg	0.000029 %		
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.45	mg/kg		0.45	mg/kg	0.000045 %		
8		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.26	mg/kg		0.26	mg/kg	0.000026 %		
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	3.053	mg/kg	0.000305 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8	mg/kg	13.43	10.744	mg/kg	0.00107 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		0.57	mg/kg		0.57	mg/kg	0.000057 %		
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		47	mg/kg	1.126	52.917	mg/kg	0.00529 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		0.49	mg/kg		0.49	mg/kg	0.000049 %		
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	50	mg/kg	1.56	77.991	mg/kg	0.005 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		39	mg/kg	1.579	61.6	mg/kg	0.00616 %		
25		pH			PH		5.6	pH		5.6	pH	5.6 pH		
26		phenanthrene		201-581-5	85-01-8		0.75	mg/kg		0.75	mg/kg	0.000075 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		0.38	mg/kg		0.38	mg/kg	0.000038 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		150	mg/kg	2.469	370.394	mg/kg	0.037 %		
											Total:	0.0586 %		

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 Deteminand - 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: WS13

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

Sample details

Sample name:
WS13
Sample Depth:
0.5 m
Moisture content:
28%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 28% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		51	mg/kg	1.32	67.337	mg/kg	0.00673 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		3.6	mg/kg	2.775	9.991	mg/kg	0.000999 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.1	mg/kg	13.43	14.773	mg/kg	0.00148 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		170	mg/kg	1.126	191.401	mg/kg	0.0191 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	310	mg/kg	1.56	483.543	mg/kg	0.031 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		79	mg/kg	1.579	124.78	mg/kg	0.0125 %		
25		pH			PH		6.4	pH		6.4	pH	6.4 pH		
26		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		380	mg/kg	2.469	938.333	mg/kg	0.0938 %		
											Total:	0.167 %		

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 Deteminand - 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: WS14

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

Sample details

Sample name:
WS14
Sample Depth:
0.2 m
Moisture content:
18%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	21.125	mg/kg	0.00211 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	3.053	mg/kg	0.000305 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	8.058	mg/kg	0.000806 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		52	mg/kg	1.126	58.546	mg/kg	0.00585 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	48	mg/kg	1.56	74.871	mg/kg	0.0048 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		38	mg/kg	1.579	60.021	mg/kg	0.006 %		
25		pH			PH		5.7	pH		5.7	pH	5.7 pH		
26		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		44	mg/kg	2.469	108.649	mg/kg	0.0109 %		
											Total:	0.0321 %		

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 Deteminand - 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: WS15

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

Sample details

Sample name:
WS15
Sample Depth:
0.4 m
Moisture content:
16%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	13.203	mg/kg	0.00132 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.2	mg/kg	2.775	3.33	mg/kg	0.000333 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6	mg/kg	13.43	8.058	mg/kg	0.000806 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		56	mg/kg	1.126	63.05	mg/kg	0.0063 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18	mg/kg	1.56	28.077	mg/kg	0.0018 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		39	mg/kg	1.579	61.6	mg/kg	0.00616 %		
25		pH			PH		6.1	pH		6.1	pH	6.1 pH		
26		phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		55	mg/kg	2.469	135.811	mg/kg	0.0136 %		
											Total:	0.0316 %		

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 Deteminand - 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: TP09

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

Sample details

Sample name:
TP09
Sample Depth:
0.5 m
Moisture content:
19%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 19% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	21.125	mg/kg	0.00211 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.3	mg/kg		1.3	mg/kg	0.00013 %		
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.9	mg/kg		0.9	mg/kg	0.00009 %		
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.4	mg/kg		1.4	mg/kg	0.00014 %		
8		benzo[ghi]perylene		205-883-8	191-24-2		0.67	mg/kg		0.67	mg/kg	0.000067 %		
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.6	mg/kg		0.6	mg/kg	0.00006 %		
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.81	mg/kg	2.775	2.248	mg/kg	0.000225 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.3	mg/kg	13.43	4.029	mg/kg	0.000403 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		1.3	mg/kg		1.3	mg/kg	0.00013 %		
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		37	mg/kg	1.126	41.658	mg/kg	0.00417 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.24	mg/kg		0.24	mg/kg	0.000024 %		
18		fluoranthene		205-912-4	206-44-0		1.5	mg/kg		1.5	mg/kg	0.00015 %		
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		0.66	mg/kg		0.66	mg/kg	0.000066 %		
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	110	mg/kg	1.56	171.58	mg/kg	0.011 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		0.24	mg/kg		0.24	mg/kg	0.000024 %		
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		19	mg/kg	1.579	30.01	mg/kg	0.003 %		
25		pH			PH		8	pH		8	pH	8pH		
26		phenanthrene		201-581-5	85-01-8		0.67	mg/kg		0.67	mg/kg	0.000067 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		1.3	mg/kg		1.3	mg/kg	0.00013 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		TPH (C6 to C40) petroleum group			TPH		46	mg/kg		46	mg/kg	0.0046 %		
31		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		240	mg/kg	2.469	592.631	mg/kg	0.0593 %		
											Total:	0.0871 %		

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 Deteminand - 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 because No hydrocarbon product / flammable liquid present

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0046%)

Classification of sample: TP10

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

Sample details

Sample name:
TP10
Sample Depth:
1.5 m
Moisture content:
20%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 20% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		42	mg/kg	1.32	55.454	mg/kg	0.00555 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
8		benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		2.4	mg/kg	2.775	6.661	mg/kg	0.000666 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		11	mg/kg	13.43	147.73	mg/kg	0.0148 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1.5	mg/kg	1.285	1.928	mg/kg	0.00015 %		
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		170	mg/kg	1.126	191.401	mg/kg	0.0191 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				1.1	mg/kg	1.884	2.072	mg/kg	0.000207 %		
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		0.77	mg/kg		0.77	mg/kg	0.000077 %		
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	180	mg/kg	1.56	280.767	mg/kg	0.018 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.9	mg/kg	1.353	1.218	mg/kg	0.000122 %		
23		naphthalene	601-052-00-2	202-049-5	91-20-3		0.71	mg/kg		0.71	mg/kg	0.000071 %		
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		83	mg/kg	1.579	131.098	mg/kg	0.0131 %		
25		pH			PH		7.5	pH		7.5	pH	7.5 pH		
26		phenanthrene		201-581-5	85-01-8		0.91	mg/kg		0.91	mg/kg	0.000091 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		0.66	mg/kg		0.66	mg/kg	0.000066 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2.1	mg/kg	1.405	2.951	mg/kg	0.000295 %		
30		TPH (C6 to C40) petroleum group			TPH		760	mg/kg		760	mg/kg	0.076 %		
31		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		360	mg/kg	2.469	888.947	mg/kg	0.0889 %		
											Total:	0.238 %		

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 Deteminand - 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 because No hydrocarbon product / flammable liquid present

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.076%)

Classification of sample: TP12

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

Sample details

Sample name:
TP12
Sample Depth:
075 m
Moisture content:
18%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		0.19	mg/kg		0.19	mg/kg	0.000019 %		
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		27	mg/kg	1.32	35.649	mg/kg	0.00356 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.76	mg/kg		0.76	mg/kg	0.000076 %		
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.36	mg/kg		0.36	mg/kg	0.000036 %		
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.7	mg/kg		0.7	mg/kg	0.00007 %		
8		benzo[ghi]perylene		205-883-8	191-24-2		0.31	mg/kg		0.31	mg/kg	0.000031 %		
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.25	mg/kg		0.25	mg/kg	0.000025 %		
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.9	mg/kg	2.775	5.273	mg/kg	0.000527 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.7	mg/kg	13.43	22.831	mg/kg	0.00228 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		**<LOD**
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		0.89	mg/kg		0.89	mg/kg	0.000089 %		
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		120	mg/kg	1.126	135.107	mg/kg	0.0135 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		**<LOD**
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		0.97	mg/kg		0.97	mg/kg	0.000097 %		
19		fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		indeno[123-cd]pyrene		205-893-2	193-39-5		0.26	mg/kg		0.26	mg/kg	0.000026 %		
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	78	mg/kg	1.56	121.666	mg/kg	0.0078 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		0.64	mg/kg		0.64	mg/kg	0.000064 %		
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		48	mg/kg	1.579	75.816	mg/kg	0.00758 %		
25		pH			PH		7.5	pH		7.5	pH	7.5 pH		
26		phenanthrene		201-581-5	85-01-8		1.3	mg/kg		1.3	mg/kg	0.00013 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		0.71	mg/kg		0.71	mg/kg	0.000071 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		TPH (C6 to C40) petroleum group			TPH		120	mg/kg		120	mg/kg	0.012 %		
31		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		160	mg/kg	2.469	395.087	mg/kg	0.0395 %		
											Total:	0.0888 %		

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 Deteminand - 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 because No hydrocarbon product / flammable liquid present

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.012%)

Classification of sample: TP14

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

Sample details

Sample name:
TP14
Sample Depth:
0.5 m
Moisture content:
18%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		acenaphthene		201-469-6	83-32-9		0.4	mg/kg		0.4	mg/kg	0.00004 %		
2		acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		24	mg/kg	1.32	31.688	mg/kg	0.00317 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1	mg/kg		1	mg/kg	0.0001 %		
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.41	mg/kg		0.41	mg/kg	0.000041 %		
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.9	mg/kg		0.9	mg/kg	0.00009 %		
8		benzo[ghi]perylene		205-883-8	191-24-2		0.33	mg/kg		0.33	mg/kg	0.000033 %		
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.3	mg/kg		0.3	mg/kg	0.00003 %		
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		2	mg/kg	2.775	5.551	mg/kg	0.000555 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		14	mg/kg	13.43	188.02	mg/kg	0.0188 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1.3	mg/kg	1.285	1.671	mg/kg	0.00013 %		
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		1.2	mg/kg		1.2	mg/kg	0.00012 %		
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		160	mg/kg	1.126	180.142	mg/kg	0.018 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				1.1	mg/kg	1.884	2.072	mg/kg	0.000207 %		
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		fluoranthene		205-912-4	206-44-0		0.92	mg/kg		0.92	mg/kg	0.000092 %		
19		fluorene		201-695-5	86-73-7		0.37	mg/kg		0.37	mg/kg	0.000037 %		
20		indeno[123-cd]pyrene		205-893-2	193-39-5		0.29	mg/kg		0.29	mg/kg	0.000029 %		
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	270	mg/kg	1.56	421.15	mg/kg	0.027 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		5.1	mg/kg		5.1	mg/kg	0.00051 %		
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		55	mg/kg	1.579	86.872	mg/kg	0.00869 %		
25		pH			PH		7.4	pH		7.4	pH	7.4 pH		
26		phenanthrene		201-581-5	85-01-8		1.2	mg/kg		1.2	mg/kg	0.00012 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		0.74	mg/kg		0.74	mg/kg	0.000074 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2.6	mg/kg	1.405	3.653	mg/kg	0.000365 %		
30		TPH (C6 to C40) petroleum group			TPH		560	mg/kg		560	mg/kg	0.056 %		
31		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		360	mg/kg	2.469	888.947	mg/kg	0.0889 %		
											Total:	0.224 %		

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 Deteminand - 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 because No hydrocarbon product / flammable liquid present

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.056%)

Classification of sample: TP15

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

Sample details

Sample name:
TP15
Sample Depth:
0.5 m
Moisture content:
18%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% No 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		acenaphthene	201-469-6	83-32-9		0.77	mg/kg		0.77	mg/kg	0.000077 %		
2		acenaphthylene	205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
3		anthracene	204-371-1	120-12-7		0.36	mg/kg		0.36	mg/kg	0.000036 %		
4		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
5		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	1.7	mg/kg		1.7	mg/kg	0.00017 %		
6		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	1.1	mg/kg		1.1	mg/kg	0.00011 %		
7		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1.8	mg/kg		1.8	mg/kg	0.00018 %		
8		benzo[ghi]perylene		205-883-8	191-24-2	0.75	mg/kg		0.75	mg/kg	0.000075 %		
9		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.7	mg/kg		0.7	mg/kg	0.00007 %		
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9	1.1	mg/kg	2.775	3.053	mg/kg	0.000305 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2	27	mg/kg	13.43	362.61	mg/kg	0.0363 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1	mg/kg	1.285	1.285	mg/kg	0.0001 %		
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		2	mg/kg		2	mg/kg	0.0002 %		
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		64	mg/kg	1.126	72.057	mg/kg	0.00721 %		

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		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 }	006-007-00-5				1.8	mg/kg	1.884	3.391	mg/kg	0.000339 %		
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.4	mg/kg		0.4	mg/kg	0.00004 %		
18		fluoranthene		205-912-4	206-44-0		2.6	mg/kg		2.6	mg/kg	0.00026 %		
19		fluorene		201-695-5	86-73-7		0.74	mg/kg		0.74	mg/kg	0.000074 %		
20		indeno[123-cd]pyrene		205-893-2	193-39-5		0.68	mg/kg		0.68	mg/kg	0.000068 %		
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	94	mg/kg	1.56	146.623	mg/kg	0.0094 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		2.5	mg/kg		2.5	mg/kg	0.00025 %		
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		31	mg/kg	1.579	48.964	mg/kg	0.0049 %		
25		pH			PH		7.7	pH		7.7	pH	7.7 pH		
26		phenanthrene		201-581-5	85-01-8		2.8	mg/kg		2.8	mg/kg	0.00028 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		2	mg/kg		2	mg/kg	0.0002 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		TPH (C6 to C40) petroleum group			TPH		510	mg/kg		510	mg/kg	0.051 %		
31		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		170	mg/kg	2.469	419.78	mg/kg	0.042 %		
											Total:	0.157 %		

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 Deteminand - 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 because No hydrocarbon product / flammable liquid present

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.051%)

Classification of sample: TP17

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
TP17
Sample Depth:
0.5 m
Moisture content:
20%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.24%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.24%)

Determinands

Moisture content: 20% No 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		acenaphthene				0.35	mg/kg		0.35	mg/kg	0.000035 %		
			201-469-6	83-32-9									
2		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-917-1	208-96-8									
3		anthracene				0.67	mg/kg		0.67	mg/kg	0.000067 %		
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				22	mg/kg	1.32	29.047	mg/kg	0.0029 %		
		033-003-00-0	215-481-4	1327-53-3									
5		benzo[a]anthracene				2.5	mg/kg		2.5	mg/kg	0.00025 %		
		601-033-00-9	200-280-6	56-55-3									
6		benzo[a]pyrene; benzo[def]chrysene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
		601-032-00-3	200-028-5	50-32-8									
7		benzo[b]fluoranthene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
		601-034-00-4	205-911-9	205-99-2									
8		benzo[ghi]perylene				0.87	mg/kg		0.87	mg/kg	0.000087 %		
			205-883-8	191-24-2									
9		benzo[k]fluoranthene				0.92	mg/kg		0.92	mg/kg	0.000092 %		
		601-036-00-5	205-916-6	207-08-9									

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
10		beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		2.1	mg/kg	2.775	5.828	mg/kg	0.000583 %		
11		boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.7	mg/kg	13.43	36.261	mg/kg	0.00363 %		
12		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1.6	mg/kg	1.285	2.056	mg/kg	0.00016 %		
13		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
14		chrysene	601-048-00-0	205-923-4	218-01-9		2.8	mg/kg		2.8	mg/kg	0.00028 %		
15		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		92	mg/kg	1.126	103.582	mg/kg	0.0104 %		
16		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 }	006-007-00-5				4.5	mg/kg	1.884	8.478	mg/kg	0.000848 %		
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.49	mg/kg		0.49	mg/kg	0.000049 %		
18		fluoranthene		205-912-4	206-44-0		3.3	mg/kg		3.3	mg/kg	0.00033 %		
19		fluorene		201-695-5	86-73-7		0.5	mg/kg		0.5	mg/kg	0.00005 %		
20		indeno[123-cd]pyrene		205-893-2	193-39-5		0.68	mg/kg		0.68	mg/kg	0.000068 %		
21		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	210	mg/kg	1.56	327.561	mg/kg	0.021 %		
22		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
23		naphthalene	601-052-00-2	202-049-5	91-20-3		1.1	mg/kg		1.1	mg/kg	0.00011 %		
24		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		45	mg/kg	1.579	71.077	mg/kg	0.00711 %		
25		pH			PH		7.3	pH		7.3	pH	7.3 pH		
26		phenanthrene		201-581-5	85-01-8		3	mg/kg		3	mg/kg	0.0003 %		
27		phenol	604-001-00-2	203-632-7	108-95-2		3.1	mg/kg		3.1	mg/kg	0.00031 %		
28		pyrene		204-927-3	129-00-0		2.7	mg/kg		2.7	mg/kg	0.00027 %		
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		**<LOD**
30		TPH (C6 to C40) petroleum group			TPH		2400	mg/kg		2400	mg/kg	0.24 %		
31		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		420	mg/kg	2.469	1037.104	mg/kg	0.104 %		
											Total:	0.394 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - 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 because No hydrocarbon product / flammable liquid present

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.24%)

Appendix A: Classifier defined and non GB MCL determinands

- **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

- **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

- **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

- **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

- **boron tribromide/trichloride/trifluoride (combined)** (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06 Aug 2015
Hazard Statements: EUH014 , Acute Tox. 2; H330 , Acute Tox. 2; H300 , Skin Corr. 1A; H314 , Skin Corr. 1B; H314

- **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 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **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

- **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

- **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

- **pH** (CAS Number: PH)

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

- **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

- **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

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

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common 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}

Worst case species

lead {lead chromate}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

zinc {zinc sulphate}

Not enough Cr(VI) to justify Zinc Chromate species

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2023.110.5568.10273 (20 Apr 2023)
HazWasteOnline Database: 2023.108.5567.10271 (18 Apr 2023)

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

FIGURES

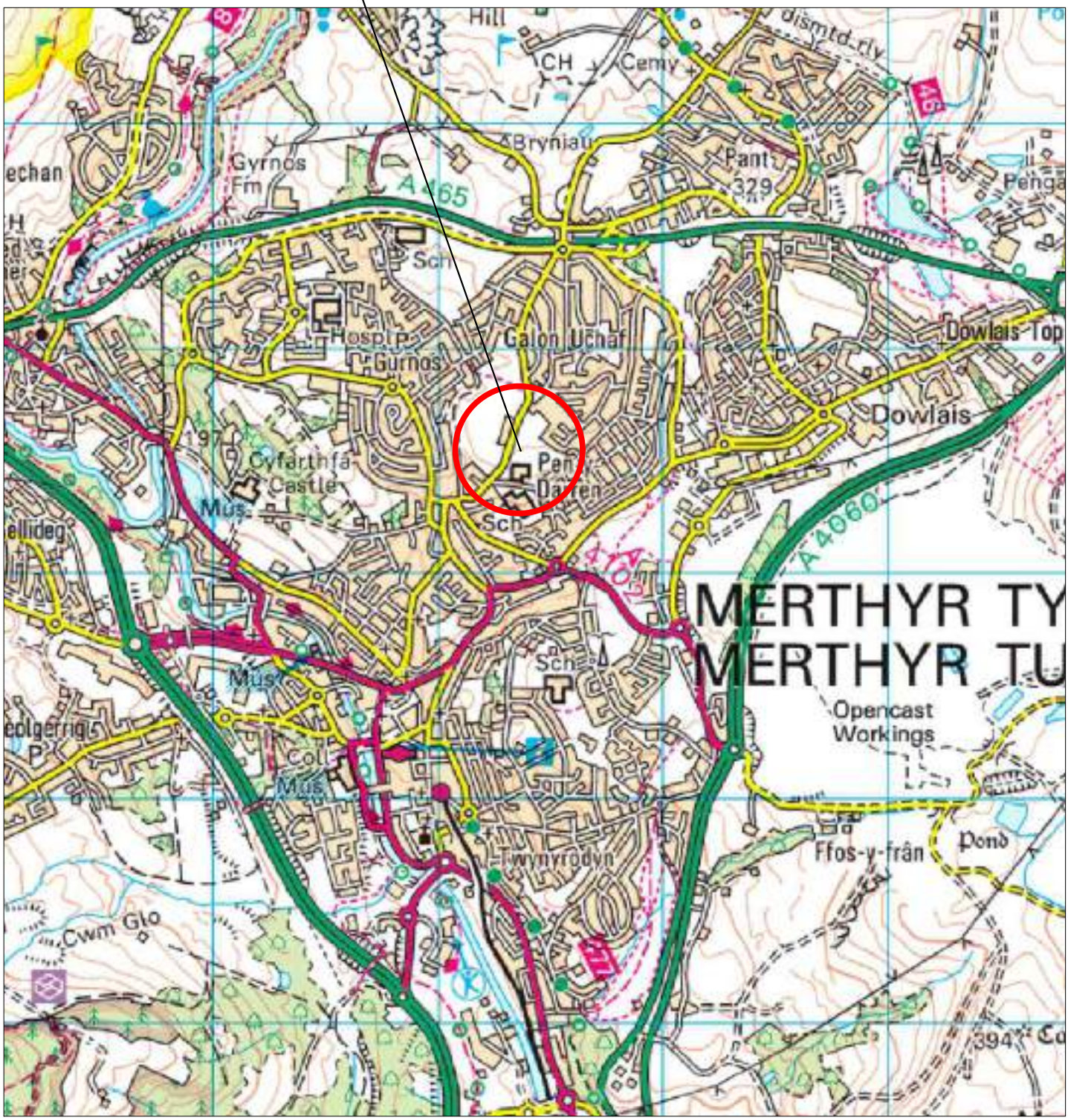

Figure 1: Site Location

Project: Bishop Hedley School, Merthyr Tydfil	Job no.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:25,000 at A4		

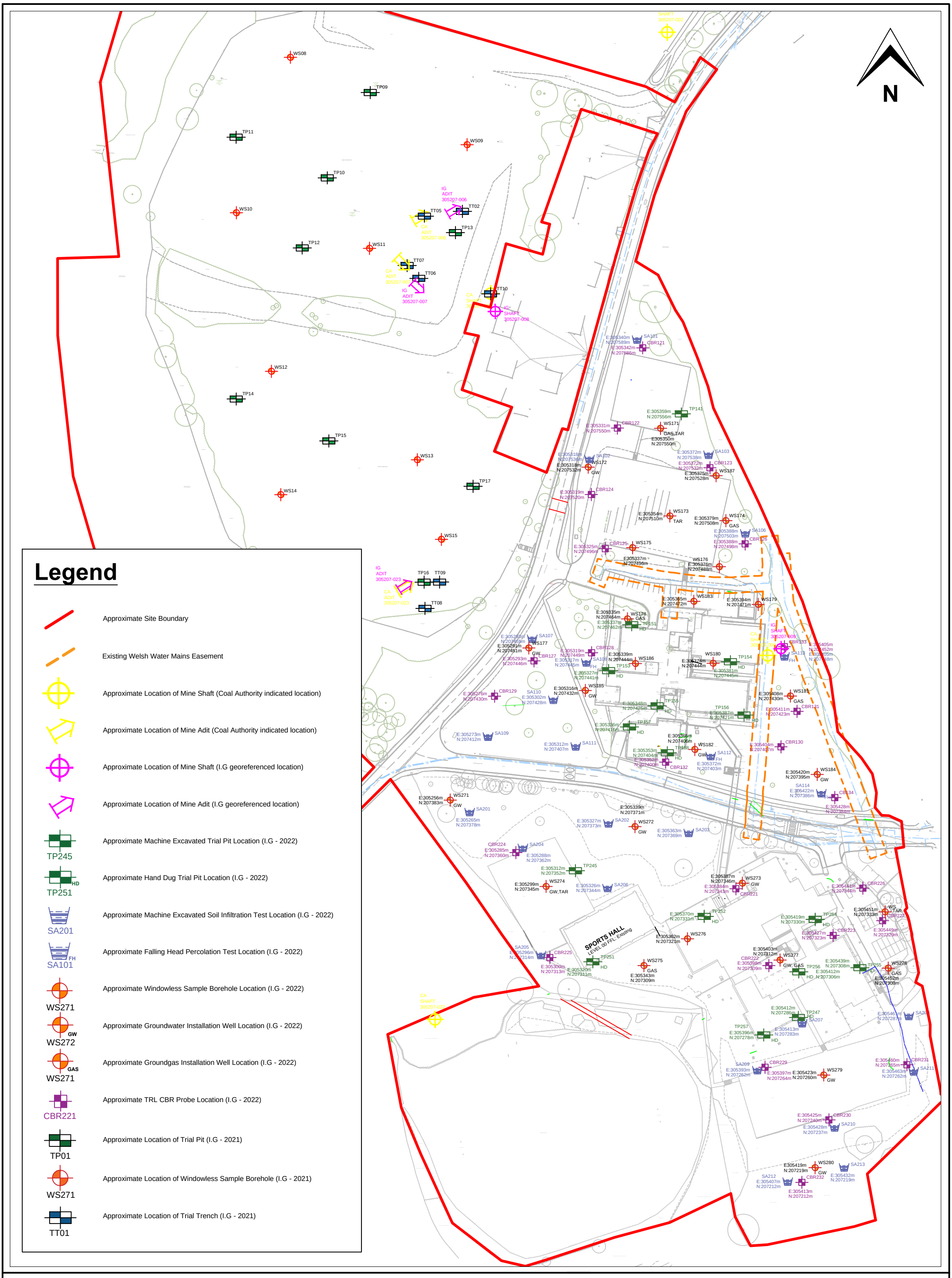

Figure 2: Site Plan

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:1,500 at A3		

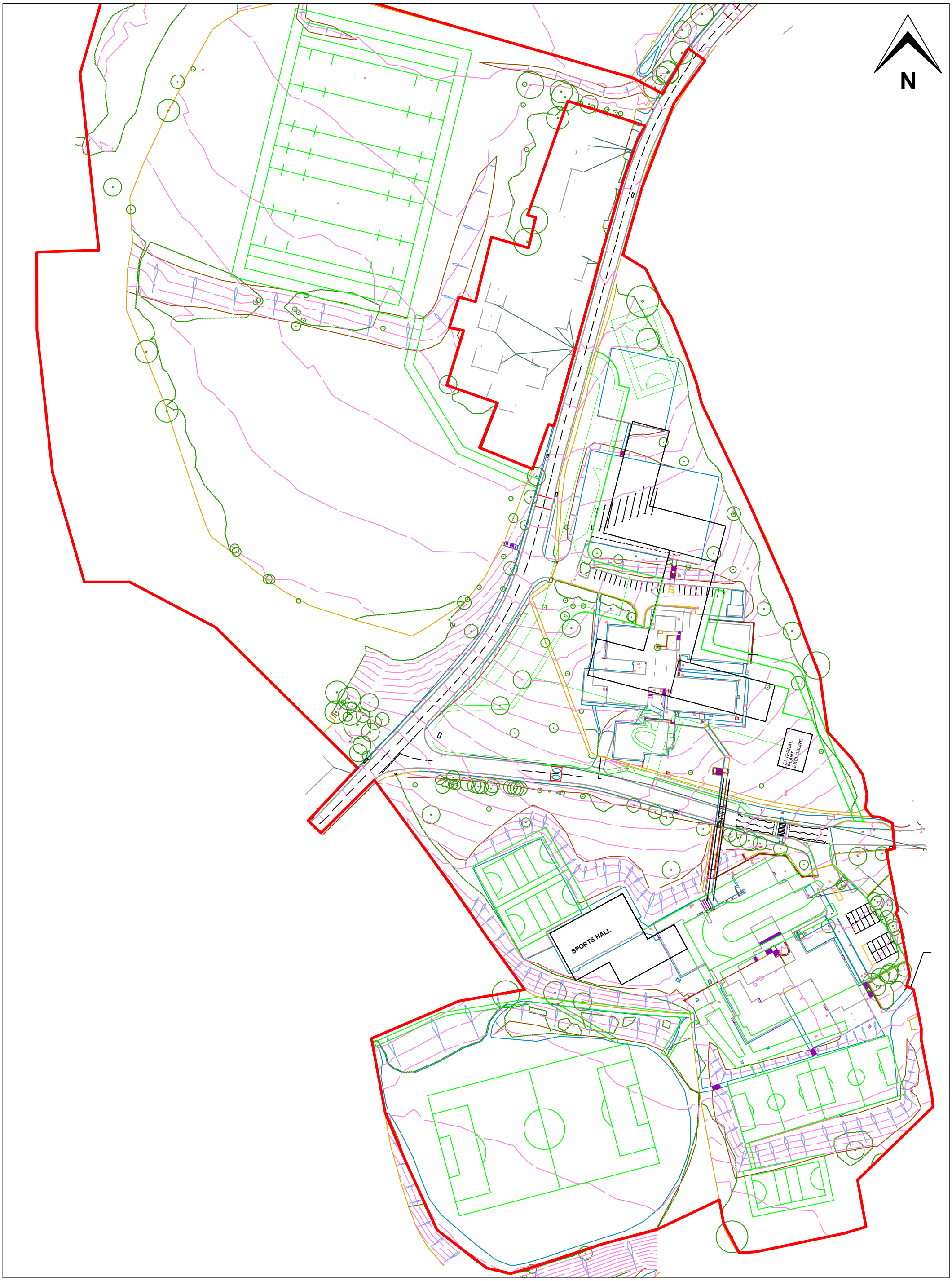

Figure 3: Indicative Proposed Development Layout

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:1,500 at A3		

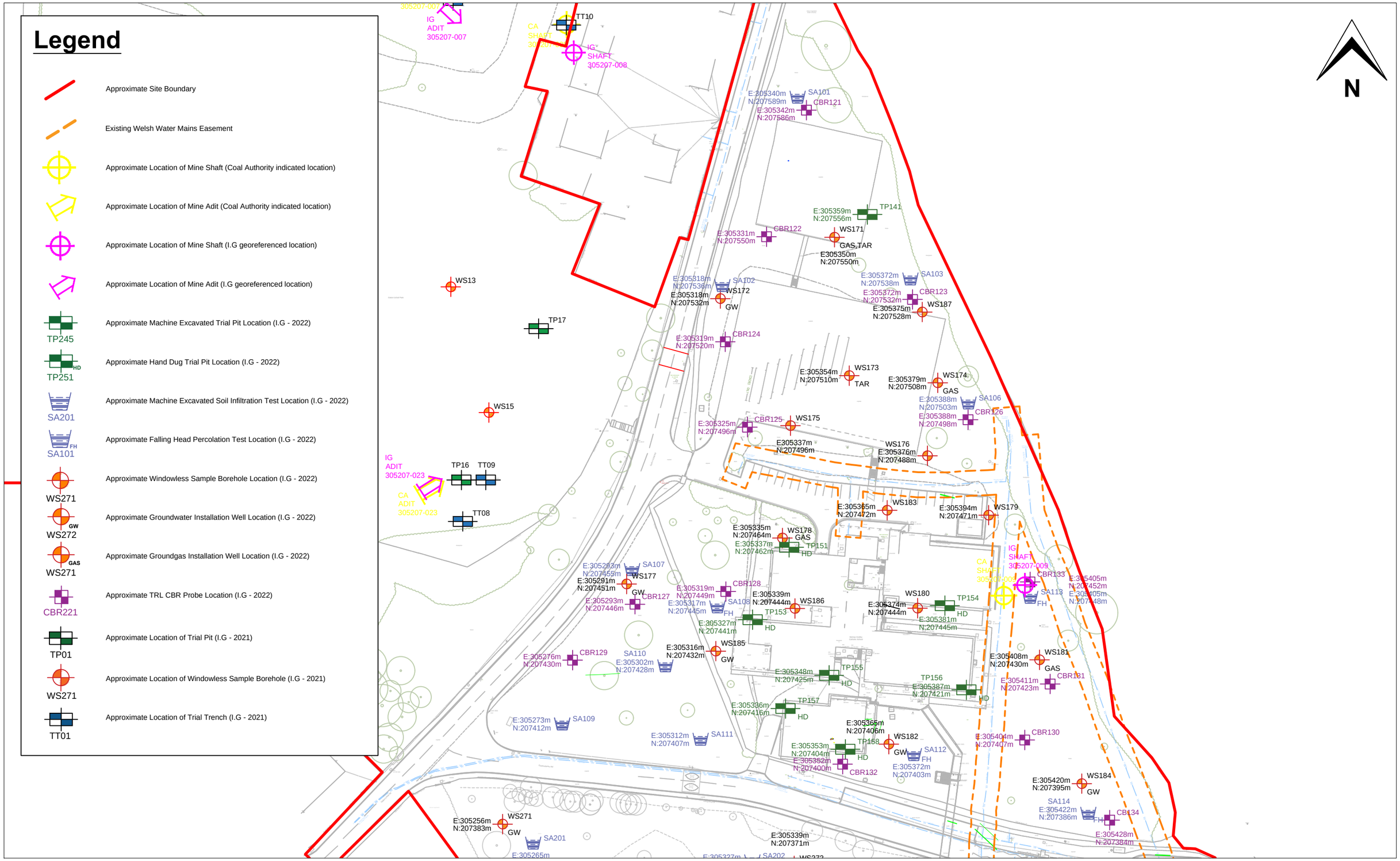

Figure 4a: Exploratory Hole Locations - Existing School Campus (North)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:1,000 at A3		

Legend

- Approximate Site Boundary
- Existing Welsh Water Mains Easement
- Approximate Location of Mine Shaft (Coal Authority indicated location)
- Approximate Location of Mine Adit (Coal Authority indicated location)
- Approximate Location of Mine Shaft (I.G georeferenced location)
- Approximate Location of Mine Adit (I.G georeferenced location)
- TP245 — Approximate Machine Excavated Trial Pit Location (I.G - 2022)
- TP251 (HD) — Approximate Hand Dug Trial Pit Location (I.G - 2022)
- SA201 — Approximate Machine Excavated Soil Infiltration Test Location (I.G - 2022)
- SA101 (FH) — Approximate Falling Head Percolation Test Location (I.G - 2022)
- WS271 — Approximate Windowless Sample Borehole Location (I.G - 2022)
- WS272 (GW) — Approximate Groundwater Installation Well Location (I.G - 2022)
- WS271 (GAS) — Approximate Groundgas Installation Well Location (I.G - 2022)
- CBR221 — Approximate TRL CBR Probe Location (I.G - 2022)
- TP01 — Approximate Location of Trial Pit (I.G - 2021)
- WS271 — Approximate Location of Windowless Sample Borehole (I.G - 2021)
- TT01 — Approximate Location of Trial Trench (I.G - 2021)

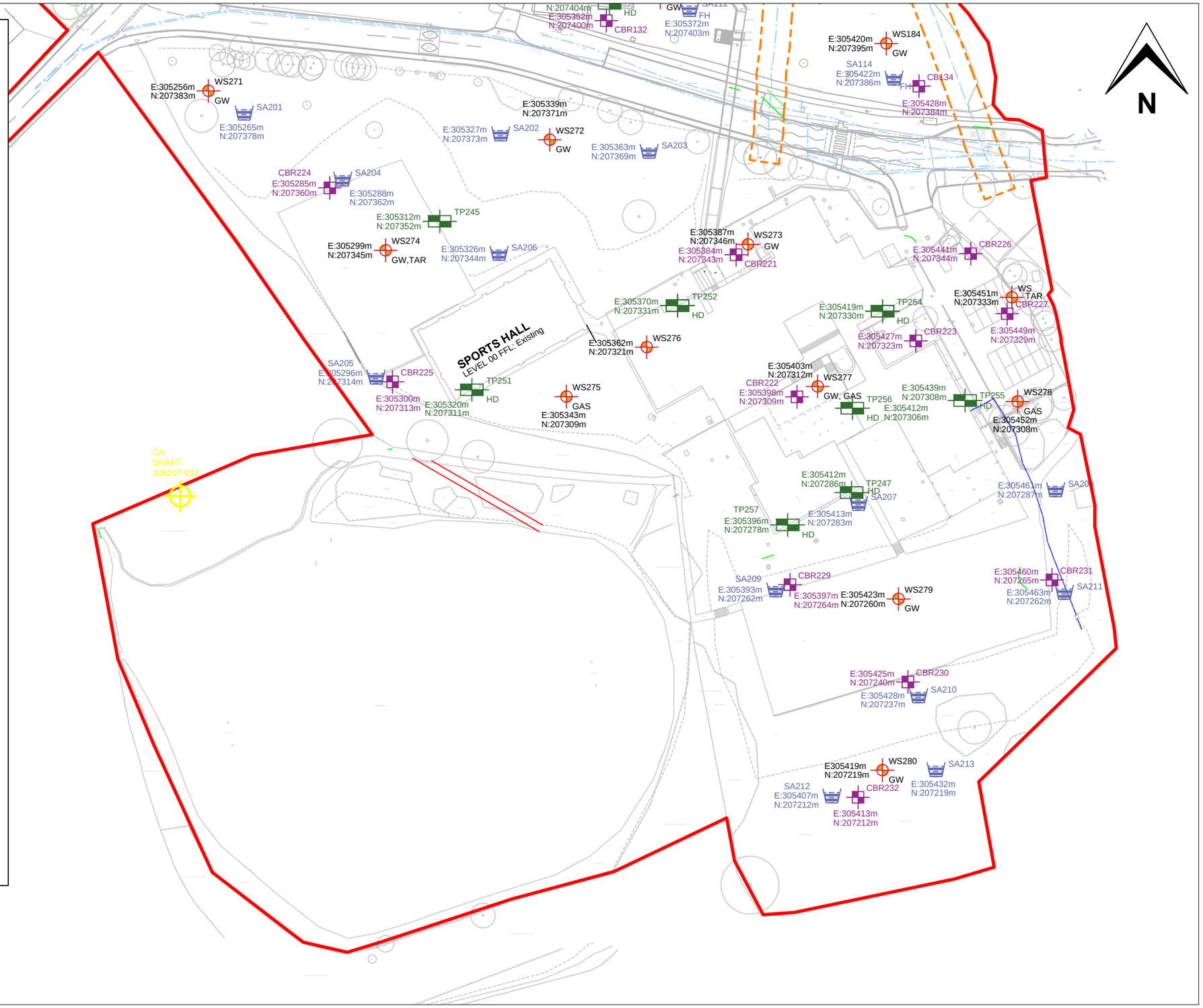

Figure 4b: Exploratory Hole Locations - Existing School Campus (South)

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:1,000 at A3		

Legend

- Approximate Site Boundary
- Existing Welsh Water Mains Easement
- Approximate Location of Mine Shaft (Coal Authority indicated location)
- Approximate Location of Mine Adit (Coal Authority indicated location)
- Approximate Location of Mine Shaft (I.G georeferenced location)
- Approximate Location of Mine Adit (I.G georeferenced location)
- TP245 — Approximate Machine Excavated Trial Pit Location (I.G - 2022)
- TP251 HD — Approximate Hand Dug Trial Pit Location (I.G - 2022)
- SA201 — Approximate Machine Excavated Soil Infiltration Test Location (I.G - 2022)
- SA101 FH — Approximate Falling Head Percolation Test Location (I.G - 2022)
- WS271 — Approximate Windowless Sample Borehole Location (I.G - 2022)
- WS272 GW — Approximate Groundwater Installation Well Location (I.G - 2022)
- WS271 GAS — Approximate Groundgas Installation Well Location (I.G - 2022)
- CBR221 — Approximate TRL CBR Probe Location (I.G - 2022)
- TP01 — Approximate Location of Trial Pit (I.G - 2021)
- WS271 — Approximate Location of Windowless Sample Borehole (I.G - 2021)
- TT01 — Approximate Location of Trial Trench (I.G - 2021)

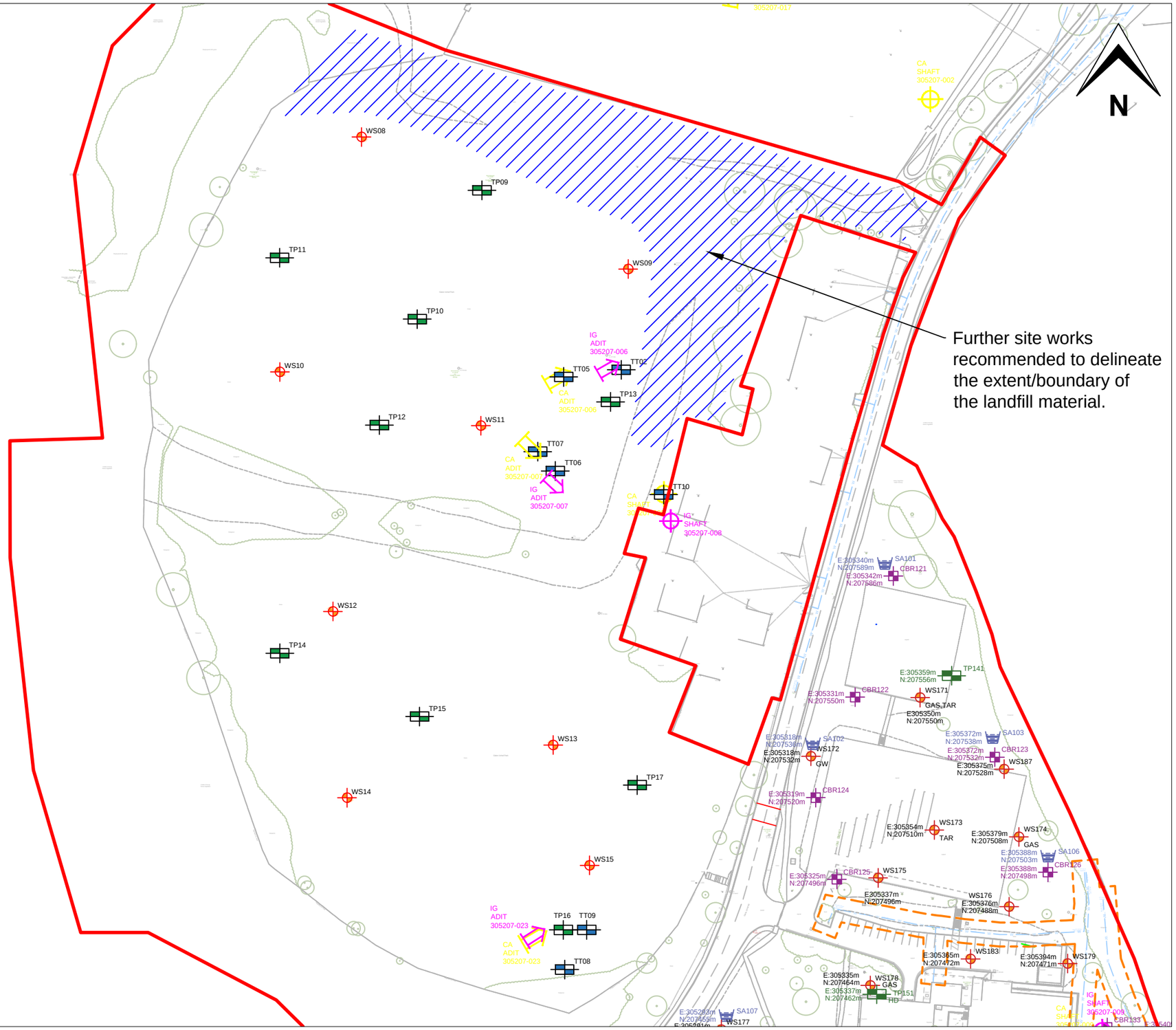

Figure 4c: Exploratory Hole Locations - Land West of Galon Uchaf Road

Project: Bishop Hedley School, Merthyr Tydfil	Job No.: 14075	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Willmott Dixon Construction Ltd	Scale: 1:1,250 at A3		